ENVIRONMENTAL AND SOCIAL IMPACT ASSESMENT STUDY FOR THE PROPOSED RESIDENTIAL DEVELOPMENT AT BELLEVUE, NAIROBI ON PLOT L.R. No., NAIROBI BLOCKS 98/106,107 AND 108.

PROJECT PROPONENT

LAPFUND
Secured Retirement

LOCAL AUTHORITIES PROVIDENT FUND
P.O. Box 79592-00200
Nairobi, Kenya

CONSULTANT

ECO PLAN MANAGEMENT LTD

OCTOBER, 2021

CERTIFICATION

This ESIA study report has been prepared by **ECO PLAN MANAGEMENT LIMITED** Company a firm of NEMA registered EIA/EA experts. We the undersigned certify that the content of this report is righteous and correct to the best of our knowledge.

EIA/EA Lead Expert:

Date: ……..

Signature: ……

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Registration number: 0447

PROPONENT:

Name: ……

Designation: …….....

Signature: …….....

Date: …….....

ACRONYMS

BAT	Best Available Technology
GHG	Green House Gases
EA	Environmental Audit
EIA	Environmental Impact Assessment
EMCA	Environmental Management and Co-ordination Act, 1999
EHS	Environmental Health and Safety
EMP	Environmental Management Plan
EM&MP	Environmental Management & Monitoring Plan
ESIA	Environmental and Social Impact Assessment
IEC	Information Education and Communication
KPLC	Kenya Power & Lighting Company
NEMA	National Environmental management Authority
NGOs	Non-Governmental Organizations
OSHA	Occupational Safety & Health Act
TIA	Traffic Impact Assessment
PC	Public Consultation
UN	United Nations
WB	WorldBank

EXECUTIVE SUMMARY

Environmental Impact Assessment is a tool for environmental conservation and has been identified as a key component in new project implementation. Early identification of possible development impacts to the environment enhances and promotes environmental sustainability as anthropogenic factors are balanced with natural environmental needs. According to the legal notice 150 of 16th June 2016, the L N 8/2003 EMCA 1999 (second Schedule) was amended and Projects categorized as low risk, medium risk and High risk according to their potential impacts to the environment.

Screening of the proposed project was done and according to the classification described in the above legislation as "Urban development including establishment of new housing estate developments exceeding one hundred housing units", the project is categorized a high-risk project. A scoping exercise was therefore done and acknowledged that Project's potential impact on the natural environment and human environment are significant but can be addressed and mitigated as described in this ESIA report.

JUSTIFICATION OF THE PROJECT

The Government of Kenya has defined the "Big Four" transformation agenda for the nation which identifies four priority initiatives to be implemented over the next five years 2017-2022. The big four agenda include food security, affordable housing, manufacturing and affordable healthcare.

Kenya's Affordable Housing Programme is one of the national government's four pillars of growth, in the President's Big Four Plan. The government recently unveiled its plan to ensure that all Kenyans enjoy their right to decent housing through an initiative dubbed 'The National Affordable Housing Programme' in the Big Four Agenda. Its aim is to enable the low to middle income citizens of Kenya acquire homes at subsidized prices. The government intends to construct 500,000 housing units distributed all over the 47 counties by 2022 and this involves a

number of incentives and support to enable the delivery of affordable housing by various stakeholders and private investors in Kenya.

However, the jurisprudence on the right to housing, as indeed on other economic and social rights remains thin. The proposed project attempts to address this challenge by providing decent and affordable housing targeting middle income earners and especially first-time home owners.

Project Description

The project proponent is developing a residential development of 18 floors in 5 blocks totaling 2,300 units of Studio apartments ,One bedroom apartments ,Two bedroom apartments and Three bedroom apartments and approximately 2000 parking slots on plot L.R No. Nairobi Blocks 98/106,107 and 108 along Popo Road Bellevue opposite Bellevue estate along Mombasa Road, Nairobi. The plot measures approximately 6.67 acres.

Other amenities in the development will include;

- Gatehouse,
- Retail shops complete with separate sanitary facilities for men and women
- Store and utility room
- Recreational field
- Health club
- Swimming pool
- Landscaped gardens
- Powerhouse
- Refuse collection areas,
- Roof terrace
- Kindergarten complete with separate sanitary facilities
- The main source of water to the development will be from the 4 boreholes to be sunk (80%) and substituted by 20% from NCWSC. The projected water demand is 320M^3 a day. The boreholes will produce 10M^3 of water per hour translating to about 100M^3 a day, thus the 4 boreholes will produce 400 M^3 which surpass the daily water demand for the project. The boreholes will be atleast 300M deep to avoid affecting the water table and the boreholes in the surrounding areas which are approximately 150M deep. This will be supplemented by underground water storage tanks.

- Waste water will be channeled to the existing improved and enhanced 4 sewer line that is (Red Cross sewer line and Mombasa road sewer line) before discharging to the main sewer line.
- The site has three access routes to the site which will be used (Popo road, Redcross road and Loop road).
- Solar panels which will be used mainly for security and street lighting and lighting of common areas and grounds.

The proponents are aware that an Environmental Impact Assessment (EIA) is a statutory requirement under Environmental Management and Coordination Act No. 8 of 2015 Cap 387, and the Integrated Environmental Impact Assessment Regulations, 2018. The expert undertook this study with the objective of identifying both positive and negative impacts of the proposed project; provide counter measures for the negative impacts and optimize the positive ones and come up with an Environmental Management Plan (EMP) as per the terms of reference (TOR).

The EMP will be useful in managing the activities at the site so that potential and actual impacts to the environment are addressed. The EMP will also be an excellent reference tool for compliance audits in future. This is in line with the statutory requirements and the guidelines issued by NEMA. The report has also provided guidelines on how to mitigate the negative environmental impacts and is confident that they will be implemented by the proponent.

Scope Objective and EIA criteria for the Study

The scope of the assessment covered the construction works of the proposed development, which include ground preparation, Excavation, masonry, and installation of service lines as well as the other necessary utilities. The output of this work was a comprehensive Environmental and Social Impact Assessment study report for the purposes of applying for an EIA license

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

- The proposed location of the proposed development and its associated infrastructure.
- A concise description of the national environmental legislative and regulatory framework, baseline information, and any other relevant information related to the project.
- The objectives of the proposed project.
- The technology, procedures and processes to be used, in the implementation of the project.
- The materials to be used in the construction and implementation of the project.
- The products, by-products and waste to be generated by the project.
- A description of the potentially affected environment.
- The environmental effects of the project including the social and cultural effects and the direct, indirect, cumulative, irreversible, short-term and long-term effects anticipated.
- To recommend a specific environmentally sound and affordable wastewater management system.
- Analysis of alternatives including project site, design and technologies.
- An environmental management plan proposing the measures for eliminating, minimizing or mitigating adverse impacts on the environment, including the cost, timeframe and responsibility to implement the measures.
- Provide an action plan for the prevention and management of the foreseeable accidents and hazardous activities in the cause of carrying out the development activities.

- Propose measures to prevent health hazards and to ensure security in the working environment for the employees, residents and for the management in case of emergencies.

- An identification of gaps in knowledge and uncertainties, which were encountered in compiling the information.

- An economic and social analysis of the project and such other matters as the Authority may require

Methodology Outline

The general steps followed during the assessment were as follows:

- Environment screening, in which the project was identified as among those requiring environmental impact assessment under schedule 2 of EMCA, cap387

- Environmental scoping that provided the key environmental issues

- Desk top studies and interviews

- Physical inspection of the site and surrounding areas

- EIA Public participation Meetings and Reporting.

Anticipated Environmental Impacts

As with any other physical development, both positive and negative impacts are anticipated to arise from the proposed project, during the construction phase, operation phase as well as the decommissioning phase. In general, the following positive and negative impacts are expected to be associated with the proposed project.

Positive Impacts

- Increase of housing facilities
- Creation of employment opportunities
- Improved growth of the economy
- Increased business opportunities
- Revenue to national and local governments amongst others
- Improved local security
- Area transformation
- Improved Road infrastructure

Negative Impacts

- Increased runoff from new impervious areas,
- Soil erosion,

- Solid Waste generation,
- Noise pollution,
- Traffic Congestion
- Air pollution from dust emissions and exhaust emissions,
- Increased water demand,
- Increased energy Consumption,
- Increased demand for building materials extracted from the natural resource base,
- Workers accidents and hazards during construction.

Mitigation Measures

In order to alleviate the potential negative impacts associated with the proposed project the proponents shall take several measures, among these are;

Dust emissions will be controlled by the following measures:

- Watering all active construction areas when necessary;
- Cover all trucks hauling soil, sand and other loose materials or require all trucks to maintain at least two feet of freeboard;

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

- Sweep daily (with water sweepers) all paved access roads, parking areas and staging areas at construction sites.

The following noise-suppression techniques will be employed to minimize the impact of temporary construction noise at the project site.

- Install portable barriers to shield compressors and other small stationary equipment where necessary;

- Use quiet equipment (i.e. equipment designed with noise control elements);

- Co-ordinate with relevant agencies regarding all substation construction activities in portions of the property bordering areas;

- Install sound barrier for pile driving activity;

- Limit pickup trucks and other small equipment to an idling time when necessary and encourage workers to shut off vehicle engines when not in use.

In order to control exhaust emissions the following measures shall be implemented during construction:

- Vehicle idling time shall be minimized;

- Alternatively fueled construction equipment shall be used where feasible; and

- Equipment shall be properly serviced and maintained.

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

The proponent will also ensure adequate collection and storage of solid waste on site and safe transportation to the disposal sites and disposal methods at designated area shall be provided. In addition, the proponent shall also provide covers for refuse containers and appropriate personal protective equipment's.

Conclusion

The proposed project will contribute to significant positive impacts in the area during its construction and operation phases. These positive impacts include: creation of employment, optimal use of land, incorporation of collective waste management practices, increase in revenue to the proponent and the County Government among others.

It is equally evident that, although the project will contribute to various positive impacts, some negative impacts are inevitable and the purpose of conducting this EIA is to outline measures to mitigate them or where possible eradicate them completely. The negative impacts of this project include increased pressure on infrastructure, noise pollution, and air pollution, generation of solid and liquid, pressure on existing infrastructure, wastes among others.

It is our recommendation that the proponent be allowed to proceed with the implementation of the proposed project, provided the outlined mitigation measures in this report are adhered to and the Environmental Management Plan (EMP) is implemented effectively.

Contents

CHAPTER 1: INTRODUCTION

This Environmental Impact Assessment study report has been prepared as per the provision of Environmental Management and Coordination Act Cap 387 and more specifically to environmental (Impact Assessment and Audit) Regulation 2003, Legal notice No. 101.

The proposed project site is situated on a plot **L.R No. Nairobi block 98/106,107 and 108** along Popo Road Bellevue opposite Bellevue estate along Mombasa Road, Nairobi. The plot measures 6.67 acres on which the proponent intends to develop a residential development comprising approximately 2,300 units of studio, one, two and three-bedroom apartments.

The Kenya Government policy on all new project, programmes or activities requires that an environmental impact assessment is carried out at the planning stages of the proposed project to ensure that significant impacts on the environment are taken into consideration during the design, construction, operation and decommissioning of the facility. The scope of this study, therefore include:

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

The overall objective of the study is to ensure that all environmental concerns are integrated in all the development activities of the proposed development project in order to enhance sustainable development. The specific objectives are:

- To identify potential environmental impacts, both direct and indirect.
- To assess the significance of the impacts
- To assess the relative importance of the impacts of relative plans designs, and sites
- To propose preventive mitigation and compensative measures for the significant negative impacts of the project on the environment.
- To generate baseline data for monitoring and evaluation of how well the mitigating measures are being implemented during the project cycle.
- To present information on impact of alternative.
- present the results of the EIA that can guide informed decision making and
- To prepare EMP for the proposed project and decommissioning plan.

The scope of the assessment covered site preparation works, excavation, construction works of the proposed development that included ground preparation, masonry and installation of service lines as well as the necessary required utilities. The output of this work was a comprehensive ESIA study report for the purposes of applying for an EIA license.

It is stipulated in EMCA, Cap387 that a form of development such as the proposed housing development and associated facilities is likely to impact the site and the surrounding environment hence, before commencement of any work; an Environmental Impact Assessment should be undertaken in compliance with the principal environmental Act and Environmental Impact Assessment/Audit Regulations 2003.

The study included the necessary specialist studies to determine the environmental impacts relating to the biophysical and socio-economic aspects and to determine the issues or concerns from the relevant authorities and interested and/or affected parties. The appropriate measures to ensure co-existence of the proposed development with other social and economic activities in the area are provided as part of Environmental Management Action Plan.

The main objective of the assignment was to assist the proponent to prepare report for the proposed project so as to ensure that the proposed development takes into consideration appropriate measures to mitigate against identified adverse impacts to the environment. The study identified existing and potential environmental impacts and the issues of concern that interested and/or affected parties raised about the development. The associated prevention and mitigation measures for the proposed projects negative impacts are outlined in the environmental Management Plan (EMP) proposed.

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

- Location of the proposed project

- A concise description of the national environmental legislative and regulatory framework, baseline information, and any other relevant information related to the project.

- The objectives of the project.

- The materials to be used in the construction and implementation of the project.

- The products, by-products and waste to be generated by the project

- A description of the potentially affected environment.

- The environmental effects of the project including the social and cultural effects and the direct, indirect, cumulative, irreversible, short-term and long-term effects anticipated.

 Provide alternative technologies and processes available and reasons for preferring the chosen technology and processes.

 Analysis of alternatives including project site, design and technologies.

 An environmental management plan proposing the measures for eliminating, minimizing or mitigating adverse impacts on the environment, including the cost, timeframe and responsibility to implement the measures.

 Provide an action plan for the prevention and management of the foreseeable accidents and hazardous activities in the cause of carrying out development activities.

 Propose measures to prevent health hazards and to ensure security in the working environment for the employees, residents and for the management in case of emergencies.

 An identification of gaps in knowledge and uncertainties that were encountered in compiling the information.

 An economic and social analysis of the project.

 Such other matters as the Authority may require.

1.2: Data collection procedures

The data collection was carried out through questionnaires/standard interview schedules, stakeholders meetings, use of checklists, observations and photography, site visits and desk top environmental studies scientific as per the Integrated Environmental Impact Assessment Regulations, 2018.

1.3: Responsibilities and Undertaking

The Consultant undertook to meet all logistical costs relating to the assignment, including those of production of the report and any other relevant material.

The output from the consultants includes the following:

- An Environmental Impact Assessment Study Report comprising of an executive summary, study approach, baseline conditions, anticipated impacts and proposed mitigation measures.

- An Environmental Management Plan Outline which also forms part of the report recommendations.

1.4: Methodology outline

The proposed site is located within an area with no rich natural resources hence the project's cumulative effects to the surrounding environment will not be such adverse even if the developer considers expansion of infrastructure such as the sewerage system, drainages, and water supply and roads. Moreover, the proposed development and use of the Facility will be in line with what exists in the surrounding areas; hence an environmental study report will adequately address the project's impacts. The general steps followed during the assessment were as follows:

- Environment screening, in which the project was identified as among those requiring environmental impact assessment under schedule 2 of EMCA, cap 387;
- Environmental scoping that provided the key environmental issues;
- Desk Stop studies and interviews;
- Physical inspection of the site and surrounding areas;
- EIA Public participation by the use of questionnaires, meetings; and
- Reporting.

1.5: Environmental screening

The screening process was applied to determine whether a full study was required and what level of assessment was necessary. This was done in reference to the requirements of the principal environmental legislation; specifically, the second schedule. Issues considered included the physical location, sensitive issues and nature of the anticipated impacts of the proposed project.

1.6: Environmental scoping

The scoping process narrowed down the study to the most critical issues requiring attention during the assessment. Environmental issues were categorized into physical, natural/ecological and social, economic and cultural aspects.

1.7: Desk top study

The study included documentary review on the nature of the proposed activities, project documents, designs, relevant policy and legislative framework as well as the environmental setting of the project site area among others. It also included discussions with project managers and design engineers as well as interviews with neighbors.

1.8: Site assessment and public participation

Field visits were conducted for physical inspections of the site characteristics and the environmental status of the surrounding areas to determine the anticipated impacts.

To ensure adequate public participation in the EIA process, questionnaires were administered to the site neighbors within the area, Public Consultation Meetings (PCMs) were also held and the information gathered was subsequently analyzed and incorporated into the EIA study report also the discussion and interviews.

1.9 Reporting

In addition to constant briefing of the proponent, this report is to be presented for submission to NEMA as required by law.

CHAPTER 2: POLICY, LEGAL AND INSTITUTION FRAMEWORK

2.1 Introduction

Environmental and Social Impact Assessment is a tool for environmental conservation and has been identified as a key component in new project implementation. According to Environmental Management and Coordination Act No. 8 of 2015, and the Integrated Environmental Impact Assessment Regulations, 2018, both new and old projects must undergo Environmental Impact assessment and Audits. The report of the same must be submitted to the National Environment Management Authority (NEMA) for approval and issuance of the relevant certificates.

There is a growing concern in Kenya and at global level that many forms of development activities cause damage to the environment. Development activities have the potential to adversely affect the natural resources upon which the economy is dependent. Environmental Impact Assessment is a useful tool for protection of the environment from the negative effects of developmental activities. It is now accepted that development projects must be economically viable, socially acceptable and environmentally sound.

2.2 Environmental policy

This ESIA has been prepared to fully comply with environmental and social safeguard policies and procedures as outlined in the various regulations by Kenya's National Environment Management Authority.

2.3 Relevant Kenya Policies

2.3.1 National Environment Policy 2013

The National Environment Policy aims to provide a holistic framework to guide the management of the environment and natural resources in Kenya. The major objective of the policy is to provide a framework for an integrated approach to planning and sustainable management of Kenya's environment and its natural resources. The policy further ensures that the environment is integrated in all government policies in order to facilitate and realize sustainable development

at all levels. This would help promote green economy, enhance social inclusion, improve human welfare and create opportunities for employment and maintenance of a healthy ecosystem.

2.3.2 Physical Planning Policy

The current policy governs the development and approval of all building plans as provided for in the Physical Planning Act (Cap 286). The proposed project has been subjected to the provisions of this policy and legislation and approvals issued.

2.3.3 Public Health Policy

The prevailing public health policy calls upon the project proponent to ensure that ancillary buildings are adequately provided with utilities that make them fit for human habitation. The proposed development has been designed by professional engineers and architects and as such will have all amenities/utilities that are essential for safeguarding public health for all the residents and visitors who access the facilities.

2.3.4 The Sessional Paper No.4 on Energy

The major objective of the Policy is to ensure adequate, quality, cost effective and affordable supply of energy through indigenous resources while protecting the environment. It encourages wider adoption and use of renewable energy technologies to enhance their role in the country's energy supply matrix. The Energy Policy is aligned to long term development strategy -Vision 2030 and other policies.

2.3.5 The Kenya Vision 2030

The Kenya Vision 2030 is the national long-term development policy that aims to transform Kenya into a newly residential, middle-income country providing a high quality of life to all its citizens by 2030 in a clean and secure environment.

2.3.6 The Kenya National Climate Change Response Strategy

The purpose of this strategy is to put in place robust measures needed to address most of the challenges posed by climate variability and change through thorough impact assessments and monitoring of various projects. According to Climate Change Projections, the country is likely to experience hotter drier sunny seasons, warmer wetter rainy seasons, rise in sea levels and an increase in extreme weather events.

In the construction sector, priority inclusion areas should include energy efficient innovations and technologies, and utilization of low-carbon appliances and tools; the utilization of eco-

friendly energy resources such as wind, solar, biogas, etc.; as well as possible utilization of biofuels.

2.3.7 The National Occupational Safety and Health Policy

This Policy significantly sustains continual development and implementation of the National Occupational Safety and Health systems and programs to reduce incidences of work related accidents and diseases. In addition, it seeks to offer equitable compensation to those who suffer physical injuries and contract occupational diseases.

The Policy addresses the current challenges, gaps and future development of safety and health systems and programs in the country.

It promotes basic principles of assessing occupational risks or hazards; combating occupational risks or hazards at source; and developing a national preventative safety and health culture that includes information, consultation, research and training.

The policy also promotes continuous improvement of occupational safety and health by integrating Kenyan national laws and regulations with Regional Protocols, ILO Conventions, ISO standards and the best practices in the world. It sets up mechanisms for resource mobilization for occupational safety and health programs and activities and provides guidance to all stakeholders in the development and implementation of national occupational safety and health systems and programs.

In all phases of the project, the issues of occupational safety and health will emerge and the National Occupational Safety and Health Policy will be handy in addressing these issues.

2.4 Institutional Framework

Environmental Impact Assessment (EIA) is a critical examination of the effects of a project on the environment. The goal of an EIA is to ensure that decisions on proposed projects and activities are environmentally sustainable. It guides policy makers, planners, stakeholders and government agencies to make environmentally and economically sustainable decisions. It is therefore a legal requirement to carry out an EIA before commencement of the proposed project.

At present there are over twenty (20) institutions and departments which deal with environmental issues in Kenya. Some of the key institutions relevant to the proposed residential development include the National Environmental Council (NEC), National Environmental Management Authority (NEMA), the Kenya Forest Service, Water Resources Authority (WRA), Directorate of Occupational Safety and Health Services (DOSHS) and others. There are also local and international NGOs involved in environmental issues in the country.

2.4.1 National Environment Management Authority (NEMA)

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

- Co-ordinate the various environmental management activities being undertaken by the lead agencies and promote the integration of environmental considerations into development policies, plan, programmes and projects with a view to ensuring the

proper management and rational utilization of environmental resources on a sustainable basis for the improvement of the quality of human life in Kenya.

 Take stock of the natural resources in Kenya and their utilizations in consultation, with the relevant lead agencies, land use guidelines.

 Examine land use patterns to determine their impact on the quality and quantity of the natural resources.

 Carry out surveys, which will assist in the proper management and conservation of the environment.

 Advise the government on legislative and other measures for the management of the environment or the implementation of relevant international conservation treaties and agreements in the field of environment as the case may be.

 Advise the government on regional and international environmental convention treaties and agreements to which Kenya should be a party and follow up the implementation of such agreements where Kenya is a party.

 Undertake and co-ordinate research, investigation and surveys in the field of environment and collect and disseminate information about the findings of such research, investigation or survey.

 Mobilize and monitor the use of financial and human resources for environmental management.

 Identify projects and programmes or types of projects and programmes, plans and policies for which environmental audit or environmental monitoring must be conducted under EMCA.

 Initiate and evolve procedures and safeguards for the prevention of accidents, which may cause environmental degradation and evolve remedial measures where accidents occur.

 Monitor and assess activities, including activities being carried out by relevant lead agencies in order to ensure that the environment is not degraded by such activities, environmental management objectives are adhered to and adequate early warning on impeding environmental emergencies is given.

 Undertake, in co-operation with relevant lead agencies programmes intended to enhance environmental education and public awareness about the need for sound environmental management as well as for enlisting public support and encouraging the effort made by other entities in that regard.

 Publish and disseminate manuals, codes or guidelines relating to environmental management and prevention or abatement of environmental degradation.

 Render advice and technical support, where possible to entities engaged in natural resources management and environmental protection so as to enable them to carry out their responsibilities satisfactorily.

- Prepare and issue an annual report on the state of the environment in Kenya and in this regard may direct any lead agency to prepare and submit to it a report on the state of the sector of the environment under the administration of that lead agency and,

- Perform such other functions as government may assign to the Authority or as are incidental or conducive to the exercise by the authority of any or all of the functions provided under EMCA.

However, NEMA mandate is designated to the following committees

2.4.2 National Environmental Complaints Committee (NECC)

The NECC'S mission is to facilitate access to environmental justice to the public by providing a forum for environmental conflict resolution and contributing to environmental policy. The Committee performs the following functions:

- Investigate complaints or allegations regarding the condition of the environment in Kenya and suspected cases of environmental degradation.

- The NECC also undertakes public interest litigation on behalf of the citizens in environmental matters.

2.4.3 County Environment Committee

The County Environment Committee shall-

(a) Be responsible for the proper management of the environment within the county for which it is appointed;

(b) Develop a county strategic environmental action plan every five years for consideration and adoption by the County Assembly.

Every County Environment Committee, in preparing a county environment plan, shall undertake public participation and take into consideration every other county environment action plan already adopted with a view to achieving consistency among such plans. The respective County Executive Committee members of every county shall submit the county environment action plan to the Cabinet Secretary for incorporation into the national environment action plan.

(c) Perform such additional functions as are prescribed by the EMCA (Amendment) Act 2015 or as will from to time, be assigned by the county Governor by notice in the Gazette.

2.4.4 National Environmental Tribunal

The tribunal's principal function is to receive, hear and determine appeals arising from decisions of the National Environment Management Authority (NEMA) on issuance, denial or revocation of environmental impact assessment (EIA) licenses, among other decisions.

If disputes with respect to the proposed project arise, the NET will function very much like a court of law.

2.4.5 National Environmental Council (NEC)

Part III section 4 of the principal Act outlines the establishment of the National Environment Council (NEC). NEC is responsible for policy formulation and directions for purposes of EMCA; sets national goals and objectives, determines policies and priorities for the protection of the environment, promotes co-operation among public departments, county governments, private sector, non-governmental organizations and such other organizations engaged in environmental protection programmes. It also performs such other functions as assigned under EMCA.

2.4.6 Directorate of Occupational Safety and Health Services (DOSHS)

This is one of departments within the current Ministry of East African Community, Labour and Social Protection, whose primary objective is to ensure safety, health and welfare of all workers in all workplaces.

Unsafe and unhealthy work environment causes accidents, diseases, disasters and environmental pollution that occasion huge economic and social burdens to individuals and enterprises thereby stifling economic and social growth.

The Directorate enforces Occupational Safety and Health Act, 2007 (OSHA, 2007) with its subsidiary legislation which aims at prevention of accidents and diseases at work. It also administers the Work Injury Benefits Act, 2007 (WIBA, 2007) which provides for compensation of workers who have been injured or have suffered a disease out of and in the course of employment.

Functions

In fulfilment of its responsibility of identifying hazards at workplaces and assessment of risks with a view of preventing accidents, diseases and damage to property, the Directorate undertakes the following functions;

- Systematic inspection and auditing of workplaces to promote best practices and ensure compliance with safety and health standards as set out in OSHA, 2007 and its subsidiary legislations.

- Examination and testing of passenger lifts, hoists, cranes, chains and other lifting equipment to ensure their safe use.

- Identification, evaluation and control of biological, chemical, physical, psychosocial, ergonomic and other factors in the work environment which may affect the safety and health of employed persons and the general environment.

- Medical surveillance, including medical examination to monitor and check on the health status of the workers and advise on intervention measures.

- Training and awareness creation on occupational safety and health in order to promote safety and health culture in the country.

- Ensuring compensation to employees for work related injuries and diseases contracted in the course of their employment in accordance with the provisions of WIBA, 2007.

- Investigation of occupational accidents, dangerous occurrences and cases of Occupational diseases with a view to preventing recurrence.

2.5 Legal Framework

2.5.1 Environmental Management and Coordination Act, Cap 387

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.

Relevance to the proposed project

Environmental Management and Coordination Act, Cap 387 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.

2.5.2 Integrated Environmental Impact Assessment Regulations, 2018

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

The proponent and consultants shall seek the views of the project neighbours through PCMs and the use of questionnaires so as to ensure that their concerns are addressed in this report.

2.5.3 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, residential, 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

All waste water shall be channeled to the main sewer line (NCWSC) so as not to pollute the ground and surface water and if a pollution incidence occurs the contractor/proponent shall notify the authority immediately.

2.5.4 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 are 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 minimize 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.

Section 12 provides that every licensed owner or operator shall carry out an annual environmental audit pursuant to the provision of the act In section 14 (1) every trade or residential undertaking is obliged to install anti- pollution equipment for the treatment of waste emanating from such trade or residential undertaking.

Relevance

A private nema licensed waste handling company will be contracted to collect waste, there will also be an designated room where residents will dispose off waste before collection.

2.5.5 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

a) 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

b) Cause to be made excessive vibrations which exceed 0.5 centimeters per second beyond any source property boundary or 30 meters from any moving source.

Part III Section 2 (1) states that any person wishing to a) operate or repair any machinery, motor vehicle, construction equipment, pump, fun, air conditioning apparatus or similar mechanical device; or b) engage in any commercial or residential activity, which is likely to emit noise or excessive vibrations shall carry out the activity or activities within the relevant levels provided in the First Schedule to these Regulations. Any person who contravenes this Regulation commits an offence.

Section 13 (1) states that except for the purposes in sub-Regulation (2) hereunder, no person shall operate construction equipment (including but not limited to any pile driver, steam shovel, pneumatic hammer, derrick or steam or electric hoist) or perform any outside construction or repair work so as to emit noise in excess of the permissible levels as set out in the Second Schedule to these Regulations. These purposes include emergencies, those of domestic nature and/or public utility construction.

Section 14 relates to noise, excessive vibrations from construction, demolition, mining or quarrying site, and state that: where defined work of construction, demolition, mining or quarrying is to be carried out in an area, the Authority may impose on how the work is to be carried out including but not limited to requirements regarding a) machinery that may be used, and b) the permitted levels of noise as stipulated in the Second and Third Schedules to these Regulations.

Relevance

The contractor shall be required to implement these measures, ensure that all machineries are in good working condition to reduce noise. Also construction activities shall be restricted between 0800Hrs-1700Hrs to ensure that the neighbours are not disturbed.

2.5.6 Environmental Management and Coordination (Air Quality) Regulations, 2014

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

The contractor shall implement the mitigation measures provided in the EMMP to prevent air pollution especially during construction phase.

2.5.7 The Energy Solar Water Heating Regulations, 2012 Installation and use of solar water heating systems

All premises within the jurisdiction of a local authority with hot water requirements of a capacity exceeding one hundred liters per day shall install and use solar heating systems

A person who contravenes the provisions of this regulation commits an offence and shall, on conviction, be liable to a fine not exceeding one million shillings, or to imprisonment for a term not exceeding one year, or to both.

Responsibility for compliance

6. (1) A developer of a housing estate, a promoter of the construction, an owner of the premises or an Architect or an Engineer engaged in the design or construction of premises shall comply with these Regulations.

(2) An owner of premises, Architect and an Engineer engaged in the design, construction, extension or alteration of premises shall incorporate solar water heating systems in all new premises designs and extensions or alterations to existing premises.

(3) An owner or occupier of premises that has a solar water heating system shall use and carry out the necessary operational maintenance and repairs required to keep the installation in good and efficient working condition.

(4) An electric power distributor or supplier shall not provide electricity supply to premises where a solar water heating system has not been installed in accordance with these Regulations.

Relevance

In compliance to these regulations solar energy shall be adopted for security lighting within the development.

2.5.8 Environmental Management and Coordination Controlled Substances Regulations, 2007 (Legal Notice No.73 of 2007)

The Controlled Substances Regulations defines controlled substances and provides guidance on how to handle them. This regulation mandates NEMA to monitor the activities of persons handling controlled substances, in consultation with relevant line ministries and departments, to ensure compliance with the set requirements. Under these regulations, NEMA will be publishing a list of controlled substances and the quantities of all controlled substances imported or exported within a particular period. The list will also indicate all persons holding licenses to import or export controlled substances, with their annual permitted allocations.

The regulations stipulate that controlled substances must be clearly labelled with among other words, “Controlled Substance-Not ozone friendly’’) to indicate that the substance or product is harmful to the ozone layer. Advertisement of such substances must carry the words, “Warning: Contains chemical materials or substances that deplete or have the potential to deplete the ozone layer.”

Producers and/or importers of controlled substances are required to include a material safety data sheet. Persons are prohibited from storing, distributing, transporting or otherwise handling a controlled substance unless the controlled substance is accompanied by a material safety data sheet. Manufacturers, exporters or importers of controlled substances must be licensed by NEMA. Further, any person wishing to dispose of a controlled substance must be authorized by NEMA. The licensee should ensure that the controlled substance is disposed of in an environmentally sound manner. These regulations also apply to any person transporting such controlled substances through Kenya. Such a person is required to obtain a Prior Informed Consent (PIC) permit from NEMA.

2.5.9 Environmental Management and Coordination (Conservation of Biodiversity regulations), 2006

Kenya has a large diversity of ecological zones and habitats including lowland and mountain forests, wooded and open grasslands, semi-arid scrubland, dry woodlands, and inland aquatic, and coastal and marine ecosystems. In addition, a total of 467 lake and wetland habitats are estimated to cover 2.5% of the territory. In order to preserve the country’s wildlife, about 8% of Kenya’s land area is currently under protection.

The country has established numerous goals, as well as general and specific objectives that relate to these issues, among others: environmental policies and legislations; involvement of communities; documentation of national biological resources; sustainable management and conservation of biodiversity; fair and equitable sharing of benefits; technical and scientific cooperation; biodiversity assessment; dissemination of information; institutional and community capacity building; and integration of biodiversity concerns into development planning. The proposed project must comply with the various national provisions that aim at the protection and conservation of the country’s biodiversity

2.5.10 County Governments Act, 2012

This Act vests responsibility upon the County Governments in planning of development projects within their areas of jurisdiction on projects of importance to the local County Government or those of national importance.

Section 102 of the Act provides the principles of planning and development facilitation which include integration of national values in county planning, protect the right to self-fulfillment within the county communities and with responsibility to future generations, protection of rights of minorities and marginalized groups and communities, promotion of equity resource allocation, among others.

Section 103 of the Act outlines the prime objective of county planning which aligned to the bill of rights and the constitution of Kenya.

Section 114 and 115 indicate and give guidelines in planning of projects of national significance and instill the aspect of public participation in every aspect of the planning process through that: clear strategic environmental assessments; clear environmental impact assessment reports; expected development outcomes; and development options and their cost implications. Each county assembly is tasked with the role to develop laws and regulations giving effect to the requirement for effective citizen participation in development planning and performance management within the county.

Relevance to the project

The project proponent initiated the process of County Government engagement in the initial project planning through application of essential development approvals from Nairobi County Government and has received the necessary approvals.

2.5.11 Land Planning Act cap 303

Section 9 of the subsidiary legislation (the development and use of land Regulations 1961) under which it require that before the local Authority to submit any plans to then minister for approval, steps should be taken as may be necessary to acquire the owners of any land affected by such plans. Particulars of comments and objections made by the landowners should be submitted, which intends to reduce conflict of interest with other socio economic activities.

Relevance to the proposed project

The proponent has submitted architectural plans to Nairobi County for approval.

2.5.12 The Land Act, 2012

This is an Act of Parliament to give effect to Article 68 of the Constitution, to revise, consolidate and rationalize land laws; to provide for the sustainable administration and management of land and land based resources, and for connected purposes. The Land Act of 2012 subsection (1) states that ‘any land may be converted from one category to another in accordance with the provisions of this Act or any other written law.’ it continues to state in subsection (2) that Without prejudice to the generality of subsection (1)

a) Public land may be converted to private land by alienation

b) Subject to public needs or in the interest of defense, public safety, public order, public morality, public health, or land use planning, public land may be converted to community land

c) private land may be converted to public land by

i. Compulsory acquisition;

ii. Reversion of leasehold interest to Government after the expiry of a lease; and

iii. Transfers; or

iv. Surrender.

d) Community land may be converted to either private or public land in accordance with the law relating to community land enacted pursuant to Article 63(5) of the Constitution.

It is important to note that any substantial transaction involving the conversion of public land to private land shall require approval by the National Assembly or county assembly as the case may be.

Part I of the same Act states that title to land may be acquired through:

(a) allocation;

(b) land adjudication process;

(c) compulsory acquisition;

(d) prescription;

(e) settlement programs;

(f) transmissions;

(g) transfers;

(h) long term leases exceeding twenty-one years created out of private land; or any other manner prescribed in an Act of Parliament.

Part viii of this ACT provides procedures for compulsory acquisition of interests in land. Section 111 (1) States that if land is acquired compulsorily under this Act, just compensation shall be paid promptly in full to all persons whose interests in the land have been determined. The Act also provides for settlement programmes. Any dispute arising out of any matter provided for under this Act may be referred to the Land and Environment Court for determination.

2.5.13 The Land Registration Act, 2012

The Land Registration Act is place to revise, consolidate and rationalize the registration of titles to land, to give effect to the principles and objects of devolved government in land registration, and for connected purposes. This Act applies to Subject to section 4, this Act shall apply to:

- Registration of interests in all public land as declared by Article 62 of the Constitution;
- Registration of interests in all private land as declared by Article 64 of the Constitution; and
- Registration and recording of community interests in land.

Section 24 states that: (a) the registration of a person as the proprietor of land shall vest in that person the absolute ownership of that land together with all rights and privileges belonging or appurtenant thereto; and (b) the registration of a person as the proprietor of a lease shall vest in that person the leasehold interest described in the lease, together with all implied and expressed rights and privileges belonging or appurtenant thereto and subject to all implied or expressed agreements, liabilities or incidents of the lease.

2.5.14 The Environment and Land Court Act, 2011

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

2.5.15 The National Land Commission Act, 2012 (No. 5 of 2012)

Section 5 of the Act outlines the Functions of the Commission, pursuant to Article 67(2) of the Constitution as follows 5(1):-

- to manage public land on behalf of the national and county governments;

- to recommend a national land policy to the national government;

- to advise the national government on a comprehensive programme for the registration of title in land throughout Kenya;

- to conduct research related to land and the use of natural resources, and make recommendations to appropriate authorities;

- to initiate investigations, on its own initiative .or on a complaint, into present or historical land injustices, and recommend appropriate redress;

- to encourage the application of traditional dispute resolution mechanisms in land conflicts;

 to assess tax on land and premiums on immovable property in any area designated by law; and To monitor and have oversight responsibilities over land use planning throughout the country

2.5.16 National Construction Authority Regulations, 2014

The NCA published the National Construction Authority Regulations 2014, the Code of Conduct and Ethics for the Construction Industry, and the NCA Strategic Plan (2015-2020) to effectively regulate the construction industry in Kenya. Contractors operating or willing to undertake construction operations in Kenya are required by law to register through the National Construction Authority (NCA), which is constituted under Act No. 41 of 2011 Laws of Kenya. The NCA is mandated to clear builders and contractors as a way of eliminating rogue contractors in Kenya and malpractices in the building and construction industry. The Authority has provided the regulatory framework for registration and renewal of contractors.

It is tasked with the responsibility of inspecting construction and building projects around the country to ensure high quality of work and close projects posing health risks and collapse hazards.

2.5.17 Occupational Safety and Health Laws and Regulations

The following pieces of legislation form the basis for occupational safety and health matters in Kenya:

The Occupational Safety and Health Act, No. 15 of 2007

His Excellency the President assented into law this Act on 22nd October 2007 and the date of commencement declared as 26th October 2007. This is the main operational law for health and safety in Kenya today.

Duties of the proponent pertaining to safety and health It is
the duty a proponent to:-

i) Ensure absence/elimination of risks at the workplace.

ii) Provide information to employees to ensure safety and health at the project site.

iii) Carry out the workplace risk assessment and send a copy of the risk assessment to the Directorate of Occupational Safety and Health Services (DOSHS).

iv) Stop any hazardous activities.

v) Obtain a certificate of registration of a workplace with the Directorate of Occupational Safety and Health Services.

vi) Prepare safety & health policy and submit a copy to the Directorate of Occupational Safety and Health Services.

vii) Bring the content of the safety and health policy statement to the attention of employees.

viii) Prevent environmental pollution

ix) Send notice of accident occurrence, cases of occupational diseases and dangerous occurrence to DOSHS

x) To have the architectural plans of the project site approved by the Directorate of Occupational Safety and Health Services before construction activities commence. In approving the plans Directorate of Occupational Safety and Health Services will among other requirements ensure that:

- Space defining machine layout for intended use by operators will be within statutory limits

- Emergency exits are provided for and are designed to open in accordance to statutory requirements

- Sanitary conveniences are provided for with adequacy as to number of intended employees and are designed to have separate approaches

- First aid facilities like first aid room(s) are provided for,
- There is provision for adequate ventilation

- There is provision for storage of firefighting water storage tank with a capacity of at least 10,000 liters

xi) Ensure that no employee is discriminated against by virtue of:-

- Lodging a complaint about an unsafe condition at the workplace
- Being an active member of a health safety committee.

xii) Establish a health and safety committee whose composition should be in accordance to the (Health and Safety Committees) Rules L.N. 31of 2004, if he will employ 20 or more employees.

xiii) Carry out workplace health and safety audit on an annual basis.

Work Injury Benefits Act, No. 17 of 2007

This law was assented to by His Excellency the President on 22nd October 2007. Various sections in this law were nullified by the high court as they were found to be unconstitutional. This is an act of parliament designed to provide for compensation to employees for work-related injuries and diseases contracted in the course employment and for connected purposes. This is the law whose enactment led to the demise of the Workmen Compensation Act Cap 236.

Relevance to the proposed project

The contractor as the employer has a duty provide for compensation to employees for work related injuries and diseases contracted in the course of their employment at the construction site.

Rules and Regulations

The following rules have been promulgated by the Minister for Labour as provided for in the statues in the furtherance of the safety & health agenda in various applicable workplaces, processes, occupations and branches of the economy; construction sites inclusive:

i. Safety & Health Committee Rules, 2004 Legal Notice No. 31

These rules apply in all workplaces where The Occupational Safety and Health Act, No. 15 of 2007 applies.

These rules are described in Legal Notice No. 31 of the Kenya Gazette Supplement No. 25 of 14th May 2004. The rules apply to all places work that regularly employs twenty or more employees. Among other items, the rules state that:

- The occupier of every workplace shall establish a health and safety committee;

- The committee shall consist of safety representatives from the management and the workers;

- Every member of the Health and Safety Committee shall undertake a prescribed basic training course in occupational health and safety within a period of six months from the date of appointment or election, and thereafter further training from time

to time;

The Legal Notice also describes the functions and duties of the health and safety committee, the purpose of meetings and recording minutes, and the roles of the office bearers. It further describes the duties of the occupier and those of the Health and Safety Adviser.

Relevance to the proposed project

This Subsidiary legislation require the contractor to form a safety and health committee to oversee safety and health on site while construction activities on site are ongoing

ii. First Aid Rules, 1977 Legal Notice No. 160

These rules outline first-aid box content with respect to size of a workplace and under whose charge the first-aid box should be placed.

Relevance to the proposed project

During all phases of the project provision of first aid is a requirement and the rules will be useful in this regard in catering for injuries sustained on site and workplace.

iii. Eye Protection Rules legal Notice No. 44 of 1978

The rules were developed for purposes of eye safety in workplaces. Processes where eye protection is required include blasting, cleaning, chipping, metal cutting, arc welding, abrasive wheel use (grinding).

Relevance to the proposed project

During the construction phase, work activities requiring eye protection will be a common feature. The rules will provide a good platform for ensuring eye safety of the workers involved in the stated activities

iv. Electric Power(Special) Rules, 1979 Legal Notice No. 340

The rules were developed to provide for electrical safety with regards to electrical power installations, use and handling. These rules apply to generation, transformation, conversion, switching, controlling, regulating, distribution and use of electricity.

v. Building Operations and Works of Engineering Construction Rules, 1984 Legal Notice No. 40

These rules provide for the safety, health and welfare of workers in construction sites.

Relevance to the proposed project

The contractor will be expected to ensure safety, health and welfare of workers and all persons lawfully present at the construction site

vi. Medical Examination Rules, 2007 Legal Notice No. 24

The rules apply to workplaces of classified hazards. Every employer has to ensure medical examination of workers in the workplaces of classified hazards.

Relevance to the proposed project

During the construction phase there will be noise emission, exposure to dusts and fumes (cement, soil, welding fumes etc.) and exposure to musculoskeletal hazards. Exposure to the said hazards will require statutory medical examination on the victims.

vii. Noise Prevention and Control Rules, 2005. Legal Notice No. 25

Kenya's Noise Prevention and Control Rules were passed under Legal Notice No. 25 dated 2005, as a subsidiary legislation of the now repealed Places of Work Act, Cap. 514. The rules state that '*No worker shall be exposed to noise level excess of the continuous equivalent of 90 dB(A) for more than 8 hours within any 24 hours duration'*.

Relevance to the proposed project

During the construction phase there is likely to be noise emission in excess of 90 dB(A) requiring the invoking of these rules to provide for the safety with regards to noise. The rules will guide the contractor in protecting the workers from effects of high noise levels.

2.5.18 The Standards Act Cap. 496

The Act is meant to promote the standardization of the specification of commodities, and to provide for the standardization of commodities and codes of practice; to establish a Kenya Bureau of Standards, to define its functions and provide for its management and control. Code of practice is interpreted in the Act as a set of rules relating to the methods to be applied or the procedure to be adopted in connection with the construction, installation, testing, sampling, operation or use of any article, apparatus, instrument, device or process.

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

Sections 8 and 9 of the Act provides for the dedication, conversion or alignment of public travel lines including construction of access roads adjacent lands from the nearest part of a public road. Section 10 and 11 allows for notices to be served on the adjacent land owners seeking permission to construct the respective roads.

2.5.20 Water Act, 2002

This Act of Parliament provides for the management, conservation, use and control of water resources and for the acquisition and regulation of rights to use water; to provide for the regulation and management of water supply and sewerage services; to repeal the Water Act (Cap. 372) and certain provisions of the Local Government Act. Section 25 (1) states that a permit shall be required for any of the following purposes:— (a) Any use of water from a water resource, except as provided by section 26; (b) The drainage of any swamp or other land; (c) The discharge of a pollutant into any water resource;

(d) Any purpose, to be carried out in or in relation to a water resource, which is prescribed by rules made under this Act to be a purpose for which a permit is required.

2.5.21 Physical Planning Act, 1999

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 effected, 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 residential 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 submitted the project designs to the local authority for approval. This development shall also comply with all the provisions of this law including vertical zoning requirements.

2.5.22 The Local Government Act (Cap. 265)

Section 160 helps local authorities ensure effective utilization of the sewerage systems. It states in part that municipal authorities have powers to establish and maintain sanitary services for the removal and destruction of, or otherwise deal with all kinds of refuse and effluent and where such service is established, compel its use by persons to whom the service is available.

Relevance to the proposed project

The appointed contractor and the Proponent will mitigate against such impacts by ensuring strict adherence to the Environmental Management Plan provided in this project report throughout the project cycle.

2.5.23 The Penal Code (Cap. 63)

Section 191 of the Penal Code states that any person or institution that voluntarily corrupts, or foils water of public springs or reservoirs, rendering it less fit for its ordinary use is guilty of an offence. Section 192 of the same act says a person who makes or vitiates the atmosphere in any place to make it noxious to health of persons/institution in dwellings or business premises in the neighbourhood or those passing along public way commit an offence.

Relevance to the proposed project

The Proponent will be required to ensure strict adherence to the Environmental Management Plan throughout the project cycle in order to mitigate against any possible negative impacts

2.5.24 The Traffic Act, 2012

The Traffic Act, 2012 gives provisions and guidelines that govern the Kenya roads transport sector. These guidelines are essential to private, public and commercial service vehicles in ensuring safety and sanity on the roads hence ensuring the environment; the human being a component is safeguarded. In section 41 The Act demands for installation and certification of speed governors for the commercial vehicles ferrying goods adjusted to the loading condition of such vehicles to a limit of 80 KPH, registration and competence of drivers.

Moreover, the owner of commercial vehicles or trailer shall ensure clear markings on their vehicles in English language on the right side of the vehicle showing ownership details, tare weight of vehicle and maximum authorized weight.

Section 26 and 27 of the same discourages engines that emit exhaust gases to the atmosphere without passing via a silencer or expansion chamber

In ensuring safety of all the persons in transit section 56 encourages that every public and commercial vehicle be fitted with inspected and first class first aid box and fire extinguisher. In

ensuring compliance to this Act the contractor and developer shall ensure that all site drivers and all material suppliers to the site satisfy the provisions as stipulated in Act.

2.5.25 Persons with Disability Act (PWD), 2003

Kenya has a Person with Disabilities Act (PWD), 2003 which is a comprehensive law covering rights, rehabilitation and equal opportunities for people with disabilities.

– It creates the National Council of Persons with Disabilities as a statutory organ to oversee the welfare of persons with disabilities.

– The Act aims to ensure that Persons with Disabilities' issues and concerns are mainstreamed.

– Requires establishment of DMCs in all public institutions

Section 21 of this Act entitles Persons with disabilities ‘to a barrier-free and disability-friendly environment to enable them to have access to buildings, roads and other social amenities, and assistive devices and other equipment to promote their mobility’.

The Proponent shall ensure that the main contractor adopts implements and mainstream PWD Provisions throughout the project phases.

2.5.26 Public Health Act (Cap. 242)

Part IX, section 115, of the Act states that no person/institution shall cause nuisance or condition liable to be injurious or dangerous to human health. Section 116 requires that County governments take all lawful, necessary and reasonably practicable measures to maintain their jurisdiction clean and sanitary to prevent occurrence of nuisance or condition liable to be injurious or dangerous to human health. Such nuisance or conditions are defined under section 118 as waste pipes, sewers, drainers or refuse pits in such state, situated or constructed as in the opinion of the medical officer of health to be offensive or injurious to health.

2.5.27 Building Code 2000

Section 194 requires that where sewer exists, the occupants of the nearby premises shall apply to the local Authority for permit to connect to the sewer line and all the wastewater must be discharged in to sewers. The code also prohibits construction of structures or building on sewer lines.

The proponent has approvals to discharge the developments waste water in to the existing sewer lines in the area.

CHAPTER 3: PROJECT DESCRIPTION

3.1 Introduction

LAPFUND is a Defined Contribution Scheme registered and regulated by the Retirement Benefits Act of 1997 and Subsequent Regulations. We are a State Corporation established in 1960 by an Act of Parliament Cap. 272, Laws of Kenya. We operate in accordance with the County Governments Act 2012 (section 132).

To achieve its elaborate role, the Fund wishes to undertake a residential development of 18 floors in 5 blocks totaling 2,300 units of Studio apartments ,One bedroom apartments ,Two bedroom apartments and Three bedroom apartments and over 2000 parking slots on plot L.R No. Nairobi Blocks 98/106,107 and 108 along Popo Road Bellevue opposite Bellevue estate along Mombasa Road, Nairobi. The plot measures approximately 6.67 acres.

3.2 Location of the proposed Project

The parcel of land for the proposed development is situated along Popo Road, Bellevue along Mombasa road, Nairobi. The proposed site is along and directly opposite Bellevue estate, Kenya Red Cross Offices and KNEC offices along Popo road. (See the Map Below yellow for residential and the highlight in blue is commercial plots which have been acquired by the government for the proposed BRT station on Mombasa road).

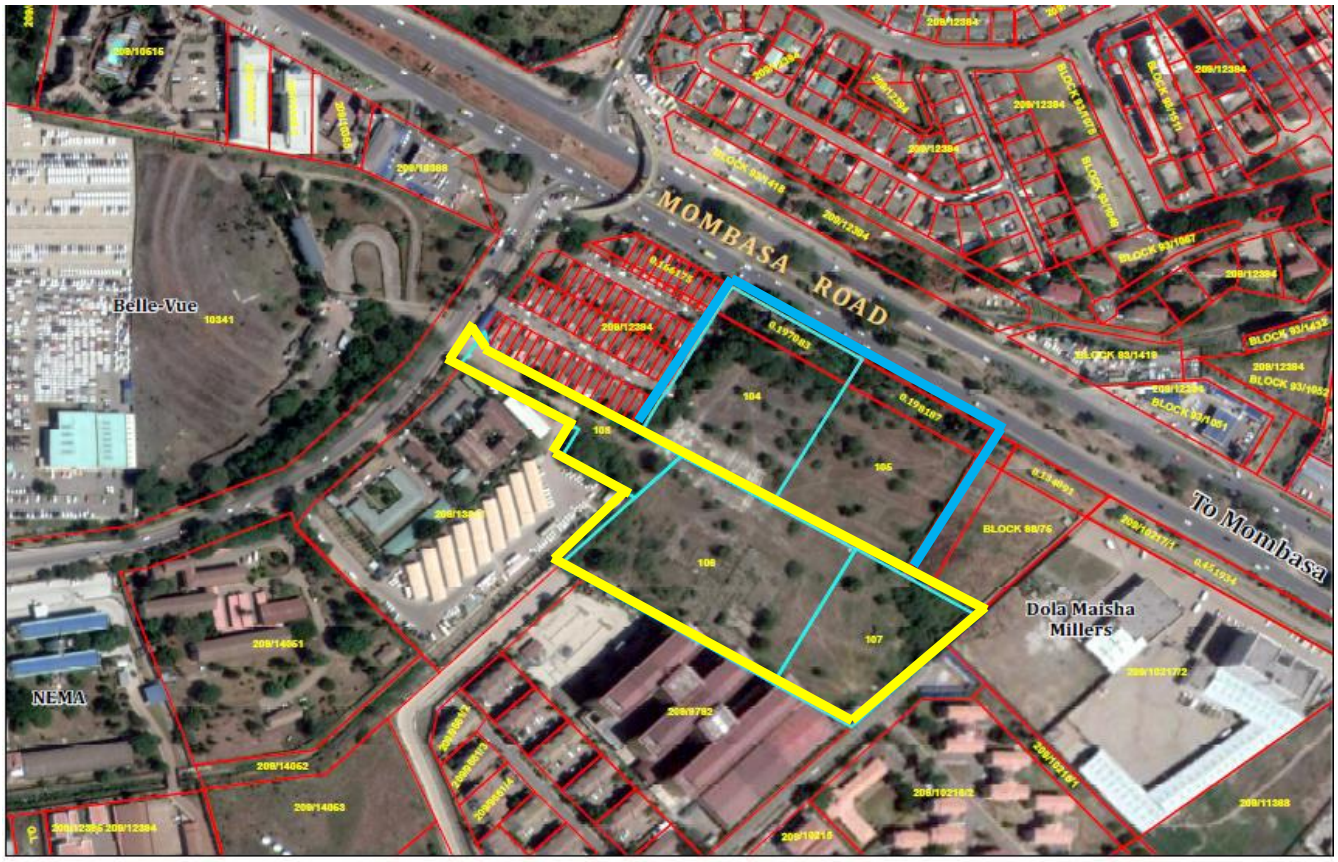

Figure 1 Proposed Project Site

3.3 Project Description

The project proponent is developing a residential development of 18 floors in 5 blocks totaling 2,300 units of Studio apartments ,One bedroom apartments ,Two bedroom apartments and Three bedroom apartments and over 2000 parking slots on plot L.R No. Nairobi Blocks 98/106,107 and 108 along Popo Road Bellevue opposite Bellevue estate along Mombasa Road, Nairobi. The plot measures approximately 6.67 acres.

Other amenities in the development will include;

- Gatehouse,
- Retail shops complete with separate sanitary facilities for men and women

- Store and utility room
- Recreational field
- Health club
- Swimming pool
- Landscaped gardens
- Powerhouse
- Refuse collection areas,
- Roof terrace
- Kindergarten complete with separate sanitary facilities
- The main source of water to the development will be from the 4 boreholes to be sunk (80%) and substituted by 20% from NCWSC. The projected water demand is 320M^3 a day. The boreholes will produce 10M^3 of water per hour translating to about 100M^3 a day, thus the 4 boreholes will produce 400 M^3 which surpass the daily water demand for the project. The boreholes will be atleast 300M deep to avoid affecting the water table and the boreholes in the surrounding areas which are approximately 150M deep. . This will be supplemented by underground water storage tanks.
- Waste water will be channeled to the existing improved and enhanced 4 sewer line that is (Red Cross sewer line and Mombasa road sewer line) before discharging to the main sewer line.
- The site has three access routes to the site which will be used (Popo road, Redcross road and Loop road)
- Solar panels which will be used mainly for security lighting and lighting of common areas and grounds

3.4 Objectives of the project

The overall objective of this Project is to develop the currently undeveloped land and provide housing to the people of South C and its environs. The project will also create various employment and business opportunities in addition to the other positive impacts as discussed in this report.

3.5 Project's surrounding

The neighboring area is a mixed use development zone of residential and commercial such as Bellevue Estate, Akiba Bellevue Estate, KPA South C Estate among others and Business

premises such as, NEMA, KNEC, Kenya Red Cross Headquarters, OLA Energy petrol station to name a few located within the project area.

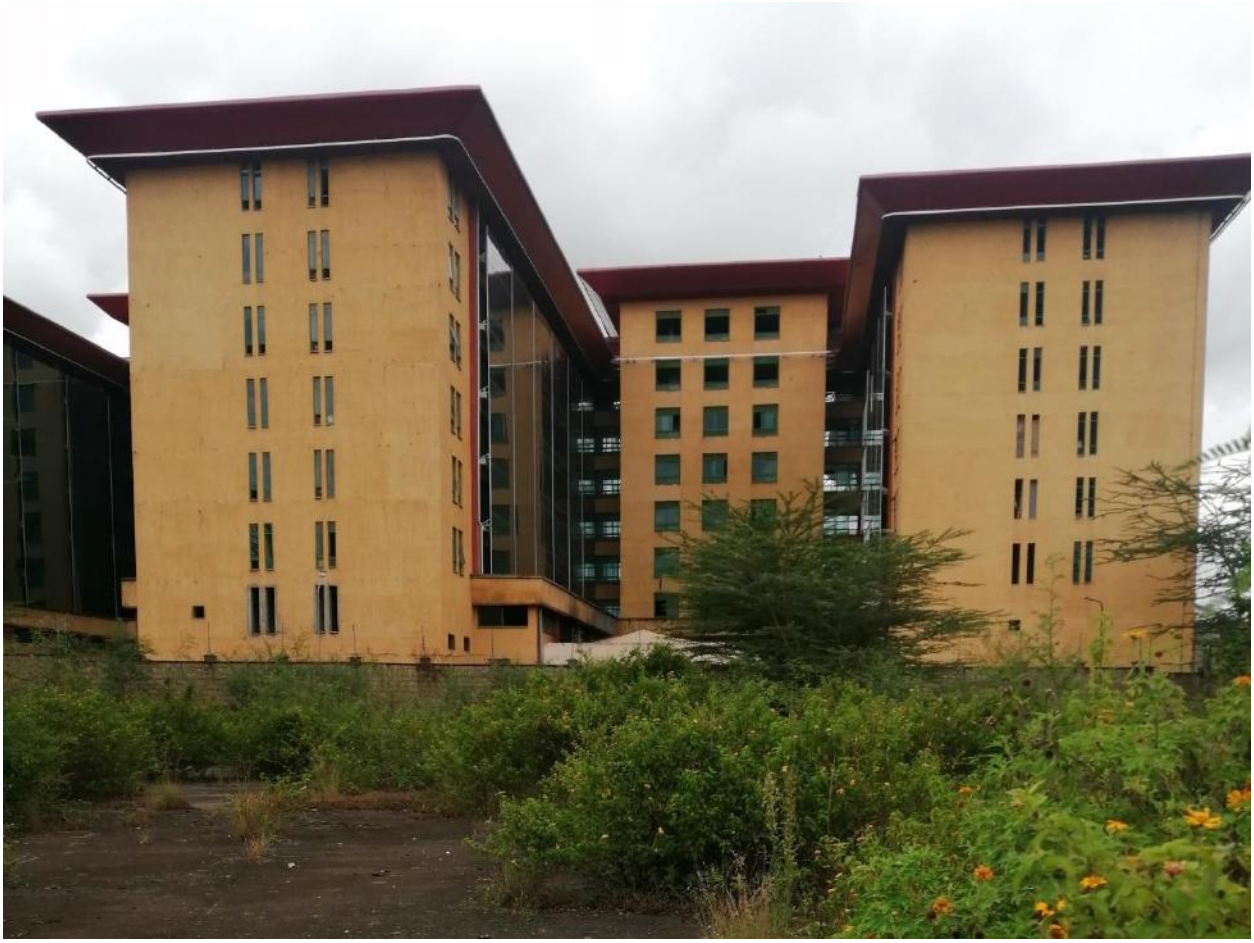

Figure 2 KNEC offices neighbouring the project site

3.6 Land Ownership and Tenure

The land on which the development is proposed is on leasehold and registered under Registration of Land Act, Cap 300 as **L.R. Nos. Nairobi block 98/106, 107 and 108 under** the name Local Authorities Provident Fund (LAPFUND). Find attached leasehold certificates.

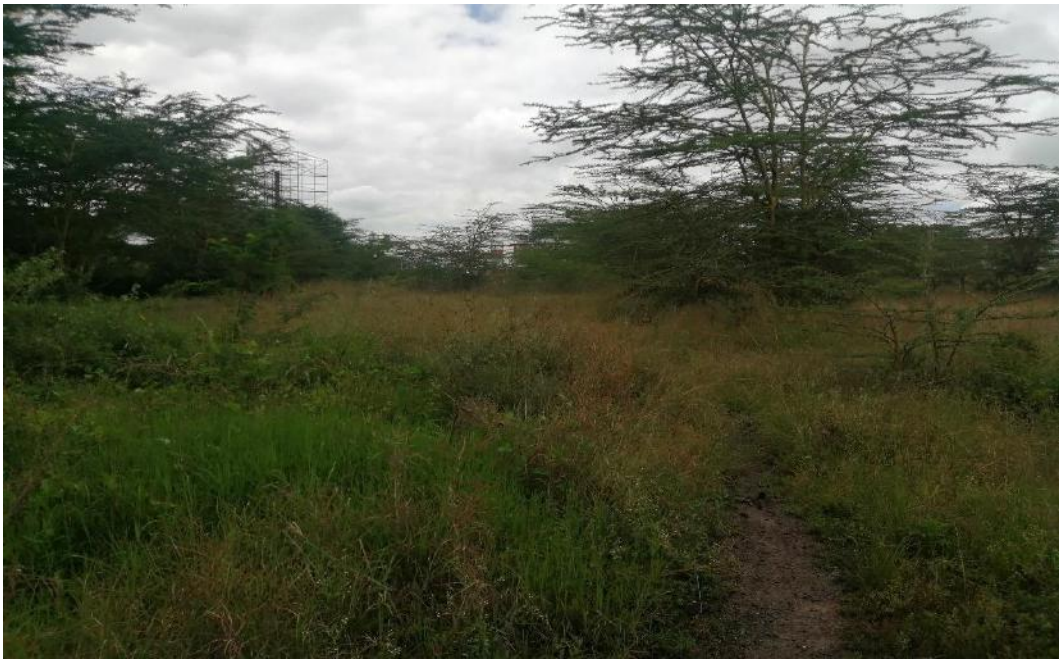

Figure 3 Proposed project site

3.7 Project Design

The design of the project has been executed with due consideration of the existing topography of the proposed project site. In general, the design of the project will optimize the use of the best available technology (BAT) to prevent or minimize potentially significant environmental impacts associated with the project and to incorporate efficient operational controls together with trained staff, to ensure high level business and environmental performances.

3.8 Description of the project's construction activities

3.8.1 Site preparation works

The proposed project site will be prepared for construction. This will involve excavation works and transportation of construction materials and construction of the proposed development.

This will be undertaken in a phased approach to mitigate soil erosion and the impacts of excessive dust generation. Due to the nature of the proposed project, construction will involve the use of earthmoving machinery such as excavators and bulldozers.

The engineers will also utilize human labour where necessary so as to create employment to the local residents especially the youth. Currently the site is mainly grassland with minimal trees and vegetation.

3.8.2 Storage of materials

Building materials will be stored on site. Bulky materials such as stones, ballast, sand and steel will be carefully piled at designated areas on site. To avoid piling large quantities of materials on site, the proponent will order bulky materials such as sand, gravel and stones in quotas.

3.8.3 Masonry, concrete work and related activities

The construction of the buildings walls, foundations, floors, pavements, and residential houses among other components of the project involves a lot of masonry work, laying of plumbing and related activities. General masonry and related activities include, concrete mixing, plastering, slab construction, construction of foundations, and erection of building walls and curing of fresh concrete surfaces. These activities are known to be labour intensive and will be supplemented by machinery.

3.8.4 Structural steel works

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

3.8.5 Electrical work

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

3.8.6 Plumbing

Installation of pipe-work will be done to connect sewage from the building blocks to the main sewer system. Plumbing will also be done for drainage of storm water from the rooftop into the peripheral storm water harvesting tanks. Plumbing activities will include metal and plastic pipe cuttings, the use of adhesives, metal grinding and wall drilling among others.

3.9 Description of the project's operational activities

3.9.1 Occupation activities

Once construction is complete, the apartments will be open for sale to the public.

3.9.2 Solid waste

The proponent will provide facilities for handling solid waste generated within the facility. These will include dust bins/skips for temporarily holding waste within the premises before final disposal at the designated sites.

The waste handling company must be registered with NEMA and disposing waste to a licensed designated dumping site using well branded waste plastic bags bearing the company's name.

3.9.3 Liquid waste

The proponent will provide adequate and safe means of handling liquid waste generated within the facility. These will include conducting regular inspections for pipe blockages or damages and fixing them appropriately.

Also, the proponent will conduct regular monitoring of the sewage discharged to the county sewerage system from the project to ensure that the stipulated sewage/effluent discharge rules are not violated. The waste water from the development will be chanelled in the existing four sewer lines that is Redcross sewer lines and Mombasa road sewer line before discharging into the main sewer line this will help reduce pressure on the existing sewer line.

3.9.4 Storm Water Drainage

The proposed development will generate enormous surface water. It is therefore recommended that adequate and well drainage channels be provided to accommodate the increased discharge. This will be determined at the site works.

3.9.5 Electricity Supply

The proposed development will be connected to the Kenya Power and Lighting Company power supply line. The KPLC electricity supply lines are already available within the neighborhood of the proposed project site. There will also be solar panels for security and street lighting and lighting of common areas.

3.9.6 General repairs and maintenance

The proposed development and associated facilities will be repaired and maintained regularly during the operational phase of the project. Such activities will include repair of building walls and floors, repair and maintenance of electrical gadgets, painting and replacement of worn out materials among others.

3.9.7 Water reticulation system

Four boreholes will be sunk during construction phase which will be the main source of water to the development (80%), supplemented by 20 % from NCWSC. Additionally, water storage tanks will be installed to increase water supply to various components of the development.

3.10 DESCRIPTION OF THE PROJECT'S DECOMMISSIONING ACTIVITIES

3.10.1 Dismantling of equipment and fixtures

All equipment including electrical installations, furniture partitions, pipe-work and sinks among others will be dismantled and removed from the site on decommissioning of the project. Priority will be given to reuse of this equipment in other projects.

3.10.2 Site restoration

Once all the waste resulting from demolition and dismantling works is removed from the site, the site will be restored through replenishment of the topsoil and re-vegetation using indigenous plant species.

3.11 Traffic Impact Assessment

Traffic impact survey was conducted to establish how the development will impact the area in terms of traffic flow once in operation, (analysis of the survey is attached below). Currently the site has three access routes that is Popo Road, Red Cross Road and the Loop Road.

CHAPTER 4: BASELINE INFORMATION OF THE STUDY AREA

4.1 Introduction

The proposed project site is situated on a plot **L.R No. Nairobi blocks 98/106,107 and 108 along** Popo Road, Nairobi County**.** The site is situated in an already mixed development zone of residential and commercialuse.

4.2 Climate

The proposed site is situated within Nairobi Metropolis. The climate of Nairobi and thus the project site is generally humid in character, with seasonal dry and wet periods. Rainfall has a bi-modal distribution with long rains occurring between March and May and the short rains between October and December with a mean annual rainfall amounting to 900 mm. Temperatures are highest in the months of January to mid-march and lowest in July and August. Since Nairobi lies close to the Equator and being 1680 m above sea level, its temperatures are altitude modified tropical, but not torrid. The mean annual is 17°C and mean daily maximum and daily minimum are 23°C and 12°C respectively. On the other hand, the mean annual rainfall is 1080 mm falling in two distinct seasons: long rains from March to May and short rains from mid-October to December.

4.3 Soils

The project site is covered with black cotton soils. The soil is moderately fertile and can support diversified vegetation.

4.4 Topography and Drainage

The area is characterised by a flat terrain and fairly drained. There is a drainage system that has been established in the site of the area.

4.5 Biological environment

4.5.1 Flora

The proposed project site is covered by planted vegetation which include; Acacia trees, shrubs and grass.

4.5.2 Fauna

There are no wildlife/wildlife corridors in the vicinity of the project site.

4.6 Socio-economic environment

4.6.1Land use

The project area serves as a commercial as well as a residential area. The area is generally developed with mixed use developments and is also occupied by people of different economic classes and ethnicities.

4.6.2 Infrastructure and services/Accessibility

The project site is served by a tarmacked road- Popo Road.

4.6.3 Water supply

The project will receive 80% of its water from the 4 boreholes to be sunk during project construction phase and substituted by 20% of water from Nairobi City Water and Sewerage Company. The projected water demand is $320M^3$ a day. The boreholes will produce $10M^3$ of water per hour translating to about $100M^3$ a day, thus the 4 boreholes will produce 400 M^3 which surpass the daily water demand for the project. The boreholes will be atleast 300M deep to avoid affecting the water table and the boreholes in the surrounding areas which are approximately 150M deep. . This will be supplemented by underground water storage tanks.

CHAPTER 5: PUBLIC PARTICIPATION

5.1 Introduction

Public consultation and participation process is a policy requirement by the Government of Kenya and a mandatory procedure as stipulated by EMCA, Cap387 section 58, on Environmental Impact Assessment for the purpose of achieving the fundamental principles of sustainable development. Therefore, this chapter describes the process undertaken in the public consultation and public participation followed to identify the key issues and impacts of the proposed development. The objective of the consultation and public participation was to:

- Disseminate and inform the stakeholders about the project with Special reference to its key components and location.

- Gather comments, suggestions and concerns of the interested and affected parties about the project.

- Incorporate the information collected in the EIA study

In addition, the process enabled,

- The establishment of a communication channel between the general public and the team of consultants, the project proponents and the Government.

- The concerns of the stakeholders are known to the decision-making bodies at an early phase of project development.

5.2 Methodology used in Public consultation

The exercise was conducted by a team of experienced registered environmental experts and consultants.

The following process in carrying out the entire process involved:

- Key informant interviews and discussions
- Dissemination of questionnaires
- Field surveys, photography and observations
- Public Consultation Meetings (PCMs).

Due to the COVID -19 pandemic the consultant put in place safety and precautionary measures to ensure the safety of both experts and the project stakeholders. This was guided by the NEMA guidelines on conduct of public consultation for EIA, EA and SEA during the pandemic.

As much as possible the views of all Key Stakeholders and Project Area Community were collected through the following forums:

- Use of letters distributed and accessible to the Project Affected Persons by the area chief. In this case the consultant provided their number for the residents to be able to share their comments on the project.

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Environmental & planning services

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12th May 2021

The Chief,

South C Ward,

Nairobi County.

CHIEF
12/05/2021

Dear Madam,

INTRODUCTION LETTER: INCEPTION STAKEHOLDER MEETING: PUBLIC PARTICIPATION AND CONSULTATION – FEASIBILITY STUDY - ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT FOR PROPOSED RESIDENTIAL DEVELOPMENT ON L.R.NO.98/106/107/108 AT BELLEVUE, NAIROBI COUNTY

I wish to notify you that **Eco Plan Management** ltd Kenya has been contracted by LAPFUND to conduct an Environmental and Social Impact Assessment (ESIA) for the above named project. The team is required to render all technical services which may be deemed relevant to the above study. In view of the foregoing, we intend to carry out a stakeholders' meeting in the area to get the views of the area residents, on the proposed construction of residential development of Eighteen floors (18) comprising Studio apartments (936 units), One bedroom apartments (1530 units), Two bedroom apartments (252 units), Three bedroom apartments (72 units) and 2014 parking slots situated in Belleveu along Mombasa Road, this is in accordance with the

Environmental Management and Coordination Act (EMCA) 1999 and EMCA (Amendment) 2015, Act and the Environmental (Impact Assessment and Audit) Regulations 2003.

We are kindly requesting your office to organize for a stakeholders meeting at the project site on Thursday 20th May 2021 at 10.00 A.M. The proposed site is situated along Popo Road Bellevue opposite Bellevue estate along Mombasa Road, Nairobi, to enable us get the views of the residents and secondly identify the relevant stakeholders. ECOPLAN contact person is Miss Mwihaki Mathu of Tel no. 0712686382.

The agenda of the meeting will be;

- Introduction of the consultancy team of experts
- Brief of the project
- Project scope
- Open discussion on the project
- Any other business

ECO PLAN MANAGEMENT LTD
12/05/2021

Yours sincerely

Irene Keino,
LEAD EXPERT, ECOPLAN MANAGEMENT LTD

Cc. MCA South C Ward
South C Residents Association

Figure 4 Letter inviting the community to the PCMs

 Public Consultation Meetings: Public Consultation Meetings (PCM) were convened within the project area.

Figure 5 First PCM within the project site in progress

Figure 6 Second PCM within project site

5.3 Consulted Stakeholders

A total of two (2) physical Public Consultation Meetings have so far been conducted at the project site on 20th May 2021 and 30th September 2021 respectively and issuance of questionnaires.

The Consultants also held discussions and interviews with various stakeholders including the following:

- Local Community;
- Administration at various levels;
- Organizations within the area.

5.4 Views expressed

From the field work surveys it was apparent that the proposed development was received with mixed reactions by the interviewed people as they anticipated numerous impacts both positive and negative . The neighbors/major stakeholders independently gave their views, opinions, and suggestions as discussed below,

5.4.1 Positive Views Expressed

5.4.1.1 Affordable Housing

The respondents approved of the project since its aim is to provide affordable housing to the general public. Though they proposed that the proponent to try and make the houses even cheaper or adopt the rent to own method so as to enable more middle-income Kenyans to afford the houses.

5.4.1.2 Employment Opportunities

The respondents interviewed were optimistic that the project will create numerous employment opportunities for both skilled and unskilled labour alike during the construction phase and the decommissioning phase. Despite the fact that most of the project will need skilled labour force, some of those interviewed expressed hope that they will be able to access employment especially the youth once the project commences mostly as casual workers.This will be a source of income for several individuals and households and hence is expected to boost the GDP and improve the living standards of the local people.

5.4.1.3 Economic growth

The use of locally available materials during the construction phase of the proposed residential development such as cement, building blocks concrete and ceramic tiles, timber, sand, ballast electrical cables etc., will enhance the growth of the economy as well as the living conditions of the business enterprises trade on these construction materials. The consumption of these materials, fuel oil and others will attract taxes including VAT which will be payable to the government hence increased government revenue.

5.4.1.4 Infrastructure improvement

The proposed development will attract a large population into the area, there is need to provide services and utilities that will serve the people conveniently without depleting the existing ones.

5.4.1.5 Increased Business Opportunities

Those with businesses along and around the area were optimistic that the increased number of visitors and customers in the area will result in an increased customer base to their business enterprises. According to them, the number of customers will increase from the construction workers, the security and maintenance personnel including visitors who will be visiting the residential development during its operation phase.

5.4.1.6 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.

5.4.2 Negative concerns expressed

5.4.2.1 Overloading of the existing infrastructure

Due to the large increase that the project tends to introduce into the area there will be continuous strain on the current infrastructure such as the sewer line and water which is a scarce commodity already in the area.

5.4.2.2 Dust emissions

The people expressed concern over possibility of generation of large amount of dust and exhaust fumes within the project site and surrounding areas as a result of construction works and transportation of construction materials. The proponent shall ensure that dust levels at the site are minimized through implementation of dust abatement techniques on unpaved, un-vegetated surfaces to minimize windblown erosion.

Sprinkling water in areas being constructed and along the tracks used by the transport trucks and diversions within the site will be done. Additional mitigation measures presented within the EMP will be fully implemented to minimize the impacts of dust generation.

5.4.2.3 Noise and Vibration Pollution

The residents expressed their fears over noise pollution that would come from the construction works and the vehicles during the construction phase. They requested the proponent to use minimum noise producing machines and to reduce the duration of idling of vehicles making deliveries. Residents were informed that maximum permissible noise levels as per the EMCA (Noise and Excessive Vibration Pollution Control) Regulations 2008 would be observed during the construction phase.

It is also recommended that quieter construction machines such as jack-in piling machines, which generate about 20 dB (A) less noise than bore piling machines be utilized. It is also recommended that the proponent consider using noise control equipment such perimeter noise barriers, which can reduce noise by 5 dB (A) to 10 dB (A). These measures will be effective in reducing construction noise, when used as part of a good noise management system.

5.4.2.4 Traffic snarl-ups

There will be increased vehicular movement in and out of the site. This will exert pressure on the existing roads around the site only getting worse towards the occupation period. Construction period will be characterized by heavy motor vehicles leading and turning from and in to the site.

5.4.2.5 Solid Waste Generation

Some of the excavation spoil material will be rendered unusable and thus will have to be disposed of. This also applies to some of the soil/rocks, which may not be reusable after excavation processes are complete. All these materials need to be collected, transported and disposed of appropriately in approved designated areas. It is encouraged that other alternative uses of these materials should be found e.g. filling excavated areas at the site. During

construction and the operational phase, designated areas for waste collection will be provided and the solid wastes will be disposed of by a NEMA registered Waste operator.

5.4.2.6 Public and Occupational Health and Safety Risks

Potential impacts during construction include: exposure to physical hazards from the construction activities, use of equipment; trips and fall hazards during construction of the upper floors and exposure to dust and noise. Construction workers are likely to have injuries and hazards as the construction works such as trenching and excavations as well as work at height unavoidably expose workers to occupational health and safety risks. The workers are also likely to be exposed to risk of construction noise and air pollution

5.4.2.7 The Zoning of the Area

Some of the residents raised an issue on the height of the project stating that the area is for low rising residential developments and not high rising structures as the proposed project.

5.4.2.8 Analysis of Stakeholder Questionnaires

Feedback from the stakeholders was also obtained from the distributed questionnaires and the analysis indicated that most stakeholders approved the project so long as their concerns were addressed. The table below provides a summary of the comments and issues raised by the stakeholders and mitigation measures. Filled questionnaires are attached in the annexes.

Table 1: Analysis of Stakeholder Responses

S/No	Stakeholder Name	Organization	Tel.Number	Stakeholder Interest, Goals, And Concerns
1	Richard Kisang	Resident	0722495955	**Positive impacts** • Addition of access route thus less traffic • Use of sustainable energy (solar energy to be used in security lighting) • Creation of green spaces within the development **Negative impacts** • Noise and dust pollution • Increased traffic • Inadequate water supply **Suggestions to the developer** • Put in place measures to reduce noise and dust pollution • Traffic management
2	Eunice Juma	Officer DRSRS	0721633572	**Positive impacts** • Improved infrastructure **Negative impacts** • Increased traffic

				Suggestions to the developer • Use of other access routes in order to decongest Popo road
3	Emily Obonyo	Administrator KLB	0720708806	**Positive impacts** • Improved security and lighting • Improved sewerage system • Affordable housing **Negative impacts** • Increase in population **Suggestions to the developer** • Project should not disrupt the daily economic and social lives of the residents and organizations within the area
4	Walter Namasake	Chair Akiba Bellevue	0722752115	**Positive impacts** • Increased amenities **Negative impacts** • Strain on water resources and sewer system • Increased traffic

				Suggestions to the developer • Traffic management • Coordinate with NCWSC to improve sewerage and drainage systems
5	W.B Omodina	Chair Mugoya phase 1	0723144901	**Positive impacts** • **Increased housing** **Negative impacts** • Increased traffic • Increase in population • Increased demand of water resources and sewer system **Suggestions to the developer** • Traffic management • Use more of borehole water than that provided by council

5.5 Analysis of impacts raised by residents and stakeholders and mitigation measure

During the public consultation meetings some concerns were raised by the residents and stakeholders within the project area. Below are the impacts raised and mitigation measures discussed at length as addressed in the minutes,

5.5.1 MINUTES OF THE STAKEHOLDERS CONSULTATIVE MEETING FOR THE PROPOSED RESIDENTIAL DEVELOPMENT FOR LAPFUND HELD ON 20th MAY 2021 AT THE PROJECT SITE IN BELLEVUE,POPO ROAD,NAIROBI AT 11.00 A.M

Members Present	• Dr. Tuesday Gichuki – Chairman Sokra • Silvester Mutharia – Consultant • Patrick Munene – Project Manager • Irene Keino – Nema Lead Expert • Arch. Maina Karanja – Project Architect • Prof. Eng. G.N. Manguriu – Project Engineer • Arch. Stephen Nyamato – Project Architect • Samuel Mokua – Project Urban Planner • Mwihaki Mathu – Environmentalist • Millicent Okaka – Senior Chief Nairobi West • Absolomon – Youth Leader South C • Eric Mokaya – Resident South C • Vincent Kiprono – Resident South C •
Agenda Items	1) Introductions 2) Chief remarks 3) Project brief 4) Question and answer session 5) Addressing issues raised by South C residents and South C MCA 6) A.O.B
AGENDA 1	**INTRODUCTION**

The meeting commenced with prayers from Silvester Mutharia .The moderator Irene Keino welcomed all for attending the meeting and proceeded to invite the chief to officially open the meeting. The chief introduced herself and welcomed all to the meeting. The consultant team went on to introduce themselves and stated the role that they will play in the proposed project followed by the residents who were present.

AGENDA 2	**Brief and Remarks from the Chief**

The chief started by welcoming all the guests and appreciated their attendance. She stated the reason for the public consulatation which was to get the views of the affected and interested parties regarding the residential project by LAPFUND.

She stated that the proposed project was a viable one and a very good idea and project and thanked the initiative that the consultants have taken to conduct public consultative meetings. She concluded by inviting the consultants team to present the proposed project.

Agenda 3	**Project Brief**

Arch. Stephen began by greeting all in attendance. He went on to give the project description specifically the project designs which were on display. He talked about number of apartment units, associated amenities, access roads in and out of the site among others. He went on to invite the Engineer to talk about water and sanitation issues which had been raised.

Eng. Manguriu talked about two main issues which had been raised by the residents and the MCA that is source of water for the proposed development and sewerage services for the proposed development. He stated that the main source of water to the proposed development will be 4 boreholes that will be sunk of which hydrological survey has already been conducted and approved and substituted by NCWSC. He also explained that 80% of the developments water will be from the boreholes and approximately 20% of the developments water will be from NSWSC. On sewerage he explained that the waste water from the development will be chanelled in the existing two sewer lines that is Redcross sewer line and the Main road sewer line before discharging into the main sewer line this will help reduce pressure on the existing sewer line.

Lead Expert Irene stated that she will be evaulating the environmental and socio-economic impacts of the

proposed project. She also stated that the Terms of Reference for the project have been approved by NEMA thus we are in the process of conducting the Environmental and Social Impact Assessment (ESIA) which involves public participation from the residents within the project site and that this was the first meeting of 3 public consultative meetings as required by NEMA EMCA cap 387 section 17.

The moderator then opened the floor for the question and answer session.

Agenda 4	**Q & A Session**

The Q & A session was moderated by the Irene Keino

CHIEF OKAKA

1) Total number of apartment units
2) Once complete are the apartments for sale or rent

Response:

- Total number of units is 2300
- On completion the houses will be for sale

CHAIRMAN SOKRA

1) Main source of water to the proposed development
2) Source of sewer to the proposed development
3) Which roads will be used to access the site
4) Concerns of traffic of Popo road which is the main access road
5) If client has involved KCAA due to height of building

Response:

- The main source of water to the site will be 4 boreholes substituted by NCWSC
- The development will channel its waste water into two improved sewer lines that is for Redcross and the one at the main road before channeling in to the main sewer line this will ensure that there will be no pressure on the existing sewer line
- Currently the site has three access routes to the site which will be used
- On the issue of traffic the client has already conducted a traffic survey which has been approved by KENHA and also client will construct a deceleration lane to assist in traffic management
- On the issue of KCAA the client is currently in discussion with Wilson and JKIA

YOUTH LEADER

1) How will the youth in the area benefit from the project

Response:

- The youth will be considered for construction jobs and opportunities
- The project will attract opportunities such as promote local businesses such as food vendors, kiosks, grocery stores among others

ERIC- RESIDENT

1) How will the project affect the youth in the area

Response:

- The proposed development will give business opportunities to the youth such as open businesses like barber shops, boda boda operators among others

Agenda 5	**Issues raised by South C residents and South C MCA**

A. ISSUES RAISED BY SOUTH C WARD MCA

ISSUE	**SOLUTION**
• **Adverse water shortage and strain on existing sewer line**	The main source of water for the proposed development will be 4 boreholes that will be sunk of which hydrological survey has already been conducted and approved and substituted by NCWSC. 80% of the developments water will be from the boreholes and approximately 20% of the developments water will be from NSWSC hence will not strain the existing water supply. On sewerage the waste water from the development will be chanelled in the existing two sewer lines that is Redcross sewer line and the Main road sewer line before discharging into the main sewer line this will help reduce pressure on the existing

	sewer line.
• **Traffic in the estate and loss of privacy**	The client has already conducted a traffic survey which has been approved by KENHA and also client will construct a deceleration lane to assist in traffic management. On the issue of loss of privacy the project is not oriented in the direction of any residential or private development thus it will not affect the residents
• **Bellevue school raised an issue of increase in liquor shops and mogoka dens in the area**	The proposed development will not have any shops instead they have created dual lanes (entry and exit routes) hence this does not apply to this development

B. ISSUES RAISED BY SOUTH C RESIDENTS ASSOCIATION

ISSUE	**SOLUTION**
• **No EIA has been conducted**	The Nema experts are in the process of carrying out the ESIA
• **No public participation has been conducted**	The Nema experts are in the process of conducting the consultative meetings, this being the first and two more meetings to follow
• **Inadequate drainage and sewerage lines**	On sewerage the waste water from the development will be chanelled in the existing two sewer lines that is Redcross sewer line and the Main road sewer line before discharging into the main sewer line this will help reduce pressure on the existing sewer line.

• **Water scarcity**	The main source of water for the proposed development will be 4 boreholes that will be sunk of which hydrological survey has already been conducted and approved and substituted by NCWSC. 80% of the developments water will be from the boreholes and approximately 20% of the developments water will be from NSWSC hence will not strain the existing water supply .
• **Loss of privacy**	On the issue of loss of privacy the project is not oriented in the direction of any residential or private development thus it will not affect the residents
• **Lack of parking space and habitable infrastructure**	The development will have over 2,000 parking slots which is sufficient

Agenda 6	**A.0.B**

The chief thanked the consultants team for conducting the exercise and welcomed the project and pledged her full support.

The moderator gave a vote of thanks to all in attendance.

The meeting adjourned at 12 noon.

Signed Signed

Secretary. MWIHAKI MATHU Chair. IRENE KEINO

Date: 20th MAY 2021

5.5.2 MINUTES OF THE STAKEHOLDERS CONSULTATIVE MEETING FOR THE PROPOSED RESIDENTIAL DEVELOPMENT FOR LAPFUND HELD ON 30th SEPTEMBER 2021 AT THE PROJECT SITE IN BELLEVUE, POPO ROAD, NAIROBI AT 10.00 A.M

Members Present	*See attached list
Agenda Items	7) Introductions 8) Remarks from NEMA Expert 9) Remarks from Architects 10) Question and answer session 11) A.O.B
Agenda 1	**INTRODUCTION**
The meeting commenced with prayers from one of the participants. The moderator Mwihaki welcomed all for attending the meeting and proceeded to invite consultants to introduce themselves and stated the roles they played in the project followed by the residents who were present. She then welcomed Ms Irene Keino to make her remarks.	
Agenda 2	**Remarks from Project Physical Planner/NEMA Lead Expert**
Ms Irene welcomed all and appreciated their attendance. She stated the reason for the public consulatation which was to get the views of the affected and interested parties regarding the residential project owned by LAPFUND. She briefly introduced the project noting different process it had undergone. She noted that public participation was mandatory and NEMA required for any project undertaken there should be atleast three consultative meetings with key stakeholders as enshrined in EMCA cap 387 section 17 and this was the second consultative meeting the first held on 20th May, 2021. Lead Expert Irene stated that she will be evaulating the environmental and socio-economic impacts of the proposed project. She also stated that the Terms of Reference for the project have been approved by NEMA	

thus we are in the process of conducting the Environmental and Social Impact Assessment (ESIA) which involves public participation from the residents within the project site.
She informed the residents and participants that they were at liberty to express their reservations, if any, to the project but reminded them that such objections are required tobe substatiated.

Agenda 3	**Remarks from project Architects**

Arch. Isaac noted the project covered 5 plots covering 12 acres, 2 fronting Mombasa Road for commercial purpose and the three at the back for residential and support facilities. He noted the government compulsory acquired the two fronting Mombasa that were meant for commercial use for BRT station thus remaining with the three at the back.
He noted that a feasibility study had been undertaken and viable use for the site had been recommended for commercial fronting Mombasa Road and residential apartments at the back. They developed the designs and submitted for approval
He welcomed Arch. Steve to present project designs

Arch. Stephen began by greeting all in attendance. He familiarised the residents with the site and went on to give the project description specifically the project designs and layout which were on display. He talked about number of apartment units, associated amenities, access roads in and out of the site, Parking spaces among others. He noted the development had 18 Storey buildind in 5 blocks designed along a court yard totaling to 2,300 units which comprised of studios, one, two and three bedrooms and parking spaces on the ground level not less than 2,000. He further noted that the site will have a loop road and 3 access point i.e. Popo road and Red cross road to reduce impacts of traffic. The access from Popo road will be dual to reduce traffic spill to Popo road. There were talks with KeNHA to get 4th access from Mombasa road along the proposed BRT station. Service amenities such as garbage holding rooms have also been factored.
He noted there the design had included substation, social amenities i.e. kindergarten and recreational facilities

On sewerage he explained that the waste water from the development will be chanelled in the existing four sewer lines that is Redcross sewer lines and Mombasa road sewer line before discharging into the main sewer line this will help reduce pressure on the existing sewer line. He further noted that the sewer along Mombasa road had been improved and enhanced and they were considering to channel most of the waste

water from the project directly to the improved sewer line to avoid congesting the other lines.

He stated that the main source of water to the proposed development will be boreholes that will be sunk of which hydrological survey had already been conducted and approved and substituted by NCWSC

The moderator then opened the floor for the question and answer session.

Agenda 4	**Q & A Session**

Access & traffic

1. One of the participants noted that the project provided for 2000 cars, accessing the development from Popo Road. This he noted will cause major traffic congestion on a very narrow road, already overwhelmed by existing traffic. Further the other secondary accesses offload traffic to narrow roads already congested. He wanted to know what the consultant had put in place to mitigate the adverse effect of additional traffic. Can you ensure that you get an access directly to Mombasa Road?

Responses

- The site has multiple access points the main being from Popo Road. He noted they were a process of negotiating an accesses directly linking to Mombasa Road through the BRT station with KeNHA. The loop road will also manage traffic. He noted that a traffic study was done and it was on the basis of its finding they had designed traffic circulation. He further noted entry and exit along Popo Road will have acceleration and deceleration lanes and dual carriage entry and exit at the neck to reduce bottleneck along Popo Road.

2. Parking

One of the residents wanted to know whether the parking allocated was sufficient or it will lead to spilling on to the streets.

Responses

- The law states1.5 parking slots per household and for the smaller units 1 parking slot. The project has a mix of studios, 1,2 & 3 bedrooms and the typologies dictates the affordability of owning a vehicle. From the by-laws 1 & 2 bedrooms have 1 slot while 3 bedroom has 1.5 parking slot. From the requirements the site could have slightly over 1300 slots but the project has provided over 2000 parking spaces.

3. Water

One of the participants noted South C had an acute water problem, offloading 2300 units (approx. 300,000 litres daily for 10,000 new users) will worsen the situation. The development proposes 4 boreholes on site. Have you considered the impact of 4 boreholes on site on the water table and potential Subsidence? In the event that the boreholes are not viable, have you considered the impact on the existing water and sewerage situation?

Responses

- Hydrological survey was done and established the projects water demand. The report proposed sinking of four high yield boreholes at the periphery to help meet daily water demand.
- The engineer noted the project required water demand of 320m3 per day. The high yield boreholes will produce 10m3 of water per hour translating to about 100m3 a day. The four boreholes will provide about 400m3 a day which surpass the daily water demand for the project. The boreholes will be atleast 300m deep to avoid affecting water table and the boreholes around are about 150m deep

4. Sewerage

One of the participants stated that South C sewerage infrastructure was over 45 years old and was inadequate for the current existing development. Connecting the project sewer to this collapsing system he noted will increase the problems residents were experiencing. He advised the consultants to connect the project sewer to the new sewer line along Mombasa Road.

Responses

- Survey was undertaken and established where all sewer facilities exist. The project proposed to channel most of the waste water to the newer improved sewer line along Mombasa Road and supported by the other two sewer lines.

5. Land Ownership

The residents wanted to know ownership status of the land

Responses

- The consultants worked on the basis of land ownership documents provided by client and the survey plan indicates that “the neck” is part of the LAPFUND land. He noted that relevant documents can be availed for further information (find attached)

6. Privacy

One of the residents noted that the development overlooked Bellevue Estate and residents were concerned

that their privacy will be interfered with and wanted to know what steps had been taken to alleviate this.

Responses

- On privacy, the critical stakeholder is residents of Bellevue estate. The Arch. noted that residential development was not intruding to Bellevue estate. The design ensured windows faced Mombasa Road and towards Mtihani house whose orientation had windows away from project site
- On the issue of loss of privacy, he noted the designs were not intrusive and since commercial project had been canceled which would have had issues of intrusion into Bellevue estate.

7. KCAA and KAA height restrictions

The development could be in the flight path of both Wilson and JKIA airports. The proposed height could be beyond the allowed limits. The chair wanted to know whether we had received approval for this.

Responses

- On issue of heights the consultants are engaging with KCAA and KAA

8. Visual Impact of the development

The tallest buildings in the area are 6 storeys high. This group of buildings will rise to 18 storeys. Has a Visual Impact Assessment been carried out to see how the general outlook of the area is affected? Will this not set a precedent for all future developments in the area to the detriment of the environment?

Responses

- On visual impact, a graphical representation is being developed and will be part of the NEMA report

9. Zoning and Adequacy of land to support Densities

South C has not been rezoned as a high-density area. Zoning plan changes can only take effect if gazetted, which has not happened. What is the basis for this very high-density development.

Responses

- The Arch. noted that urban development is inevitable. Pressure of urban growth necessitate that rezoning is done to accommodate the pressure. He noted that government was slow on improving consummate infrastructure as pressure increased. Thus, public private partnership was essential to mitigate this effect. He further reported that the approving authorities review development applications on a case by case basis even as rezoning is underway.

11.How Will The Proponent Handle Domestic Waste

- A private nema licensed waste handling company will be contracted to collect waste, there will also

be an designated area/room where residents will dispose off waste before collection.

12.Minutes of Public Participation Meetings/Technical Reports and Approvals

We would like to have minutes of PP Meetings circulated to SOUCRA and all attendees. We would also like to have copies of the Traffic Study, Hydrology Study and land ownership documents, with the minutes**.** This should be within the next 7 days, but in any case, before notice for the next meeting**.**

Responses

- All relevant documentation will be sent to individual emails shared (find attached)

Agenda 6	**A.0.B**

Irene thanked the residents for finding time to attend the consultative meeting and noted the session had been so interactive.
The meeting adjourned at 12. 25 PM

Signed Signed

Secretary. MWIHAKI MATHU Chair. IRENE KEINO

Date: 30th SEPTEMBER 2021

CHAPTER 6: POTENTIAL IMPACTS AND PROPOSED MITIGATION MEASURES

6.1 Introduction

This chapter focuses on the impacts likely to occur as a result of the proposed construction works. For ease of reference, the impacts due to or affecting certain elements during construction and operation phases are presented in matrix form in the Environmental and Social Management and Monitoring Plan.

6.2 Positive impacts of the construction phase activities

a) Creation of employment opportunities

Several employment opportunities will be created for construction workers during the construction phase of the project. This will be a significant impact in addressing unemployment menace in the country.

b) Provision of market for supply of building materials

The project will require supply of large quantities of building materials most, of which will be sourced locally. This provides ready market for building material suppliers such as quarrying companies, hardware shops and individuals with such materials.

c) Increased business opportunities

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

d) Optimal land use

The public interviewed were optimistic that the implementation of the proposed project will lead to opening up the area by adding more residential space that ensures optimal land use as compared to the current use or any perceived future use of the said plot.

6.3 Negative Environmental Impacts of the Construction phase Activities

a) Extraction and use of building materials

Building materials such as hard core, ballast, cement, rough stone and sand required for construction will be obtained from various places such as; quarries, hardware shops and sand harvesters who extract such materials from natural resource banks such as rivers and land. Since substantial quantities of these materials will be required for construction of the building, the availability and sustainability of such resources at the extraction sites will be negatively affected, as they are not renewable in the short term. In addition, the sites from which the materials will be extracted may be significantly affected in several ways including landscape changes, displacement of animals and vegetation, poor visual quality and opening of depressions on the surface leading to several human and animal health impacts.

b) Dust emissions

During construction, the project will generate substantial quantities of dust at the construction site and its environs. The sources of dust emissions will include site preparation and levelling works, and to a small extent, transport vehicles delivering building materials. Emission of large quantities of dust may lead to significant impacts on construction workers and the local residents, which will be accentuated during dry weather conditions.

c) Traffic flow during construction

There is a likelihood of increase in traffic at the construction site and its environs. The trucks used to transport various building materials from their sources to the project site will contribute to increases in emissions of CO_2, NO_2 and fine particulate along the way as a result of diesel combustion. Such emissions can lead to several environmental impacts including global warming and health complications. Because large quantities of building materials are required, some of which are sourced outside Nairobi, such emissions can be enormous and may affect a wider geographical area. The impacts of such emissions can be greater in areas where the materials are sourced and at the construction site as a result of frequent running of vehicle engines, frequent vehicle turning and slow vehicle movement in the loading and offloading areas such trucks may slow down traffic flow.

d) Noise

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 contribute to high levels of noise and vibration within the construction site and its environs. Elevated noise levels within the site can affect project workers and other persons in and within the vicinity of the project site.

e) Risk of accidents and injuries to workers

Because of the intensive engineering and construction activities including erection and fastening of roofing materials, metal grinding and cutting, concrete work, steel erection and welding among others, construction workers will be exposed to risks of accidents and injuries. Such injuries can result from accidental falls from high elevations, injuries from hand tools and construction equipment cuts from sharp edges of metal sheets and collapse of building sections among others. The proponent will install signage to direct and inform users and pedestrians.

f) Solid waste generation

Large quantities of solid waste (soil) will be generated as a result of excavation of the site. Additional solid waste will be generated at the site during construction of the building and related infrastructure. Such waste will consist of metal cuttings, rejected materials, surplus materials, surplus oil, excavated materials, paper bags, empty cartons, empty paints and solvent containers, broken glass among others. Such solid waste materials can be injurious to the environment through blockage of drainage systems, choking of water bodies and negative impacts on human and animal health. This may be accentuated by the fact that some of the waste materials contain hazardous substances such as paints, cement, adhesives and cleaning solvents, while some of the waste materials including metal cuttings and plastic containers are not biodegradable and can have long-term and cumulative effects on the environment

g) Energy consumption

The project will consume fossil fuels (mainly diesel) to run transport vehicles and construction machinery. Fossil energy is non-renewable and its excessive use may have

environmental implications on its availability, price and sustainability. The project will also use electricity supplied by supplied by KPLC. Electricity in Kenya is generated mainly through natural resources, namely, water and geothermal resources. In this regard, there will be need to use electricity sparingly since high consumption of electricity negatively impacts on these natural resources and their sustainability. The proponent will utilize renewable energy such as solar to maintain the facility and reduce running costs and reduce in contributions to greenhouse emission.

h) Water use

The construction activities will require large quantities of water that will be provided by the county council. Water will mainly be used for concrete mixing, curing, sanitary and washing purposes. Excessive water use may negatively impact on the water source and its sustainability. The proponent will invest in recycling of water

6.4 Positive Environmental Impacts of Operational Activities

a) Employment opportunities

Employment opportunities are one of the long-term major impacts of the proposed residential development that will be realized after the construction phase and during the operation and maintenance of the facility.

b) Revenue to national and county governments

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.

c) Improved security

Security will be ensured around the project area and its environs through distribution of suitable security lights, electric fence and presence of 24-hour security guards. This will lead to improvement in the general security in the surrounding area.

d) Optimal use of land

e)

By building the homes the design has incorporated an optimal use of the available land. Land is a scarce resource in Kenya and through construction of the proposed homes shall ensure optimal use of land.

6.5 Negative Environmental Impacts of Operational Activities

a) Solid waste generation

The project is expected to generate enormous amounts of solid waste during its operational phase. The bulk of the solid waste generated during the operation of the project will consist of paper, plastic, glass, metal, textile and organic wastes. Such wastes can be injurious to the environment through blockage of drainage systems, choking of water bodies and negative impacts on animal health. Some of these waste materials especially the plastic/polythene are not biodegradable may cause long-term effects to the environment. Even the biodegradable ones such as organic wastes may be injurious to the environment because as they decompose, they produce methane gas, a powerful greenhouse gas known to contribute to global warming.

b) Energy consumption

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

c) Increased water utilization

The domestic activities during the operation phase of the project will involve the use of large quantities of water in the daily operations of the residential development to include offices, workshop, showroom and access road.

6.6 Positive Environmental Impacts of Decommissioning Activities

a) Rehabilitating

Upon decommissioning the project, rehabilitation of the project site will be carried out to restore the site to acceptable status. This will include replacement of topsoil and re-vegetation that will lead to improved visual quality of the area.

b) Employment opportunities

Several employment opportunities will be created for demolition staff.

6.7 Negative Environmental Impacts of Decommissioning Activities

a) Solid waste generation

Demolition of the projects small buildings and related infrastructure will result in large quantities of solid waste. The waste will contain the materials used in construction including concrete, metal, drywall, wood, glass, paints, adhesives, sealants and fasteners. Although demolition waste is generally considered as less harmful to the environment since they are composed of inert materials, there is growing evidence that large quantities of such waste may lead to release of certain hazardous chemicals into the environment. In addition, even the generally non-toxic chemicals such as chloride, sodium, sulphate and ammonia, which may be released as a result of leaching of demolition waste, are known to lead to degradation of groundwater quality.

b) Noise and vibration

The demolition works will lead to significant deterioration of the acoustic environment within the project site and the surrounding areas.

c) Dust

Large volumes of dust will be produced during demolition works which in turn will affect the demolition staff and the adjourning residents**.**

CHAPTER 7: IMPACT MITIGATION AND MONITORING

7.1 Introduction

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

7.2 Minimization of Soil Run-off

The proponent will put in place measures aimed at minimizing soil erosion and associated sediment release from the project site. These measures will include terracing and levelling the project site to reduce run-off velocity and increase infiltration of rainwater into the soil. In addition, construction vehicles will be restricted to designated areas to avoid soil compaction within the project site, while any compacted areas will be ripped to reduce run-off.

7.3 Minimization of Construction Waste

It is highly recommended that demolition and construction waste be recycled or reused to ensure that materials that would otherwise be disposed of as waste are diverted for productive uses. In addition, damaged or wasted construction materials including cabinets, doors, plumbing and lighting fixtures, marbles and glass will be recovered for refurbishing and use in other projects. Such measures will involve the sale or donation of such recyclable/reusable materials to construction companies, local community groups, institutions and individual residents or homeowners.

The proponent shall put in place measures to ensure that construction materials requirements are carefully budgeted and to ensure that the amount of construction materials left on site after construction is kept minimal. It is further recommended that the proponent should consider the use of recycled or refurbished construction materials. Purchasing and using once-used or recovered construction materials will lead to financial savings and reduction of the amount of construction debris disposed of as waste.

7.4 Reduction of Dust Generation and Emission

Dust emission during construction will be minimized through strict enforcement of onsite speed controls as well as limiting unnecessary traffic within the project site. In addition, it is recommended that excavation works be carried out in wet weather; and traffic routes on site be sprinkled with water regularly to reduce amount of dust generated by the construction trucks.

7.5 Minimization of impacts on traffic flow

The proponent will put in place measures to address such concerns by ensuring that construction vehicles preferably deliver materials during off-peak hours when traffic is low. There will also be provision for caution signs on the access road to alert users on construction activities in progress in order to prevent occurrence of accidents.

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

7.6 Minimization of Noise

Noise and vibration will be minimized in the project site and its environs through sensitization of construction truck drivers to switch off vehicle engines while offloading materials. In addition, they will be instructed to avoid gunning of vehicle engines or hooting especially when passing through sensitive areas such as churches, schools and hospitals. In addition, construction machinery shall be kept in good condition to reduce noise generation. It is recommended that all generators and heavy-duty equipment be insulated or placed in enclosures to minimize ambient noise levels.

7.7 Health and safety of Workers on site

The proponent is committed to adherence to the occupational health and safety rules and regulations stipulated in Occupational Health and Safety Act (Cap 514). In this regard, the

proponent is committed to provision of appropriate personal protective equipment such as gloves; helmets, ear muffs, overalls as well as ensuring a safe and healthy environment for construction workers by providing sanitary facilities (toilets) while portable water and food will be will be bought by workers from the nearby kiosks and hotels.

To ensure safety and health workers employed and to eliminate or minimize incidents during the construction, operational and decommissioning phase of the project, a number of requirements to be adhered to by the proponent are outlined in table hereunder.

Table **1**: Requirements to be adhered to during the construction, operational and decommissioning phase of the project

Requirement	**Relevant clause in the Law**
1. Ensure acquisition and annual renewal of registration certificate of the workplace by lodging an application and remitting prescribed fees to the Directorate of Occupational Safety and Health Services	Legal Notice No.14 of 2011 as read together with Section 44 of OSHA, 2007
2. Provide Personal Protective and Equipment (PPE) to construction site workers i.e. a) Helmets/hard hats for head protection b) Goggles/shields for eye protection where necessary c) Ear protection (ear muffs or ear plugs) for those workers exposed to high noise levels d) Dust masks/respirators for protection from inhalation of air contaminants where necessary and as applicable d) Body protection (overalls, reflector jackets, aprons dust coats as appropriate) e) Gloves for hand protection where necessary f) Foot protection (safety boots or safety shoes) g) Safety harnesses, when necessary, for prevention of	Section 101 of OSHA, 2007

falls from height	
3. Acquire and display at a prominent place within workplace an abstract of OSHA, 2007	Section 121 of OSHA, 2007
4. Acquire and maintain a General Register	Section 122 of OSHA, 2007
5. Develop an occupational safety and health policy and ensure all workers are informed of its content.	Legal Notice No.31 of 2004 as read together with Section 7 of OSHA, 2007
6. Undertake the risk assessment exercise, compile a report and submit a copy to the Directorate of Occupational Safety and Health Services.	Section 6 of OSHA, 2007
7. Form a workplace Safety and Health Committee and have it trained on matters relating to Occupational Safety and Health.	Legal Notice No.31 of 2004 as read together with Section 9 of OSHA, 2007
8. Provide first aid i.e. a) Appoint and train using a government recognized trainer, first aiders b) Provide and maintain, to the prescribed standard, first aid box(es)/cupboards	Legal Notice No. 160 of 1977 as read together with Section 95 of OSHA, 2007
9. Ensure safe Housekeeping by:- a) Ensuring good machine layout and arrangement b) Designating and marking walkways, gangways and driveways for workplace safe movement. c) Proper arrangement of stocks and products	Section 77 of OSHA, 2007
10. Ensure safety of workers engaged in high risk	Section 77 of OSHA, 2007

activities by development of a permit to work document to be used in such activities	
11. Ensure good health of workers employed by:- a) Causing prescribed periodical medical examinations to be done on workers exposed to classified hazards e.g. excessive noise levels, hazardous dusts, chemicals, radiation etc. b) Causing pre-employment medical examinations to be done on workers to be employed in areas with classified hazards c) Causing post-employment medical examinations to be done on workers formerly employed in areas with classified hazards d) Causing prescribed medical surveillance to be done	Legal Notice No.24 of 2005 as read together with section103 of OSHA, 2007

7.8 Reduction of Energy Consumption

The proponent shall ensure that electricity be used only when necessary at the construction site as well as sensitization of staff to conserve electricity by switching off electrical equipment or appliances when they are not in use.In addition, proper planning of transportation of materials will ensure that fossil fuels (diesel, petrol) are not consumed in excessive amounts.

7.9 Minimization of Water Use

The proponent shall ensure that water is used efficiently at the site by sensitizing construction staff to avoid irresponsible water usage. In addition, the proponent will ensure avoidance of leaking taps and use automatic taps where necessary.

7.10 Mitigation of Operation Phase Impacts

- **Ensure Efficient Water Use**

The proponent will install water-conserving automatic taps and toilets. Moreover, any water leaks through damaged pipes and faulty taps will be fixed promptly by qualified staff. In addition, the occupants of the facility will be sensitized to use water efficiently.

- **Ensure Efficient Energy Consumption**

The proponent plans to install an energy-efficient lighting system for the project. This will contribute immensely to energy saving during the operational phase of the project. In addition, occupants of the residential development be sensitized to ensure energy efficiency in their domestic operations. To complement these measures, it will be important to monitor energy use during the occupation of the premise and set targets for efficient energy use.

- **Ensuring Efficient Solid Waste Management**

The proponent will be responsible for efficient management of solid waste generated by the project during its operation. In this regard, the proponent will provide waste handling facilities such as waste bins for temporarily holding domestic waste generated at the site before collection by a NEMA registered waste handler. In addition, the proponent will ensure that such is disposed of regularly and appropriately.

7.11 Mitigation of Decommissioning Phase Impacts

- **Reduction of Dust Particulate and Emission**

Dust emission during construction will be minimized through strict enforcement of onsite speed controls as well as limiting unnecessary traffic within the project site. In addition, it is recommended that excavation works be carried out in wet weather; and traffic routes on site be sprinkled with water regularly to reduce amount of dust generated by the construction trucks.

- **Minimization of Noise**

Noise and vibration will be minimized in the project site and its environs through sensitization of construction truck drivers to switch off vehicle engines while offloading materials. In addition, they will be instructed to avoid gunning of vehicle engines or hooting especially when passing through the park which can scare the animals. In addition, construction machinery shall be kept in good condition to reduce noise generation. It is

recommended that all generators and heavy-duty equipment be insulated or placed in enclosures to minimize ambient noise levels.

- **Ensuring Efficient Solid Waste Management**

The proponent will be responsible for efficient management of solid waste generated by the project during its decommissioning phase. It is highly recommended that demolition and construction waste be recycled or reused to ensure that materials that would otherwise be disposed of as waste are diverted for productive uses.

CHAPTER 8: ENVIRONMENTAL MANAGEMENT PLAN

Significance of an EMP

Environmental Management Plan (EMP) for developing projects is usually to provide a logical framework within which identified negative environmental impacts can be mitigated and monitored. Additionally, EMP assigns responsibilities of actions to various actors and provides a timeframe within which mitigation measures and monitoring can be done. The EMP is a vital output of an Environmental Impact Assessment study as it provides a checklist for project monitoring and evaluation. The EMP outlined below will address the identified potential negative impacts and mitigation measures of the proposed multi-dwelling apartments based on the chapters of environmental impacts and mitigation measures of the negative impacts.

8.1: Construction Phase EMP

The necessary objectives, activities, mitigation measures, and allocation of costs and responsibilities pertaining to prevention, minimization and monitoring of significant negative impacts and maximization of positive impacts associated with the construction phase of the proposed residential development project are outlined below.

Table 2: Environmental and Social Management Plan (ESMP)

Expected Negative Impacts	**Recommended Mitigation Measures**	**Responsible Party**	**Time Frame**	**Cost (Kshs)**
Increased exploitation of raw materials	Source building materials from suppliers who use environmentally friendly processes in their operations.	Proponent & Contractor	Throughout the construction period	-
	Ensure accurate budgeting and estimation of actual construction material requirements to ensure that only the material necessary is ordered	Proponent & Contractor	Throughout the construction period	200,000
	Ensure that damaged or loss of materials at the construction site are kept minimal through	Proponent & Contractor	Throughout the construction period	500,000

	proper storage			
	Use at least 5%-10% recycled refurbished or salvaged materials to reduce the use of raw materials and divert material from landfills.	Proponent & Contractor	Throughout the construction period	
Ecosystem disturbance	Ensure proper demarcation and delineation of the project area to be affected by construction works.	Proponent & Contractor	One month	100,000
	Specify locations for trailers and equipment, and areas of the site which should be kept free of traffic, equipment, and storage.	Proponent & Contractor	One month	50,000
	Designate access routes	Proponent &	One month	100,000

	and parking within the site.	Contractor		
	Ensure that no dumping is done into the Neighboring lands	Proponent & Contractor	Every 3months	-
	Plant trees and other vegetation to replace those that will be excised.	Proponent & Contractor	One-off	500,000
Increased storm water, runoff and soil erosion	Surface runoff and roof water shall be harvested and stored in underground reservoir tanks for reuse.	The Civil Engineer, Mechanical Engineer and Project Manager	2 months	20,000
	A storm water management plan that minimizes impervious area infiltration by use of recharge areas and	The Civil Engineer, Mechanical Engineer and Project Manager	1 months	20,000

	use of detention and/or retention with graduated outlet control structure will be designed.			
	Apply soil erosion control measures such as leveling of the project site to reduce run-off velocity and increase infiltration of storm water into the soil.	The Civil Engineer, Mechanical Engineer and Project Manager	2 months	100,000
	Ensure that construction vehicles are restricted to existing graded roads to avoid soil compaction within the project site.	The Civil Engineer, Mechanical Engineer and Project Manager	Throughout construction period	10,000
	Ensure that any compacted areas are ripped to reduce run-off.	Project Manager	Throughout construction period	10,000

	Site excavation works to be planned such that a section is completed and rehabilitated before another section begins.	Project Manager	Throughout construction period	10,000
Solid waste generation	Use of an integrated solid waste management system i.e. through a hierarchy of options including: Source reduction, Recycling, Reuse,Combustion and Sanitary land filling.	Project Manager & Contractor	Throughout construction period	300,000
	Through accurate estimation of the sizes and quantities of materials required, order materials in the sizes and quantities that will be needed	Project Manager & Contractor	One-off	0

	Ensure that construction materials left over at the End of construction period will be re-used in other projects rather than being disposed of.	Proponent & Contractor	One-off	0
	Ensure that damaged or wasted construction materials including cabinets, doors, plumbing and lighting fixtures, marbles and glass will be recovered for refurbishing and use in other projects	Proponent & Contractor	One-off	0

8.2: Operational Phase EMP

The necessary objectives, activities, mitigation measures, and allocation of costs and responsibilities pertaining to prevention, minimization and monitoring of significant negative impacts and maximization of positive impacts associated with the operational phase of the proposed residential development are outlined in the table below:

Objective/Plan	**Recommended Mitigation Measures**	**Responsible Party**	**Monitoring Mechanism**	**Cost (Kshs)**
Solid waste Generation	Provide solid waste handling facilities such as waste bins across the complex and ensure that they are often emptied to enhance maximum cleanliness.	Proponent	One- off	150,000
	Ensure that solid waste generated at the residential development, is regularly disposed of appropriately at authorized dumping sites	Proponent	Continuous	201,000
	Ensure that the occupants of the complex manage their waste efficiently through recycling, reuse and proper disposal procedures	Proponent	Continuous	30,000
	Donate redundant but serviceable equipment to charities and institutions	Proponent	Continuous	-
Sewage release into environment	Provide adequate and safe means of handling sewage generated at the complex.	Proponent		
	Conduct regular inspections for sewage pipe blockages or damages and fix appropriately	Proponent	Continuous	100,000

	Ensure regular monitoring of the sewage discharged from the project to ensure that the stipulated sewage/effluent discharge rules and standards are not violated	Proponent	Continuous	380,000
Energy Consumption	Switch off electrical equipment, appliances and lights when not in use	Proponent	Continuous	-
	Install occupation sensing lighting at various locations such as storage areas which are not in use all the time	Proponent	Continuous	200,000
	Install energy saving fluorescent tubes at all lighting points within the complex instead of bulbs which consume higher electric energy	Proponent	One off	
	Monitor energy use during the operation of the project and set targets for efficient energy use	Proponent	Continuous	-
	Sensitize workers at the complex on efficient energy practices	Proponent	One off	70,000
Water Exploitation	Promptly detect and repair of water pipe and tank leaks	Proponent	Continuous	90,000
	Residents to conserve water e.g. by avoiding unnecessary toilet flushing.	Proponent	Continuous	-

	Ensure taps are not running when not in use	Proponent	Continuous	-
	Install water conserving taps that turn-off automatically when water is not being used	Proponent	One-off	160,000
	Install a discharge meter at water outlets to determine and monitor total water usage	Proponent	Continuous	100,000
Health and safety risks	Implement all necessary measures to ensure health and safety of workers and the general public during operation of the complex as stipulated in Factories and Other Places of Work Act Cap 514	Proponent	One off	250,000
Safety and security of the premises and surrounding areas	Ensure the general safety and security at all times by providing day and night security guards and adequate lighting within and around the premises during night hours. The proponent will install security lighting powered by solar energy.	Proponent	Continuous	

8.3: Decommissioning Phase EMP

The necessary objectives, activities, mitigation measures, and allocation of costs and responsibilities pertaining to prevention, minimization and monitoring of significant negative impacts and maximization of positive impacts associated with the decommissioning phase of the proposed residential development project are outlined below.

Objective/Plan	**Recommended Mitigation Measures**	**Responsible Party**	**Monitoring Mechanism**	**Cost (Kshs)**
Air pollution(dust, smoke, fuel emissions)	Control of demolition vehicle speeds; Prohibition of idling of vehicles; Water is to be sprayed on building undergoing demolition during decommissioning to reduce dust emission; Regular maintenance of vehicles and equipment; Provision of dust masks for use in dusty conditions. Use of serviceable vehicles and machinery to avoid	Contractor	One- off	150,000

	excessive smoke emission These is in line with: •EnvironmentalManagement and Coordination Act No. 8 of 2015 • Occupational Safety and Health Act (OSHA) 2007			
Noise Pollution	Noise reduction/ hearing protection devices when working with noisy equipment; Use of serviceable equipment with low noise level; Instruction to truck/machinery operators to avoid raving engines; Use of noise protection (ear	Contractor	One - off	50,000

	muff) during demolition;			
Potential injury to workers	Use of appropriate head, hand and feet protection (PPE) during demolition of structures Adopting ergonomic work flow designs that fit physical tasks to employees and not vice versa while maintaining a balance with productivity;	Contractor	One- off	0
Working at heights	Use construction site barrier tape to isolate the site to guard site visitors from accidents and injuries; Implement a fall protection program that includes training in climbing techniques and use of fall	Contractor	One- off	100,000

	protection measures, Provide Harnesses; Use of helmets and other protective gear to mitigate against injury, Provide first aid facilities at the site			
Site rehabilitation and restoration	All buildings, machinery, equipment, structures and partitions that will not be used for other purposes must be removed and recycled/reused as far as possible All foundations must be removed and recycled, reused or disposed of at a licensed disposal site Where recycling/reuse of	Contractor	One -off	500,000

	the machinery, equipment, implements, structures, partitions and other demolition waste is not possible, the materials should be taken to a licensed waste disposal site Donate reusable demolition waste to charitable organizations, individuals and institutions Repair and restore project area site Evaluate site contamination Plant trees and other appropriate vegetation			

CHAPTER 9: ANALYSIS OF PROJECT ALTERNATIVES

9.1 Introduction

This section analyses the project alternatives in terms of site, technology scale and waste management options.

9.2 Relocation Option

Relocation option to a different site might be an option available for the proposed project. However, presently the developer does not have an alternative land for the proposed project. Locating an alternative piece of land together with the registration process is a process that can take a long time due to bureaucratic processes involved. Subsequent development of designs and approvals is a process that will delay the project further. Project design and planning before the stage of implementation will be very costly to the developer. Assuming the project will be given a positive response by the relevant authorities such as NEMA and County Government this project would have been delayed further hence a state of no project as all. Based on this scenario, relocation cannot be a good option for the project site.

9.2 Zero or No Project Alternative

The No Project option in respect to the proposed project implies that the status quo is maintained. This option is the most suitable alternative from an extreme environmental perspective as it ensures non-interference with the existing conditions. This option will however, involve several losses both to the developer and the community as a whole. The No Project Option is the least preferred from the socio-economic and partly environmental perspective due to the following factors:

- The economic status of the Kenyans and the local people would remain unchanged
- Stagnated industrialization process
- No employment opportunities will be created for thousands of kenyans
- Sustained and increased urban poverty and crime in Kenya
- Discouragement for investors to produce this level of modern residential development
- Development of associated infrastructural facilities such as roads will not be undertaken.

From the analysis above, it becomes apparent that the No Project alternative is no alternative to the local people, Kenyans and the government of Kenya.

9.3 Analysis of Alternative Construction Materials and Technology

The proposed project will be constructed using modern, locally and internationally accepted materials to achieve public health, safety, security and environmental aesthetic requirements. Equipment that saves energy and water will be given first priority without compromising on cost or availability factors. The concrete pillars and walls will be made using locally sourced material like stones, cement, sand, steel metal bars and fittings that meet the Kenya Bureau of Standards requirements. The alternative technologies available include the conventional brick and mortar style, prefabricated concrete panels, or even temporarily structures. The scale and extent of the project is by design, the plot size and funds available. The various technologies available include, concrete frame construction, timber construction, prefabricated space frame construction, steel frame and aluminum frame. The technology to be adopted will be the most economical and one sensitive to the environment.

Timber use will be however minimized to prevent further destruction of vegetation. The exotic species would be preferred to indigenous species in the construction where need will arise.

9.4 Domestic wastewater management alternatives

Five locally available technologies are discussed below: -

9.4.1 Alternative one: Waste water treatment plant

This involves the construction of a plant that will enable the recycling of the wastewater from the project activities to reusable standards and utilized within the site in activities such as irrigating the flower gardens and flashing of the toilets. Although a water treatment is expensive to construct and maintain, it remains the most reliable, efficient and cost-effective option in the long term. Additionally, land is limited for the construction of a waste treatment plant.

9.4.2 Alternative two: Use of stabilization ponds/lagoons

This refers to the use of a series of ponds/lagoons that allow several biological processes to take place, before the water is reused. The lagoons can be used for aquaculture purposes and

as well as for irrigation. Although they are less costly, they occupy a lot of space. Due to decomposition taking place in the lagoons, they remain a nuisance to the public because of foul smell from the lagoons/ponds. The scarcity of space at the site cannot allow for this option.

9.4.3 Alternative three: Use of Constructed/Artificial wetland

This is one of the powerful tools/methods used in raising the quality of life and health standards of local communities in developing countries. Constructed wetland plants act as filters for toxins. The advantages of the system are the simple technology, low capital and maintenance costs required. However, they require space and a longer time to function. Long-term studies on plant species on the site will also be required to avoid weed biological behavioural problems. Therefore, this alternative too is not the best alternative for this kind of project

9.4.4 Alternative four: Use of septic tanks

This involves the construction of underground concrete-made tanks to store the sludge with soak pits. It is less expensive to construct and regularly empty into large discharge points like the large-scale project of which the project shall be falling in.

9.4.5 Alternative Five: Connection to the existing sewer system

Connection to the available large main sewer line will solve the wastewater management issue at a very minimal cost and in an environmental efficient manner. Conclusively, the recommended course of action for this site would be connection to the existing county sewer to help in the management of all the waste water generated on site as this will adequately protect the environment from possible pollution. The proponent has obtained approval to discharge its waste water into the existing improved Mombasa road sewer line and Redcross sewer lines which will in turn discharge into the main sewer line.

9.5 Solid waste management alternatives

Substantial amounts of solid waste are expected from the operational phase of the facility due to the big size of the project. This explains why an integrated solid waste management system

is recommendable. The proponent will first give priority to waste reduction at Source of the materials. This option will demand a solid waste management awareness programme by the management and the workers as well. Recycling, Reuse and Composting of the waste will be the second option. This will call for a source separation programme to be put in place.

CHAPTER 10: CONCLUSION AND RECOMMENDATIONS

The proposed residential development poses numerous positive impacts such as creation of employment, quality housing, improved infrastructure, and increase in revenue among others as outlined in this report. The negative environmental impacts that will result from establishment of the project include: increased pressure on infrastructure; air pollution; water pollution and generation of waste among others which however can be mitigated.

The proponent is committed to implementing the outlined measures in this report to mitigate against the negative environmental, safety, health and social impacts associated with the Development cycle of the proposed housing project. It is recommended that in addition to this commitment, the proponent shall focus on implementing the measures outlined in the EMP as well as adhering to all relevant national and international environmental, health and safety standards, policies and regulations that govern establishment and operation of such projects. It is also recommended that the positive impacts that emanate from such activities shall be maximized as much as possible. The outlined measures will effectively ensure the best possible environmental compliance and performance standards.

It is thus our recommendation that the project be allowed to go ahead with the implementation provided the outlined mitigation measures are adhered to. Major concerns should nevertheless be focused towards minimizing the occurrence of impacts that would degrade the general environment. This will however be overcome through close follow-up and implementation of the recommended Environmental Management and Monitoring Plans (EMPs).

Recommendations for the prevention and mitigation of adverse impacts are as follows:

- The proponent should therefore follow the guidelines as set by the relevant departments to safeguard and envisage environmental management principles during construction and operation/occupation phases of the proposed project.
- It is important that warning/ informative sign (bill boards) be erected at the site. These should indicate the operation hours and when works are likely to be started and completed. The signs should be positioned in a way to be easily viewed by the public and mostly motorists.

 All solid waste materials and debris resulting from construction activities should be disposed off at approved dumpsites.

 All construction materials e.g. pipes, pipe fittings, sand just to mention a few should be sourced/procured from bonafide / legalized dealers.

 During construction all loose soils should be compacted to prevent any erosion. Other appropriate soil erosion control measures can be adapted. Any stockpiles of earth should be enclosed, covered or sprinkled with water during dry or windy conditions to minimize generation of dust particles into the air.

 Once earthworks have been done, restoration of the worked areas should be carried out immediately by backfilling, landscaping/ leveling and planting of suitable tree species.

 Proper and regular maintenance of construction machinery and equipment will reduce emission of hazardous fumes and noise resulting from friction of metal bodies.

CHAPTER 11: PROJECT COST

The total project cost is approximately **Kshs.11,267,985,396.76**

REFERENCES

Environmental Management and Coordination (Noise and Excessive Vibration Pollution) (Control) Regulations, 2009, *government printer, Nairobi*

Kenya gazette supplement Acts 2000, Environmental Management and Coordination Act Number 8 of 1999. Government printer, Nairobi

Kenya gazette supplement Acts Building Code 2000, Government Printers, Nairobi Kenya gazette supplement Acts Penal Code Act (Cap.63) Government Printers, Nairobi

Kenya gazette supplement Acts Physical Planning Act, 1999, Government Printers, Nairobi Kenya gazette supplement Acts Public Health Act (Cap. 242) government printer, Nairobi

Kenya gazette supplement Acts Water Act, 2002, Government Printers, Nairobi

Kenya gazette supplement. Integrated Environmental Impact Assessment Regulations, 2018, Government Printers, Nairobi

Kenya gazette supplement number 57, Environmental Management and Coordination (Controlled Substances) Regulations, 2007, Government printer, Nairobi

Kenya gazette supplement number 68, Environmental Management and Coordination (Water Quality) Regulations, 2006, Government printer, Nairobi

Kenya gazette supplement number 69, Environmental Management and Coordination (Waste management) Regulations, 2006, Government printer, Nairobi

Noise Prevention and Control Rules 2005, Legal Notice no. 24, Government Printers, Nairobi Pollution prevention and abatement handbook – Part III, (September, 2001)

The Occupational Safety and Health Act, 2007, Government Printers, Nairobi

APPENDICES

1) TOR approval letter
2) Lease agreement
3) Nema practicing license
4) Questionnaires
5) Minutes and attendance lists
6) Traffic survey report
7) Hydrological survey report
8) Survey plan
9) KENHA approval letter
10) Change of use/ PPA2
11) Certificate of incorporation
12) PIN and VAT certificate
13) Architectural drawings
14) KCAA letter

FORM 7

(r.15(2))

nema
mazingira yetu | uhai wetu | wajibu wetu

NATIONAL ENVIRONMENT MANAGEMENT AUTHORITY(NEMA)

THE ENVIRONMENTAL MANAGEMENT AND CO-ORDINATION ACT

ENVIRONMENTAL IMPACT ASSESSMENT/AUDIT (EIA/EA) PRACTICING LICENSE

License No : NEMA/EIA/ERPL/14680

Application Reference No: NEMA/EIA/EL/18988

M/S **IRENE CHEPTOO KEINO**
(individual or firm) of address

P.O. Box 45897-00100, NAIROBI

is licensed to practice in the

capacity of a (Lead Expert/Associate Expert/Firm of Experts) **Lead Expert**

registration number **0447**

in accordance with the provision of the Environmental Management and Coordination Act Cap 387.

Issued Date: **4/8/2021**

Expiry Date: **12/31/2021**

Signature:....

(Seal)
Director General
The National Environment Management Authority

P.T.O.

ISO 9001: 2015 Certified

nema

NEMA/TOR/5/2 1186 Date: 24/11/2015.

Local Authority Provident Fund.

P.O Box 79592-00200

NAIROBI.

RE: ACKNOWLEDGEMENT AND APPROVAL OF TERMS OF REFERENCE (TOR) FOR ENVIROMENTAL IMPACT ASSESSMENT

We acknowledge the receipt of TOR for the above subject.

Pursuant to the Environmental Management and Coordination Act CAP 387, the second schedule and the Environmental (Impact Assessment and Audit) Regulations 31 and 25, your terms of reference for the Environmental Impact Assessment (EIA) for the proposed Residential Development On Plot L.R. No. Nairobi Blocks 9x/106/107/108 At Bellevue, Nairobi County. has been approved.

You shall submit ten (10) copies and one electronic copy of your report prepared by a registered expert to the Authority

MARRIAN KIOKO
EIA SECTION HEAD

Invoice Number: INV-CU-AAD425

PRN: PPA-CU-AAD425

FORM P.P.A. 2

THE PHYSICAL PLANNING ACT (NO. 6 OF 1996)

NOTIFICATION OF APPROVAL OF DEVELOPMENT PERMISSION

To Irene Keino,

SilverPool Office Suites, Jabavu lane, Box 45897-00100 Nairobi.

Your application, **PPA-CU-AAD425** , submitted on 11 August 2020

Seeking permission for **Change of use (New)** from **Residential** to **Mixed use Residential Apartments, Kindergartenand Shops.** on L.R/Plot no **NAIROBI BLOCK 98/106, 98/107& 98/108**

Situated in **BELLEVUE SOUTH C** ,Road **POPO ROAD**

Was approved by the County Planning Committee held on **2021-07-01** .

Under **Item 4** Subject to the following/appended conditions:

i.) Submission of satisfactory building plans within three years otherwise the approval lapses.

ii) Payment of revised ground rent as will be determined by the Director of Valuation,Ministry of Lands and Physical Planning

iii) Payment of revised rates as will be determined by the Director Valuation & Property Management - Nairobi City County

iv) Subject to the plot not constituting part of the disputed public/private utility land/allocations

v) Subject to compliance with Sections 36, 41 and 52 of the Physical Planning Act

vi) Subject to compliance with the approved zoning policy

vii) Subject to provision of appropriate setback(s) as per the rezoning plan

viii) Subject to provision of adequate and functional on site parking to the satisfaction of Director of Roads, Public Works & Transport

xv) Subject to the proposed development maintaining the requisite of 3m, 6m, 9m building line as per the statutes

xxii) Subject to the submission and implementation of traffic management plan to the satisfaction of the Director of Roads - NCC

xxvi) Subject to the development maintaining the residential character and densities of the area

xxx.) Direct access to Mombasa road shall not be permitted.

xxxi) Subject to provision of an outline design of the proposed development and functional traffic management plan acceptable to Nairobi City County

xxxviii) Subject to functional and physical separation of the land use and parking space

Date of Issue 09 September 2021	Signed
	Name
	For: Chief Officer - Urban Planning

NAIROBI METROPOLITAN SERVICES
CITY PLANNING DEPARTMENT
Development Application - Policy
Plan Approval
On.....
Signature.....
Date.....
Director,
POLICY IMPLEMENTATION SECTION