ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT STUDY REPORT FOR PROPOSED MULTI-STOREY HOUSING DEVELOPMENT PROJECT ON PLOT NO KISUMU/DAGO/5400

PROPONENT
WEMA MAGHARIBI LIMITED
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FIRM OF EXPERTS:
Hope Urban Environmental Research and Investments Limited
NEMA registration NO. 7718
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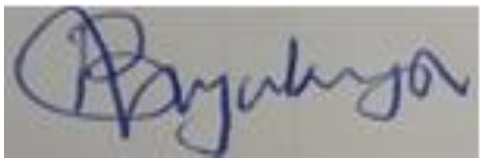
KISUMU

SUBMITTED TO NEMA: JUNE 2023

This Report has been prepared in accordance with the requirements of the Environmental (Impact Assessments and Audit) Regulations, 2003, pursuant to the Environmental Management and Coordination Act, (EMCA 387)

EIA FIRM OF EXPERTS:

I**, BELINDA NYAKINYA** on Behalf of, Hope Urban Environmental and Research Investment Limited, NEMA Reg No: 7718, do hereby, submit the following Environmental Impact Assessment Full Study Report for the proposed gated community apartments development site on plot Number; Kisumu/DAGO/5400, North Kisumu ward, Kisumu west sub-county, Kisumu county, has been prepared by Hope Urban Environmental and Research Investment Limited, a NEMA registered Firm of Experts. The guidelines contained in Environmental Management and Coordination (Impact Assessment and Audit) Regulations 2003; and best practice guidelines on environmental management in Kenya have been observed. We, the undersigned, certify that the particulars given in this report are correct to the best of our knowledge.



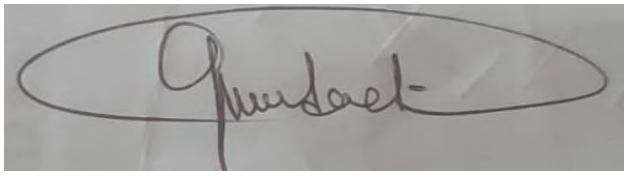
26th JUNE 2023

Signed……Date; ……

Project Proponent

PROPONENT;

I, GEORGE MUDACHI, on behalf of the proponent WEMA MAGHARIBI LIMITED, hereby certify that the information provided hereby is to the best of our knowledge true and correct.



26TH JUNE 2023

Signed; ……Date; ……

Acronyms

ºC **:** Degrees Celsius
IEA **:** Initial Environmental Audit
EA **:** Environmental Audit
EIA **:** Environmental Impact Assessment
ESIA : Environmental and Social Impact Assessment
EMCA **:** Environmental Management Coordination Act
EMP **:** Environmental Management Plan
KNBS : Kenya National Bureau of Statistics
Km² : Square Kilometers
KWS : Kenya Wildlife Services
KP **:** Kenya Power
L.R : Land Registration
MEAs : Multilateral Environment Agreements
mm :millimeters
m.a.s.l : meters above sea level
M² : Square Meter
NEAP : National Environment Action Plan
NEC : National Environment Council
NGOs : Non-Governmental Organizations
KIWASCO : KIWASCO Water and Sewerage Company
NEMA **:** National Environment Management Authority
PPE **:** Personal Protective Equipment
PAPs : Project Affected Persons
Spp : Species
SWM : Solid Waste Management
SHE **:** Safety Health and Environment
TOR : Terms of Reference
WRMA : Water Resources Management Authority

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ACKNOWLEDGEMENTS

We, the consultants under Hope Urban Environmental and Research Investment Limited, would like to register our sincere appreciations to all those who made the entire Environmental and Social Impact Assessment (EIA) study a success. In this regard we would extend our thanks to the Management of **WEMA MAGHARIBI LIMITED** for appointing us to develop this detailed Report for the proposed Multi-Storey Housing Development Project, for the support they gave us during the study period.

We would like to appreciate the contribution of all the stakeholders especially the area Chief and County Government of Kisumu for mobilization of the stakeholders and residents from the project area that we interacted with in the course of the ESIA study for the proposed Project.

EXECUTIVE SUMMARY

Project Background

The proponent **WEMA MAGHARIBI LIMITED** has commissioned a Firm of Experts; **HOPE URBAN ENVIRONMENT AND RESEARCH INVESTMENTS LIMITED** to conduct an Environmental and Social Impact Assessment (ESIA) Study for the **PROPOSED GATED COMMUNITY APARTMENTS DEVELOPMENT ON PLOT PARCEL NUMBER KISUMU/DAGO/5400**, comprising of 120 family units of assorted sizes.

The project will be fully funded by **WEMA MAGHARIBI LIMITED** at an estimated cost of **KSH 500,000,000** and is expected to take 48 months**.** The project will involve construction of Residential Apartments (Mix of 1, 2 and 3 Bedroom Apartments), 1 No. club house, 1 playground, swimming pool, Landscaped Lawns, Recreation Areas, and Driveways and Parking spaces.

The Site currently has 8 old abandoned bungalows that will be demolished to pave way for the modern affordable houses and make good use of the available land. The proponent has prepared a decommissioning plan and submitted for approval at the NEMA, Kisumu County office for approval. The Proponent also prepared Terms of Reference for the Environmental and Social Impact Assessment study report, submitted to NEMA Headquarters and was approved under reference number NEMA/TOR/5/2/586. (Attached in Annex)

The plot has some vegetation on it, mainly consisting of *Gravelia robusta, Jacaranda mimosifolia, Cupressus lusitanica, Psidium guajava, Croton megalocarpus, Pteridium esculentum,* and *Azadirachta indica, palm trees.* Grasses and flowers were also found to be growing in between the existing structures. The current site structures shall be decommissioned and vegetation cleared to pave way for the development

The main activities to be carried out in the development of the proposed project includes: decommissioning of the existing structures on site, excavation/earthwork, actual construction of the housing units and the other recreational structures, finishing work (painting, fittings, electrical, plumbing, security installations), perimeter wall construction and landscaping.

ESIA Objective

Hope Urban Environmental and Research Investment Limited, a NEMA registered Environmental Consultancy Firm was appointed by the Proponent to conduct an Environmental and Social Impact Assessment for the proposed project in line with section 58 of the Environmental Management and Coordination (Amendment) 2015 Act, part 2

section 7 of the Environmental (Impact Assessment and Audit) Regulations, 2003, legal notice 101, and other relevant regulations. The overall aim of this study is to assess environmental and social impacts that are likely to ensue from the implementation of the proposed Multi-Storey Housing Development Project and identify mitigation measures for the anticipated negative impacts.

The Kenyan Government policy on such projects and/or activities requires that an Environmental and Social Impact Assessment be carried out at the planning stages of the proposed undertaking to ensure that significant impacts on the environment are taken into consideration during the design, construction, operation and decommissioning of such projects, programmes and/or activities. Therefore, in compliance with the law and to avoid unnecessary conflicts that may retard development in the country, the proponent undertook this Environmental and Social Impact Assessment and incorporated environmental and social concerns as required.

The Report of the same must be submitted to National Environment Management Authority (NEMA) for approval and issuance of relevant certificates. This was necessary as many forms of developmental activities cause damage to the environment and hence the greatest challenge today is to maintain sustainable development without interfering with the environment.

Specific assessment objectives pinned to these activities were to:

- Identify and analyze the impacts of the proposed project on the natural environment
- Evaluate impacts of the project on the socio-cultural environment
- Assess impacts on infrastructure and social amenities (sewerage, water supply, road network, electricity)
- Assess and predict any effects on any sensitive ecosystems
- Identify and predict impacts on and changes in development policy with respect to the area
- Formulate an Environmental Management Plan (EMP)

Study approach

To achieve the above objectives the consultant collected baseline data firstly through desktop studies on a: national level; regional, and then finally scoping down to the assessment area and its immediate environs. These were combined with a public participation, a checklist and matrix to identify and analyse impacts in order to fully prioritize them and develop efficient and appropriate mitigation measures. The key methods that were used to gather information in the ESIA study included desktop studies, site survey and stakeholders' consultations through administration of questionnaires, analysis of potential environmental impacts and development of environmental management plans. A stakeholders meeting was

held at the site on 23rd June 2023 to discuss the proposed Multi-Storey Housing Development Project. The minutes of the meeting are attached in Annexes of this study report.

Output and Terms of Reference

The output of this work is an Environmental and Social Impact Assessment Study report for the purposes of applying for an EIA license and ensuring sustainable development is attained. The consultant on behalf of the proponent conducted the study by incorporating but not limited to the following terms of reference:

- Description of the location of the proposed development project
- A concise description of the national environmental legislative and regulatory framework, baseline information, and any other relevant information related to the project.
- Description of technology, procedures, materials and processes to be used, in the implementation of the project.
- A description of the potentially affected environment.
- Identification of 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.
- Provide alternative technologies and processes available and reasons for preferring the chosen technology and processes.
- Analysis of alternatives including project site, design and technologies.
- To prepare environmental management and monitoring plan proposing the measures for eliminating, minimizing or mitigating adverse impacts on the environment, including the cost, time frame and responsibility to implement the measures.
- 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, clients and for the management in case of emergencies.

Projects impacts

Anticipated Positive impacts

The proposed project will also have many positive impacts due its objectives, scope, details, the site and other baseline conditions. These can be summarized by the following which are the most significant positive impacts:

- Creation of employment both direct and indirect throughout all of its phases.
- Development of the area by making more economic use of land
- Economic benefits that include the capital investment that will be injected into the economy.
- Stimulation of development through revenue and taxes that will be levied by the government
- Creation of market for goods and services that will be utilized in the entire project such as raw materials, plumbing services, electrical fittings, transport and landscaping
- Creation of business opportunities for various companies and individuals which is in line with the vision 2030
- Improvement of areas general security
- The project will play an important role in increasing the number and quality of accommodation in the area, country and regionally.

Anticipated Negative Impacts

From the project assessment, the anticipated adverse negative impacts and recommended mitigation measures are summarised as follows:

Table 1: Summary of project negative impacts and mitigations

Anticipated negative impact	***Recommended mitigation measures***
Increased demand of raw materials	• Construction materials will be sourced from licensed quarries and local suppliers who use environmentally friendly processes in their operations; • Accurate budgeting and estimation of actual construction material requirements to ensure that the least amount of material necessary is ordered and to ensure that the amount of construction materials left on site after construction is kept minimal; • Ensuring that damage or loss of materials at the construction site is kept minimal through proper handling;
Generation of construction and domestic wastes	• Use of durable, long-lasting materials that will not need to be replaced as often, thereby reducing the amount of construction waste generated over time; • Construction waste will be recycled or reused to ensure that materials that would otherwise be disposed of as waste are diverted for productive uses; • Provide facilities for proper handling and storage of construction materials to reduce the amount of waste caused by damage or exposure to the elements;

Anticipated negative impact	*Recommended mitigation measures*
	• Consider the use of recycled or refurbished construction materials where feasible; • On occupation, the developer shall provide adequate domestic waste receptacles on site and ensure safe transportation to designated disposal sites by licensed waste handlers; • Ensure effective drainage into the onsite sewer system • Regular maintenance checks on drainage system • Proper and constant maintenance of the building's plumbing system. Regularly checking for plumbing leaks and practising water conservation will help the system's operation. • The clients in the apartments should be notified of sanitation requirements in the tenancy contract. • Treatment of kitchen wastewater by means of suitably sized grease traps in all kitchens. The outlet of the grease traps should be free from oil & grease
Dust and air pollution	• Watering all active construction areas as and when necessary to lay dust; • A speed limit of 10km/hr shall apply to all construction vehicles on the site; • Rehabilitation of disturbed areas once completed; • Materials transport equipment will be cleaned on a regular basis; and • Planting appropriate shrubs and flowers to compensate for emissions.
Noise and vibrations	• Restriction of the work hours during the construction phase from 7 am to 6 pm Monday to Saturday; • All machinery used during construction shall be maintained in a sound mechanical condition; • Co-ordinate with relevant agencies regarding all construction activities in the project area; • Limit pick-up trucks and other small equipment to a minimum idling time and observe a common-sense approach to machine use, and encourage workers to shut them off whenever possible; • Once commissioned, enforcement of speed limits (10 km/hr) within the parking area shall be ensured.
Increased vehicular traffic along Kisumu Kakamega Road	• Undertake traffic impact studies/assessments and do a traffic management plan. • Construction vehicles to enter and leave the site through designated paths only; • Posting traffic warning signs on both approaches to the construction site to warn other road users of traffic risks;

Anticipated negative impact	*Recommended mitigation measures*
	• Strict adherence to speed limits within the proponent's premises of 10 km/hr; and • Clearly marking parking spaces, installation and maintenance of traffic guide signage.
Increased energy demand	• Sensitisation of staff to conserve non-renewable fossil energy by switching off machinery and equipment when they are not being used; • Proper planning of transportation of materials to ensure that fossil fuels (diesel, petrol) are not consumed in excessive amounts unnecessarily; • Monitoring energy use during construction/welding and operation and setting targets for reduction of energy use; and • Installation and use of energy efficient welding and lighting equipment during construction and operation respectively.
Occupational and public hazards and accidents	• Provision of appropriate Personal Protective Equipment (PPE) to construction workers; • Safety education and training for workers; • Barricading the construction area appropriately and posting public warnings; • Provision of appropriate onsite sanitary convenience for workers; • Establishing emergency procedures against hazards and ensuring the workers stay aware/educated on following them and commensurate to the magnitude and type of emergency, by conducting regular drills and involving the neighbours. • Adherence to the Occupational Health and Safety rules and regulations stipulated in the Occupational Safety and Health Act, 2007. • Creating safe and adequate fire and emergency assembly points and making sure they are well labeled. • Providing fire fighting equipment and in easily accessible areas as well as ensuring site personnel are well trained to use them as well as maintaining them regularly.
Increased Water demand	• Employing water conservation techniques and only using the required amounts of water to prevent wastage. • Implementing water conservation techniques such as having faucets with dead man tap openers.
Soil disturbance, erosion and road drainage blockade	• Levelling the disturbed site areas to reduce run-off velocity and increase infiltration of rain water into the soil;

Anticipated negative impact	*Recommended mitigation measures*
	• Construction vehicles will be restricted to designated paths to avoid soil compaction within the proposed Project site; • stockpiling materials shall not be done along the road; and • Maintain drainage of the nearby road.

Conclusion

The project will play an important role in increasing the number and quality of affordable accommodation in Kisumu and regionally. Constant monitoring of the said aspects (impacts and mitigation) through close follow-up and implementation of the recommended Environmental Management and Monitoring Plans will also ensure its longevity and avoid conflicts between the project, stakeholders and the environment. In relation to the proposed mitigation and environmental management and planning measures that will be incorporated during construction and operation phases; and the developments' impact to the proponent and the general society, the proposed project is considered highly beneficial. Major concerns should nevertheless be focused towards minimizing the occurrence of impacts that would degrade the general environment.

Considering these positive socio-economic and environmental benefits which will accrue as a result of the development, and the ESIA study having found no major impacts to arise from the development, it is our recommendation that the project be allowed to proceed on the understanding that the proponent will adhere to the mitigation measures recommended in the proposed Environmental Management and monitoring Plan (EMMP).

Below is the project data sheet:

Title of the project;	**Proposed Multi-Storey Housing Development Project .**
Project Proponent;	WEMA MAGHARIBI LIMITED
Firm of Experts;	Hope Urban Environmental Research and Investments Limited NEMA registration NO. 7718
Objective of the project;	To provide modern, affordable housing to Kenyan citizens in line with Bug Four Agenda.
Scope of the project;	**Design Description Salient Features** **a)** 1 Bedroom 7 Units; 2 Bedrooms - 65 Units; 3 Bedrooms 48 Units. Total 120 Units **b)** Modern contemporary gated community apartments design in context of site realities.

	TEAM OF EXPERTS	NEMA REG NO
1	Belinda Nyakinya	7319
2	John Sande	Sociologist

	c) Double facing contemporary apartments designed in split level configuration to respond to slopping site. **d)** Large glazed surfaces. Lots of natural light and natural cross ventilation. **e)** Modular grid for structural efficiency and incremental mixing and addition of units. **Other amenities** ➢ Parking 2 per unit + 6 visitor parking per block. ➢ Solar panels at roof top terrace. ➢ Cloths lines at roof top terrace. ➢ Lift in each block ➢ Clubhouse with Gym, Kitchen, functions areas. Swimming pool at the end of the site. ➢ Intercom. CCTV Alarm, Electric fence boundary wall, Access control to apartment doors. ➢ Green landscaped gardens and open spaces. ➢ Central garbage collection point at gate House. ➢ Bio digester sewer treatment and recycling. ➢ Borehole water (We need a hydrological survey). ➢ Rain water collection. ➢ Low maintenance finishes. ➢ Playgrounds b.
Project location ;	• **NORTH KISUMU WARD, KISUMU WEST SUB-COUNTY,KISUMUCOUNTY** • **PLOT NO; KISUMU/DAGO/5400** • GPS; Latitude: -0.044839, Longitude; 34.761442
Designated Land use;	Residential
Project Cost;	KSH 500,000,000

1. INTRODUCTION

1.1 Introduction and background

The proponent **WEMA MAGHARIBI LIMITED** has commissioned a Firm of Experts **HOPE URBAN ENVIRONMENT AND RESEARCH INVESTMENTS LIMITED** to conduct an Environmental and Social Impact Assessment (ESIA) Study for the **PROPOSED GATED COMMUNTY APARTMENTS DEVELOPMENT ON PLOT PARCEL NUMBER KISUMU/DAGO/5400**, the project comprises of the following;

Design Description Salient Features

- **f)** 1 Bedroom 7 Units; 2 Bedrooms - 65 Units; 3 Bedrooms 48 Units. Total 120 Units
- **g)** Modern contemporary gated community apartments design in context of site realities.
- **h)** Double facing contemporary apartments designed in split level configuration to respond to slopping site.
- **i)** Large glazed surfaces. Lots of natural light and natural cross ventilation.
- **j)** Modular grid for structural efficiency and incremental mixing and addition of units.

Other amenities

- Parking 2 per unit + 6 visitor parking per block.
- Solar panels at roof top terrace.
- Cloths lines at roof top terrace.
- Lift in each block
- Clubhouse with Gym, Kitchen, functions areas. Swimming pool at the end of the site.
- Intercom. CCTV Alarm, Electric fence boundary wall, Access control to apartment doors.
- Green landscaped gardens and open spaces.
- Central garbage collection point at gate House.
- Bio digester sewer treatment and recycling.
- Borehole water (We need a hydrological survey).
- Rain water collection.
- Low maintenance finishes.
- Playgrounds

Below is a tabulated summary:

DEVELOPMENT SCHEME

BLOCKS	ONE BEDRM	TWO BEDRM	THREE BEDRM	TOTAL	AREA PER SQM BLOCK
BLOCK-01	2 UNITS	10 UNITS	8 UNITS	20 UNITS	2,148 m²
BLOCK-02		10 UNITS	10 UNITS	20 UNITS	2,250 m²
BLOCK-03		10 UNITS	10 UNITS	20 UNITS	2,250 m²
BLOCK-04		10 UNITS	10 UNITS	20 UNITS	2,250 m²
BLOCK-05	5 UNITS	10 UNITS	5 UNITS	20 UNITS	1,995 m²
BLOCK-06		15 UNITS	5 UNITS	20 UNITS	1,755 m²
BLOCL-07 GATE HOUSE					27 m²
BLOCK-08 CLUB HOUSE					630 m²
BLOCK-09 MACHINE/ GENERATOR ROOM					30.7 m²
TOTAL	7 UNITS	65 UNITS	48 UNITS	120 UNITS	13,335 m²

This ESIA Project Report has been prepared to comply with section 58 of EMCA (2015 Amendment), Part 2 section 7 of the Environmental (Impact Assessment and Audit) Regulations, 2003, Legal notice 101, and other relevant regulations.

1.2 The proponent

WEMA MAGHARIBI LIMITED is a private owned company that focuses on development of housing projects for interested investors.

1.3 Objectives, Scope and Terms of Reference for the ESIA

1.3.1 Objectives

The overall objective of the ESIA is to carry out an assessment of constructing and operating a Multi-Storey Housing Development Project to determine whether or not the construction and operation and associated activities will have any adverse impacts on the environment, taking into account biophysical, social, cultural, legal and economic considerations.

The specific objectives of the ESIA are to:

- describe the nature of construction to be undertaken;
- verify compliance with environmental laws, policies and regulations as well as industry best practice and standards;
- review and collection of baseline environmental data in the study area;
- identify and analyze alternatives to the envisaged project;
- Identify, analyse and propose mitigation measures for positive and negative impacts and enhancement measures for positive impacts to be undertaken during and after the implementation of the project including; recommending cost effective measures to be used to mitigate against the anticipated negative impacts;
- liaison with affected and interested stakeholders in the area in order to seek their views on pertinent environmental and social issues related to the proposed project;
- prepare an Environmental and Social Management Plan (ESMP) report compliant with the Environmental Management and Co-ordination (Amendment) Act, 2015

The assessment was undertaken in full compliance with the Environmental Management and Co-ordination (Amendment) Act, 2015 and the Environmental (Impact Assessment and Audit) Regulations 2003.

1.3.2 Scope

The Kenya Government policy on all new development projects, programs or activities of such magnitude requires that an environmental impact assessment be carried out at the implementation stage of the proposed undertaking to ensure that significant impacts on the environment are taken into consideration during the construction, operation and decommissioning of the facility. The scope of this Environmental Impact Assessment therefore covers:

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

1.3.3 Terms of Reference (TOR) for the ESIA Process

The main objective of the assignment was to assist the proponent to prepare an Environmental and Social Impact Assessment (ESIA) Project report for the proposed project, to ensure that the proposed development takes into consideration appropriate measures to mitigate any adverse impacts to the environment. The study identified potential environmental and social impacts; and possible concerns that interested and/or affected

parties have with the development, as well as the associated prevention and mitigation measures for the negative impacts as stipulated in the Environmental Management and Monitoring Plan (EMMP).

Hope Urban Environmental and Research Investment Limited on behalf of the proponent conducted the study by incorporating but not limited to the following terms of reference:-

- To provide a description of the location of the proposed development project
- To provide a concise description of the national environmental legislative and regulatory framework, baseline information, and any other relevant information related to the project.
- To provide objectives of the proposed project.
- To provide a description of the potentially affected environment.
- To identify 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 and solid waste management system.
- To provide alternative technologies and processes available and reasons for preferring the chosen technology and processes.
- To analyse of alternatives including project site, design and technologies.
- To prepare an Environmental Management/Monitoring Plan proposing the measures for eliminating, minimizing/mitigating adverse impacts on the environment, including the cost, timeframe and responsibility to implement the measures.
- To provide an action plan for the prevention and management of the foreseeable accidents and hazardous activities in the cause of carrying out development activities.
- To 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.
- Such other matter as NEMA may require.

1.4 Methodology

The general steps followed during the assessment were as follows:

1.4.1 Environmental Screening

This step was applied to determine whether an environmental and social impact assessment was required and what level of assessment was necessary. This was done in reference to requirements of the EMCA (Amendment 2015), and specifically the second schedule.

1.4.2 Environmental Scoping

The Scoping process helped narrow down onto the most critical issues requiring attention during the assessment. Environmental issues were categorized into physical, natural/ecological and social, economic and cultural aspects.

1.4.3 Desk Review

Deskwork provided a detailed description of the project with respect to spatial coverage, preliminary design layout, magnitude, implementation schedules and costs as well as human resources. Relevant documents were reviewed to obtain information on the baseline information in general but specifically at the project site. This documentary review provided further understanding the project design (site plan and architectural drawings), land use, local micro-environmental conditions, data on demographic trends, land use practices, development strategies and plans (local and national) as well as the policy and legal documents among others. Others included area maps, Development Plans of the Kisumu City, National Development and Economic Surveys, relevant legislations, regulations and guidelines and standards.

1.4.4 Field Survey

Physical evaluation of the project area was carried out with specific focus on landform trends, land use patterns, biodiversity, natural resources, hydrology and climatic variations. This was also an evaluation of the current environmental status with respect to physical, biological and socio-cultural perspectives. It was a systematic field inspection backed with available documentation and direct interviews. Field evaluation was planned to enable determination of the exact physical environmental features to be affected within the proximity of the project site. In addition to identifying the potential positive and negative impacts, field assessments contributed understanding the proposed works to be undertaken. Observable environmental data was recorded and potential positive and adverse impacts identified on a preliminary scale.

The field survey adopted various techniques of baseline data collection on the existing environmental conditions, namely:

- Field observations and recordings including noting of environmental features and photography of the project site and its vicinity.
- Use of checklists for determining potential environmental impacts of the proposed project.
- Consultations and public participation within the neighbourhood of the project site.

1.4.5 Public and Stakeholders Engagement

Stakeholder engagement was undertaken in the neighbourhood of the proposed project site to capture the views and concerns of interested and affected parties. The engagement process entailed face to face meetings/interviews where questionnaires were administered. A stakeholders' meeting was also held at the project site on 23rd June 2023, to discuss the project details and get the stakeholders views on the same, minutes and attendance list are attached at the Annexes of this report. The consultations were meant to give an indication of whether the Project is welcome, positive and negative impacts envisaged and the mitigation measures in place to eliminate risks.

1.4.6 Impact assessment and analysis

Assessment and analysis in the ESIA studies were based on multi-disciplinary approaches, and were structured to allow for a comprehensive assessment of the following components of the environment in relation to the proposed project:

- Physical component;
- Biological/ecological component;
- Sociological/cultural component; and
- Economic/operational component.

1.5 Climate Change Risk and Vulnerability Assessment for the proposed project as per requirement of Climate Change Act 2016.

Climate change risk and vulnerability assessments are vital to identify climate change hot spots which require urgent attention to act on remedies and to mainstream climate change into the development activities for sustainable development. The Proponent shall work with the relevant agencies for technical advice in order to ensure that climate change impacts are addressed and mitigation efforts provided for.

The proponent and relevant agencies shall educate the public on climate change since it is a crucial strategy in addressing climate change concerns and patterns. The proponent shall therefore implement the following strategy to address this issue:

i. Define of the problem, requiring identification of the specific goals of assessment, the sectors, systems and regions of interest, and time horizon and data needs of the study
ii. Selection of the methods, which depends on the availability of resources, models, data ranging from qualitative and descriptive to quantitative and prognostic;
iii. Testing the method, which involved model validation, sensitivity testing and uncertainty analysis to ensure the credibility of the tools applied in the assessment;
iv. Development of the scenario, requiring first the projection of conditions expected to exist over the period in the absence of climate change, and second the projection of conditions associated with possible future changes in climate;
v. Assessment of potential impacts, which involves estimating, for the sectors and regions of interest, the differences in environmental and socioeconomic conditions projected to occur with and without climate change;

vi. Assessment of autonomous adjustments, which implies the analysis of responses to climate change that generally occur in an automatic or unconscious (spontaneous) manner.
vii. Evaluation of adaptation strategies involving the analysis of different means of reducing damage costs through exogenous or planned adaptation, requiring deliberate policy decision.

1.5.1 Reporting and documentation

This Environmental Impact Assessment project report was then prepared by approved and registered (by NEMA) ESIA experts, who are familiar with the provisions of the Environmental Management and Coordination (Amendment) Act (EMCA), 2015 and other relevant regulations and laws of Kenya as indicated in the Legal framework. The contents were presented for submission to NEMA as required by law.

1.5.2 Submission of the Project Report

This report will then be submitted to National Environment Management Authority (NEMA), in copies of ten and a soft copy for review.

2. PROJECT DESCRIPTION

2.1 Introduction

This ESIA Project report is for an upscale project that will fully showcase the urban vitality and modern atmosphere of Kisumu. The project, shall be composed of multi-dwelling housing units comprising a total of 120 self-contained units. This ESIA Project report is based on information and consultations with the project proponent, the Architects, Quantity Surveyors, Engineers, and details contained in the Drawings of the proposed project and site plan. (attached at the Annex).

2.2 Project Location and Access

The project site is on PLOT NUMBER KISUMU/DAGO/5400, within dago Village, North Kisumu Ward, Kisumu West Constituency, Kisumu County.

GPS Location is as follows: Latitude; 0° 2'39.21"S Longitude ; 34°45'43.03"E

The property is situated within Ukweli Area approximately 12 kilometers due North of Kisumu, approximately 1.2 Kilometers due Southwest of Royal Swiss Hotel and approximately 700 meters due Northeast of Ukweli Market. The land size is 1.21HA. Approach is off Kisumu-Kakamega Road turning due left at Ukweli Market along a murram road leading to the property.

Below is a satellite image of the proposed site:

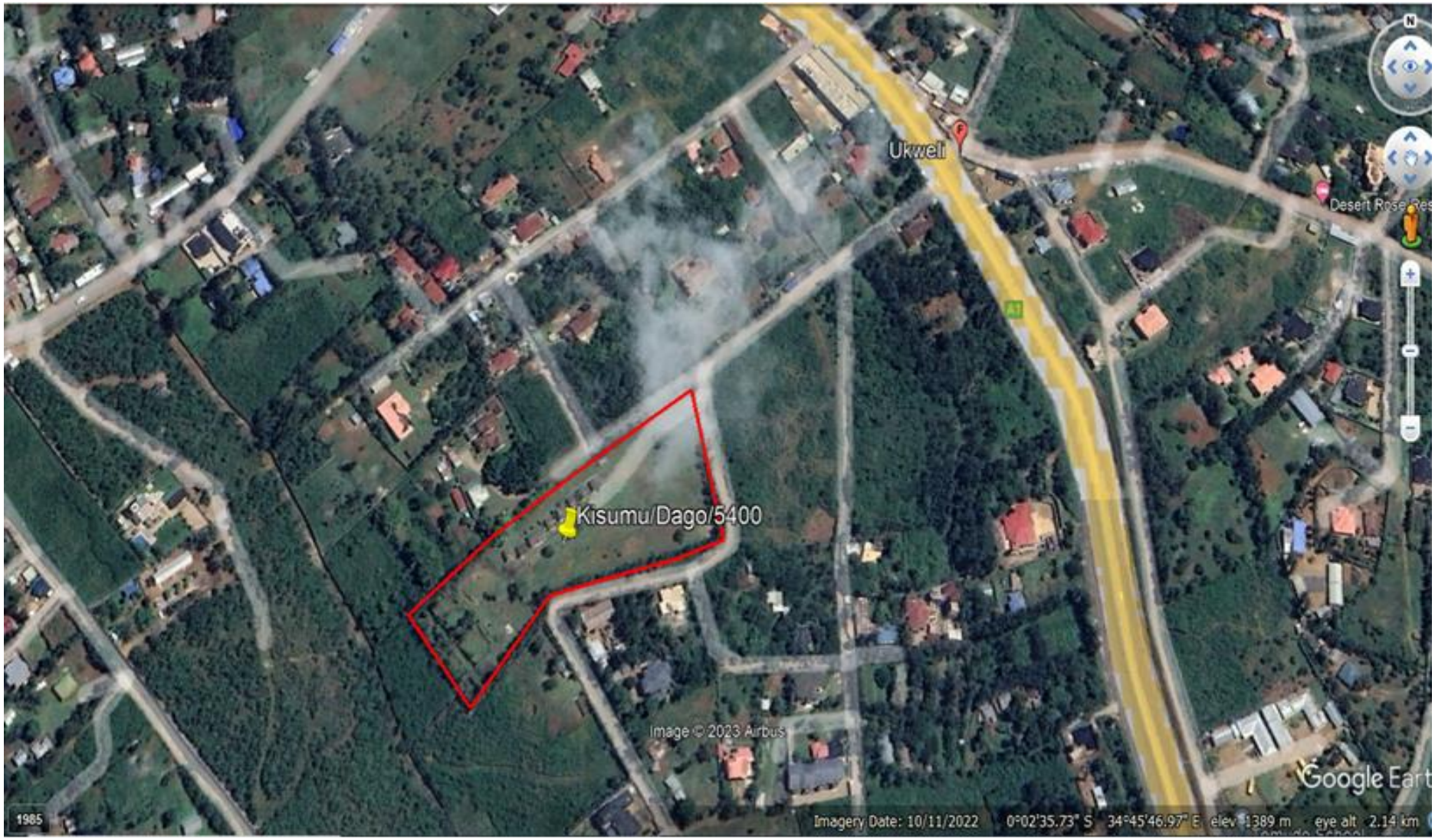
Ukwel
Kisumu/Dago/5400
Image © 2023 Airbus
Google Earth
1985
Imagery Date: 10/11/2022 0°02'35.73" S 34°45'46.97" E elev 1389 m eye alt 2.14 km

Figure 1: A satellite view of a section of Kisumu showing the proposed project site

2.3 The Goal of the Project

The goal of the project is to provide affordable housing units in line with the Government's Big 4 agenda to members of the public. The project is expected, at the minimum, to:

- Enhance affordable housing that is reachable to Kisumu residents.
- Generate revenue from the investment .
- Enhance development in Kisumu City in the immediate and surrounding areas through attracting investment from similar minded investors in government and the private sector.

2.4 Land ownership

The plot is owned and registered under the proponent**, WEMA MAGHARIBI LIMITED.** Copies of the Title deed is attached in the Annex of this study.

2.5 General Site Analysis

The Site currently has 8 old abandoned bungalows which the developer recommends for their demolition to pave way for the modern affordable houses and make good use of the available land.

From the initial analysis of the site by the project implementation team, the site was found to be good and of pleasant weather. The site is well inter-connected to roads infrastructure in the area, including the national electric grid (KPC), Kisumu Water and Sanitation Services (KIWASCO) is not currently connected to site but arrangements are underway for water connection. A borehole is also planned for and back up rain water storage is also in place, a solid waste collection point, and fire assembly point are also in place.

The site is currently planted with trees and flowers. About 30 individual trees were observed at the project site and will have to be cut down to allow for the construction of the new project. Tree species observed at the site and which will have to be removed are *Gravelia robusta, Jacaranda mimosifolia, Cupressus lusitanica, Psidium guajava, Croton megalocarpus, Pteridium esculentum*,palm trees and *Azadirachta indica*, The proponent will there after embark on an elaborate landscaping and tree planting program to ensure that the site has over 10%tree cover.

Plate 1: Some of the existing structures at the project site

2.6 The project site neighborhood

The property is situated within Ukweli Area approximately 12 kilometers due North of Kisumu, approximately 1.2 Kilometers due Southwest of Royal Swiss Hotel and approximately 700 meters due Northeast of Ukweli Market. The land size is 1.21HA. Approach is off Kisumu-Kakamega Road turning due left at Ukweli Market along a murram road leading to the property.

2.7 Designs of the Proposed Project Development

The proposed development will be a landmark Residence in Dago Village , Kisumu. The project was designed by registered architects firm, the drawings were then submitted to the County Government of Kisumu for approval and approval issued. (attached in the Annex)

Design Description Salient Features

- **k)** 1 Bedroom 7 Units; 2 Bedrooms - 65 Units; 3 Bedrooms 48 Units. Total 120 Units
- **l)** Modern contemporary gated community apartments design in context of site realities.
- **m)** Double facing contemporary apartments designed in split level configuration to respond to slopping site.
- **n)** Large glazed surfaces. Lots of natural light and natural cross ventilation.
- **o)** Modular grid for structural efficiency and incremental mixing and addition of units.

Other amenities

- Parking 2 per unit + 6 visitor parking per block.
- Solar panels at roof top terrace.
- Cloths lines at roof top terrace.
- Lift in each block

- Clubhouse with Gym, Kitchen, functions areas. Swimming pool at the end of the site.
- Intercom. CCTV Alarm, Electric fence boundary wall, Access control to apartment doors.
- Green landscaped gardens and open spaces.
- Central garbage collection point at gate House.
- Bio digester sewer treatment and recycling.
- Borehole water (We need a hydrological survey).
- Rain water collection.
- Low maintenance finishes.
- Playgrounds

Below is a tabulated summary:

DEVELOPMENT SCHEME

BLOCKS	ONE BEDRM	TWO BEDRM	THREE BEDRM	TOTAL	AREA PER SQM BLOCK
BLOCK-01	2 UNITS	10 UNITS	8 UNITS	20 UNITS	2,148 m²
BLOCK-02		10 UNITS	10 UNITS	20 UNITS	2,250 m²
BLOCK-03		10 UNITS	10 UNITS	20 UNITS	2,250 m²
BLOCK-04		10 UNITS	10 UNITS	20 UNITS	2,250 m²
BLOCK-05	5 UNITS	10 UNITS	5 UNITS	20 UNITS	1,995 m²
BLOCK-06		15 UNITS	5 UNITS	20 UNITS	1,755 m²
BLOCL-07 GATE HOUSE					27 m²
BLOCK-08 CLUB HOUSE					630 m²
BLOCK-09 MACHINE/ GENERATOR ROOM					30.7 m²
TOTAL	7 UNITS	65 UNITS	48 UNITS	120 UNITS	13,335 m²

Figure 2: Site Layout Plan

GENERAL SITE LAYOUT
SCALE 1:350

2.8 Utilities

In order for the project to achieve its objectives varying quantities of utilities will be necessary as ancillary and primary inputs. These utilities and facilities, whose sources are described in this sub-section, include: Water, Electricity, Sewerage, Storm Water Drainage, Transport and Traffic, and Fire Reticulation.

2.8.1 Water

The site is currently not connected to KIWASCO but KIWASCO services being close by an application will be made to KIWASCO to authorize connection. Currently the project will rely on borehole water that is planned for drilling onsite and has also considered rain water harvesting and storage as a supplementary source, this is due to the known high demand on water infrastructure in Kisumu and a sustainable approach to development.

2.8.2 Fire fighting Systems

All floors, including the parking areas, will be protected by sprinklers designed in accordance with NFP. All areas will be protected with the exception of electrical equipment rooms, lift shafts, small washrooms and cupboards. Hose reels will be provided for the use of occupants in event of fire. Various protection systems including oil leak detection, local water leak detection, major water leak protection, water supply protection and high temperature alarms will be installed for critical installations and where required. A fire lane and security checks have also been incorporated in the design to cater for the emergencies around the building.

Access for fire brigade vehicles will be provided around the site, with fire hydrants spaced to give adequate coverage to the perimeter of the building. The proponent will ensure that, the pressure within the main is adequate as the fire engines have an in-built booster pump.

2.8.3 Electricity

The site is already being served by power from Kenya Power electricity mains. It will be easy to connect the new development to power from the mains.

2.8.4 Back-up Power

The project design has provided separate back-up generator room for the development.

2.8.5 Sewerage

During construction, liquid effluents emanating from the project site will include site drainage and run-off. Such run-off may result from curing processes and drainage of areas filled with storm water. The major liquid effluent during the operation of the project will be sewerage. In addition, cleaning/washing operations will lead to generation of substantial amounts of liquid effluents.

The sewage produced in urban areas consists of waste water, industrial effluent, and storm water, which may enter sewers through faulty or damaged manholes. The inadequate capacity of existing treatment plants results in the disposal of untreated sewage. This given site is not supplied with sewer line; the proponent intend to construct a small waste water treatment plant and bio-digesters to manage waste water,(attached drawings in annex)

2.8.6 Solid waste disposal

During the construction phase of the project, significant amount of solid waste will be generated that may result in both ecological and visual impacts from improper disposal. Kisumu County Government has the responsibility of collecting and disposing of solid wastes within its area of jurisdiction. However, lack of resources, especially vehicles, and the general apathy of residents have led to uncollected waste piling up in several parts. Some private companies now operate, and privatizing waste collection has been considered as a possible remedial measure, but has not yet been adopted as official policy. The waste will be collected by licenced private contractors from a common collection point for self-incineration and compositing.

2.8.7 Safety and Security Systems

The building will be provided with a distributed type Fire Alarm System comprising multiple alarm collection panels, linked into the a high integrity data collection reporting to the building Fire Command Centre and repeater panels as agreed with the fire service. A fully automatic fire alarm system will be installed incorporating the functions of fire detection and alarm, voice alarm and emergency voice communication. A CCTV system will be installed with fixed and cameras monitoring the main access points and final escape exits and additional key internal areas, including the parking, lift lobbies/communication corridors on each floor. The system will incorporate monitoring and recording facilities.

2.8.8 Transport and Traffic Management

It is anticipated that the development will cause traffic snarl up along Kisumu Kakamega Highway. As a mitigation measure to avert traffic congestion, a traffic management planned will be developed and implemented by the proponent and contractor. All vehicles and people entering the site will need to pass security checks positioned strategically within the project. Emergency traffic has direct access to all buildings on the plots due to the internal road system as well as the brought walkways. Delivery traffic will use the internal street for a smooth delivery process without interference with the public interface of the project. Traffic has been put into consideration in the design with a clear separation of external and internal traffic and a minimum number of entry and exit points to the public street during and after construction phase.

2.8.9 Storm Water Drainage

Storm water drains are meant to drain water from sites to ensure that sites and houses do not get dump thereby compromising the health of tenants and clients especially during rainy seasons. The proposed site is located on a slightly sloppy land. However, the proposed development should have well designed drains within the facility to ensure its proper drainage.

The topography of the development site is a general fall from North of the site to the South of the site. Preliminary calculations have been carried out to determine the quantity of runoff from the site but will need to be checked with verified climatic details for the vicinity (as rainfall can be quite localised). For the preliminary calculations it has been assumed that the entire development site will be impermeable, whether through building development or hard landscape areas and roads. The extent of future soft landscaping will reduce the runoff volumes but it is anticipated that these areas will be small (10-15% maximum) of the development areas and therefore not significant in the initial calculations. The choice of storm water drains will include having open storm water drains which leads to a nearby stream.

2.9 Description of the Project's Construction Activities

2.9.1 Pre-construction Investigations

The implementation of the project's design phase started with preliminary surveys and cost-benefit analysis to establish the need for a modern Multi-Storey Housing Development Project. Investigations also covered identification of any existing legal and regulatory requirements that may affect the project at any stage of its implementation. Below are a few mandatory requirements at this phase :

- Design and drawing of specific architectural plans for specific projects and applying for the various permits and licenses including ;
    - The Kisumu County Development Control Section approvals of the specific projects.
    - Environmental and Social Impact Assessment and approvals by NEMA;
    - National Construction authority licence
- Getting into collaborative agreements with key stakeholders including project manager, architects, quantity surveyors, engineers/contractors (structural, mechanical, electrical), material suppliers, landscapers, and financiers.
- Getting into agreements with service providers e.g KPLC, KIWASCO

Establishment of Site Office Materials, storage and handling

- The contractors shall construct temporary site offices to run and manage all activities at different phases. This will also include connection of the utility services such as water, electricity which will be crucial for the construction activities.
- Non-hazardous materials: Materials to be stored in the site store shall include samples for review / testing by consultants and or inspectors.
- Hazardous materials: These shall include paints, oil, grease, vehicle fuel etc. The store for these materials shall have iron sheet walling and roof and a waterproof concrete floor to contain spills. Storage and handling of all hazardous chemicals shall be in accordance with manufacturer's instructions as outlined on the material safety data sheets.
- Bulk construction materials: These include: sand, ballast, stones, cement, quarry chips, steel and timber. It is recommended that the project contractors should plan for material to be delivered in small quantities in order to avoid any form of deposit, which will impede site activities, induce safety hazards and create a nuisance to the neighbourhood.
- Building materials will be stored on site according to their need. Bulky materials such as rough stones, ballast, sand and steel can be carefully piled and covered on site. Materials such as cement, paints and glasses among others are to be stored in temporary storage rooms conveniently within the project site for this purpose.

Site clearance and fencing.

The proposed project site shall be fenced to help control right of entry to the site for purposes of safety and security. The enclosure will also aid to reducing the amount of dust and other solid waste that have a potential of getting into and out of the site. Site clearance will include removal of top soil, vegetation and debris.

2.9.2 Sourcing and Transportation of Building Materials

The proponent will source several building materials locally. The great emphasis laid on procurement of building materials from within the local area makes both economic and environmental senses since it reduces negative impacts of transportation of the materials to the project site through reduced distance of travel by the materials transport vehicles. All the materials must adhere to KEBs standards.

2.9.3 Excavation works:

This involves excavating for the various unit foundation works. The bulk of the excavated material should be carried away from site by the contractor(s) to approved dumpsite in accordance with the EMCA (Waste Management) Regulations, 2006.

Civil works activities Includes:

- **Masonry, concrete work and related activities** : The construction of the building's foundations, floors, and drainage systems among other components of the project

involves a lot of masonry work and related activities. General masonry and related activities include reinforced structure of columns and beams filled with stone/block walls, concrete mixing, plastering, slab construction, construction of foundations, and erection of building walls and curing of fresh concrete surfaces. These activities are labour intensive and are to be supplemented by machinery such as concrete mixers. In addition, activities such as concrete mixing and curing require large amounts of water.

- **Structural Steel Works ;** The building is to be reinforced with structural steel for stability. Structural steel woks involve steel cutting, welding and erection of forms for beams and slabs.
- **Superstructure;** include construction of support pillars and stone walling Structural reinforcement
- **Plumbing and drainage**: Plumbing and drainage will include both underground water mains and drainage systems and above ground internal water service installation. It will also include testing and inspection of the system. Installation of pipe work for water supply and distribution will be carried out within the buildings and associated facilities. In addition, pipe work will be done to connect tubing to storage tanks, water cylinders and sanitation fittings, connect sewage from the premises to the onsite waste water treatment plant, and for drainage of storm water, plumbing activities will include installation of sanitary appliances, construction of manholes, metal and plastic cutting, the use of adhesives, metal grinding and wall drilling.
- **Electrical works:** The electrical supply shall be derived from Kenya Power Company limited. Electrical work during construction of the premises will include wiring, installation of electrical gadgets and appliances including electrical cables, lighting apparatus, sockets fluorescent fittings, lamps etc. in addition, there will be other activities involving the use of electricity such as welding and metal cutting. This will also entail street lighting with installation of lighting. It will also include testing and inspection of the system.
- Roofing work
- **Other internal installations**: including the doors windows, stairways, ventilations tiling.
- **Landscaping and recreational zones**: to include beautification both natural (Trees, grasses, flowers and ornamental plants) and artificial (Cabro designs work).
- **Security feature:** This will include construction of gates to manage the sites access, installation of security lighting, emergency response appliance e.g. fire-fighting appliances, first aid boxes etc.

2.9.4 Construction Material

The major materials required for construction of the proposed project will be steel, cement, metal, flooring tiles/stones, blocks, wood, sanitary and hardware items, electrical fittings,

water and roof materials. All the items to be used in the proposed project will be as per the National Building Code specifications.

Construction machines will include machinery such as trucks, concrete mixers and other relevant construction equipment. These will be used for the transportation of materials, mixing of materials and clearing of the vegetation and resulting construction debris. Most of the machinery will use petroleum products to provide energy.

- Most construction materials will be sourced locally but where the contractor deems necessary will import from other authorized countries especially the finishes.
- A construction labour force of both skilled and non-skilled workers will be involved.

2.9.5 Installation of Equipment

Several equipment will be installed within the building. Equipment to be installed include air conditioning and refrigeration equipment, generators, firefighting equipment, alarms, lighting systems, sanitary equipment and waste handling facilities, railings and others as needs be.

2.10 Description of the Project's Operational Activities

2.10.1 Tenancy activities

This will be the main thrust of activities of the project as the building will have residential apartments. The accommodation terms and conditions will be determined by the proponent. Several environmental aspects are associated with Residential buildings including traffic congestion, human congestion, increased waste generation, water and electricity consumption etc.

2.10.2 Solid Waste and Waste Water Management

The solid wastes will include metal cuttings, rejected materials, surplus materials, surplus spoil, paper bags, empty cartons, empty paint and solvent containers, broken glass among others. The proponent has plans to minimize the generation of such waste and to ensure proper disposal procedures. Where possible this waste shall be put into use within the same project.

The proponent will provide facilities for handling solid waste generated within the facility. These will include dust bins and skips for temporarily holding waste within the premises before final disposal at the County dumping site by a registered waste contractor. Sanitary waste from the premises will be discharged into onsite Waste Water Treatment system, while storm water from the roof of the premises will join a nearby stream,

2.10.3 Cleaning

The proponent will be responsible for regular washing and cleaning the entire building components, common lavatories and pavements. Individual clients accommodated in the

rooms will be expected to maintain general cleanliness in their respective rooms. Cleaning operations will involve the use of substantial amounts of water and detergents.

2.10.4 General Repairs and Maintenance

The Multi-Storey Housing Development Project and its affiliate facilities will be repaired and maintained regularly during its operation phase. Such activities will include repair of building walls and floors, repairs and maintenance of electrical gadgets and equipment, repairs of leaking water pipes, painting, maintenance of flower gardens and grass lawns and replacement of worn out materials among others.

2.11 Description of the Project's Decommissioning Activities

2.11.1 Demolition Works

Decommissioning is the process of shutting down an operational facility in a manner that leaves the area in a safe and stable condition that is consistent with the surrounding physical and social environment. We do not foresee any need for decommission the project in the next one hundred years, however in the event that this happens;

The contractor will ensure that:

- The process of closure occurs in an orderly, cost effective and timely manner with the allocation of adequate resources
- The anticipated cost of decommissioning is adequately provided for the project costs.

The contractor will be expected to;

- Carry out consultations with stakeholder
- Develop the action plan for demolition including the assigning of roles for the demolition crew.
- Isolate power at the main switch and remove cables up to that point
- Dismantle, remove and dispose of construction camp equipment and structures in an appropriate environmentally friendly manner
- Request utility service providers to disconnect the power, water and telephones as may be appropriate
- Reinstate the land too its natural condition by filling excavations and planting suitable saplings

The contractor must obtain a certificate of satisfactory decommissioning from the relevant authorities. In the unlikely event that the building is closed down decommissioning would comprise the reduction of all buildings and facilities to a safe condition and the restoration of the land to its original condition. The following will be done:

- Notification of intent to all relevant regulatory agencies
- Liaise with project consultants including architects, engineers and environmentalist to ascertain guidelines, anticipated de-commissioning impacts and mitigation measures.

The impacts anticipated from de-commissioning activities include but are not limited to the following:

- Change in energy and water supply demand
- Waste generation
- Various socio-economic impacts.

2.12 Project Design and Cost

The projects' gross cost estimates as per the Design Engineers amounts to KSH 500,000,000 **(Five Hundred Million Kenya Shillings Only)** The summary of the BOQ has been attached in this report in the annexes .

3. ANALYSIS OF PROJECT ALTERNATIVES

3.1 Introduction

The consideration of alternatives to a proposal is a requirement of many E.I.A systems. It lies at the heart of the E.I.A process and methodology. During the scoping process, alternatives to a proposal can be generated or refined, either directly or by reference to the key issues identified. A comparison of alternatives will help to determine the best method of achieving project objectives while minimizing environmental impacts or, more creatively, indicate the most environmentally friendly or best practicable environmental option.

From an environmental perspective, not carrying out this development may be the best option. Without the development, the area would remain a relatively undisturbed area providing a habitat for the varied flora and fauna presently observed. This area will continue to be impacted, although minimally, by anthropogenic and natural factors. From a socio-economic perspective the "no action" alternative may not be the best alternative as the numerous benefits to be gained from the development both locally and nationally would not be realised and the resources in the area would continue to be underutilized.

In order to enable the proposed project to seek different ways of minimizing its impacts on the environment and at the same time achieve its objectives several alternatives were assessed through its architectural and engineering designs and environmental planning through this ESIA.

The proceeding subsections review these alternatives in the subjects of: location, time, design, inputs, existence and the base case with mitigation.

3.2 Alternative Site

This option involves pursuing the proposal but on a different site meaning its impacts that are relevant to the proposed site or occur due it will be avoided. The avoidance of these in-situ and ex-situ regional impacts would be the main benefit of this option but there will also

be other impacts specific to the alternative site and due to specifications of the proposed project, a different site would also increase logistic costs. Alternative sites are also not readily available since availability of land in urban areas is low.

At present the landowner/developer does not have an alternative site. This means that the developer has to look for the land. Looking for the land to accommodate the scale and size of the project and completing official transaction on it may take up to three (3) years although there is no guarantee that the land would be available. The developer will spend another two years on design and approvals since design and planning has to be according to site conditions. Project design and planning before the stage of implementation will cost the developer millions of Kenya shillings. Whatever has been done and paid to date will be counted as a loss to the developer. Assuming the project will be given a positive response by the relevant authorities including NEMA, this project would have been delayed for about two (2) years period before implementation.

3.3 Alternative Schedule

This option entails carrying out the proposal at a later time thereby offsetting its impacts to that time. Only benefit is if there will be improvements in baseline conditions and technologies that may be involved with the proposal. However these are not guaranteed and it may only lead delays in development, therefore carrying out the proposed project with mitigation would be a preferred option due to this uncertainty. In addition carrying out the proposed project at later time may lead to more operational and logistic costs due to increasing inflation and standards of living

3.4 Alternative Designs

This option curtails undertaking the project but with different infrastructural designs that encompass: buildings, roads, power, water and sewerage. The presented project design was however achieved by considering the options available that would ensure cost-effectiveness and avoid or reduce environmental and social impacts as much as possible.

The selected design is most preferred in terms of cost-effectiveness, energy and space. Other designs would mean the project would use more energy and resources as compared to the preferred project option. Additionally the alternative possible designs would also reduce the project's commercial viability as well as its targeted balance with nature that will create ambience.

3.5 No Project Option

This alternative means forfeiting the proposed development avoiding all its impact both positive and negative. It implies that the status quo is maintained. The only benefit of this option would be negative impacts would be avoided such as losses in flora & faunal habitats, waste generation and pressure on infrastructure. However positive gains from the project on the economy would also be lost such as employment creation, revenue generation, tourism

development, capital injection into the economy and infrastructure developments that may result from the project.

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.
- The local skills would remain underutilized.
- Reduced investing due to lack of secure and decent Apartments in Dago area where the project is proposed.
- Reduced interaction both at local, national and international levels.
- No employment opportunities will be created for thousands of Kenyans who will work in the proposed building tower development area and Kisumu at large.
- Increased urban poverty and crime in Kenya.
- Discouragement for investors thus leading to reduced Accommodation space in Dago Village and Kisumu in general.

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.

3.6 Alternative Inputs

Alternatively the project may use different combinations of inputs such as: transport systems; water; electric power, and sewerage. This may reduce the project's impacts in several cases but as compared to the project's preferred options for these services they may result in extensive costs and bottlenecks since several of these options/inputs are at a techno-commercial infancy stage and have a varying set of impacts.

3.7 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 stones, cement, sand (washed and clean), metal bars and fittings that meet the Kenya Bureau of Standards requirements.

3.8 Waste water management alternatives

Alternative waste management technologies available locally are as discussed below:-

3.8.1 Alternative One - Use of stabilization ponds/lagoons

This is the use of a series of ponds/lagoons which allow several biological processes to take place, before the water is released to the outside environment. The lagoons can be used for aquaculture purposes and irrigation. However, they occupy a lot of space but are less costly.

No chemicals are used/heavy metals sink and decomposition processes take place. They are usually a nuisance to the public because of smell from the lagoons/ponds. This option is not preferable in the area because the required space is not available and the area is a cosmopolitan area.

3.8.2 Alternative Two - 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 behavioral problems. Hence it is not the best alternative for this kind of project.

3.8.3 Alternative Four - Use of septic tanks

This involves the construction of underground concrete-made tanks to store the sludge with soak pits. It is expensive to construct and regular empting in large discharge points especially with the large projects like the proposed Multi-Storey Housing Development Project. Given the kind of liquid waste expected to emanate from the proposed project this option is not preferred since it will be uneconomical.

3.8.4 Alternative Five - Waste water treatment plant

This involves the construction of a plant and use of chemicals to treat the effluents to locally/internationally accepted environmental standards before it is discharged. It is usually expensive to construct and maintain, but it is the most reliable, efficient and cost-effective in the long term.

3.8.5 Alternative six - Connection to the sewer line system

Connection to the sewer line option is not a viable option since the area is not served by existing sewer line.

3.8.6 Alternative seven: Use of Bio-digester

Bio digester is an on-site sanitation unit that utilizes anaerobic technology for the disposal of toilet (black) wastewater as well as of kitchen and bathroom (grey) water, in a closed system. This is an incredibly ethical sanitation technology which treats wastewater in an environmentally friendly manner, facilitating its use for irrigation or its return to water bodies without polluting them. The process also generates organic fertilizer and biogas (a form of fuel) by allowing naturally occurring bacteria to break down solid waste. From the analysis and economic as well as environmental; considerations use of bio digester system is a viable option for the proponent to adopt in order to supplement connection to the sewer system.

3.9 Solid waste management alternatives

A lot of solid wastes will be generated from the proposed development. An integrated solid waste management system is recommendable. First, the proponent will give priority to Reduction at Source of the waste materials. This option will demand a solid waste management awareness programme in the management and the workers. Notices for proper waste management/handling may be posted at strategic places for the sake of visitors. Secondly, Recycling, Reuse and compositing of the waste will be the second alternative in priority. This will call for a source separation programme to be put in place especially in the kitchen sections. The recyclables will be sold to waste buyers within Kisumu City. The third priority in the hierarchy of options is combustion of the waste that is not recyclable. Finally, sanitary land filling will be the last option for the proponent to consider.

3.10 The proposed development alternative

Under the development in question, the developer of the proposed Multi-dwelling units would be issued with an EIA License. In issuing the license, NEMA would approve the proponent's proposed development project, provided all environmental measures are complied with during the construction period and operational phases. This alternative consists of the applicant's final proposal with the inclusion of the NEMA regulations and procedures as stipulated in the environmental impacts to the maximum extent practicable.

4. BASELINE ENVIRONMENTAL AND SOCIO-ECONOMIC CONDITIONS

4.1 Introduction

The region where the project site lies is composed of residential and commercial urban establishments with several key neighborhoods. Over the past years Kisumu has grown rapidly. However, the growth rate of new apartment's construction as well as infrastructure growth to cater for the ever growing population falls far below demand. There is need for rapid development of new housing blocks as well as infrastructure to accommodate the demands and influx of the working class and community into emerging new industries.

This chapter presents the baseline environmental, socioeconomic and cultural conditions of the project site and its environs. The scope of this chapter covers the project's area influence, the immediate neighbourhood around the project and then Kisumu County, across the subjects of:

- Physical Environment,
- Ecological Environment, and
- Socio-cultural and Economic Environment.

4.2 Kisumu Administrative and Political Units

Kisumu County has seven Sub-Counties/Constituencies namely: Kisumu east, Kisumu West, Kisumu Central, Muhoroni, Nyando, Seme and Nyakach. There are five major urban canters; Ahero, Katito, Muhoroni, Chemilil, and Maseno. Other emerging fast-growing canters include Awasi, Pap-Onditi, Holo, Kombewa and Sondu.

4.3 Physical Environment

a) Climate condition

Kisumu is warm throughout the year with a mean annual temperature of 23^0C. The temperature ranges between 20^0C and 35^0C but seldom falls below 19^0C. The humidity is relatively high throughout the year. The climate of the whole county is modified by the presence of Lake Victoria. Kisumu is known for its thunderstorms, which are the major type of precipitation and normally occur in mid-afternoon during the rainy season

The county has an annual relief rainfall that ranges between 1200 mm and 1300 mm in different sectors. The rain mainly falls in two seasons. Long Rains' experienced between March and May, while Short Rains' witnesses between September and December, The major characteristic of rainfall in Kisumu is its variability in amounts received such that at times it fails to fulfil the basic need of the people. It is noted that the variation in the distribution of rainfall over the year forms a significant factor in the water shortage problem

within Kisumu. On the other hand, during the rainy seasons, most rivers and sewage systems fail to absorb the amount of rain resulting in annual flooding

b) Physical and Topographic Features

Kisumu County lies in a down warped part of large lowland surrounding the Winam Gulf, at the tip of which is Kisumu Town. East of Kisumu Town is the Kano Plains occasionally broken by low ridges and rivers. There are some notable physical features such as the scarps in the north, east and south. Others include the hill slopes and piedmont plains spreading across the vast Kano Plains. The County can be divided into 3 topographical zones namely: the Kano Plains, the upland area of Nyabondo Plateau and the midland areas of Maseno. The Kano Plains lie on the floor of the Rift Valley, which is a flat stretch bordered to the North and East by the escarpment, while the upland area comprise ridges which rise gently to an altitude of 1,835m above sea level. The major physical features in the county are the overhanging huge granite rocks at Kisian and the legendary Kit Mikayi in Kisumu West Sub-county, the Lake Victoria, which is the second largest fresh water lake in the world, the geographically famous rice-growing Kano Plains, and lake islands (e.g. Ndere National Park which are major tourist attraction). The granite rocks are exploited (in small scale) by the local population to produce building ballast. While the varying types of soils and rivers deposits are mined for building sand and baked bricks for building in Maseno and Nyakach. There are three major rivers flowing into the Winam Gulf namely: the Nyando, Kibos and Sondu. The rivers are heavily silted, resulting in the extensive formation of lakeside swamps. The Kano Plains, due to the structure on the floor of these escarpments is vulnerable to flooding during heavy rains especially the lower Kano Plains and in particular low lying areas of Nyando. The county has a long shoreline along Lake Victoria. This shoreline is 90 km long and has more than 17 beaches all of which are fish landing bays. Within Kisumu City, the shores have been used to put up beautiful tourist hotels like Kiboko Bay, the Yatch Club and Tilapia Beach Resort. The project area is on a flat land and hence conducive for the proposed development

c) BIOLOGICAL ENVIRONMENT

Flora and fauna

The project area is a buildup environment however not much vegetation has been compromised with exemption of shrubs, grasses and tree species present. A number indigenous and exotic tree species were identified. Examples of tree species observed include: eucalyptus trees, *Grevelia robusta* and *Syzygium cuminii.* Notable shrubs include; *Rhus natalensis, Grewia similis, Psidium guajava, Lippia javanica, Lantana camara, Teclea nobilis,* and *Carissa edulis.* No wild animals were observed within the proposed project area. Bird species were however, numerous, including wild doves.

Environmentally Sensitive/or Significant Areas

There are no such areas of significance importance established at or near the project site. There are no environmentally sensitive areas in the immediate project area. No areas of cultural importance were established near the site

4.4 Infrastructure and Services

The property is located in an area that has adequate supply of basic infrastructure and utilities. These include water, roads, electricity, and sewer system.

- **Roads**: The area is well served and linked to other estates within Kisumu town. The plot is accessed through Ondiek Highway.
- **Electricity**: There area has power lines running along the road of access. Connection already done.
- **Water Supply**: area is not served by municipal tapped water supply from KIWASCO, an application has been made for consideration, in the meantime, a borehole will be drilled onsite and rain water harvested for alternative use.
- **Sewerage**: there are adequate sewer drainage system within the project area. The proponent proposes to channel all effluent to the existing in a Waste Water Treatment Plant that will be built onsite and also use of bio-digester technology
- **Solid Waste Disposal**: The Kisumu County Council provides solid waste disposal services in the area with some private refuse collecting firms also operating in the neighbourhood. Most of the waste that will be generated will include office waste papers, food refuse, rags and bottles. The proponent will hire the services of a private waste dealer to manage general waste, as they are more efficient. The proponent will be required to adhere to spill control procedure when handling waste.
- **Storm drainage**: Storm water will be channelled to the nearby stream
- **Fire Safety**: Fire safety equipment and assembly point are in place

4.5 Socio-Economic Aspects

Population Density and Distribution

The county population according to 2019 Kenya National Population and Housing Census. Stands at a Total Population of 1,155,574persons, 300,745 households and covers an area of 2,085.9Sq. Km. the Population density stands at 554 Per Sq.km

Figure 3: Kisumu County Population Density and Distribution by Sub County

Sub county	Population	Land Area (Sq. Km)	Population density (No. per Sq. Km)
Kisumu East.	220,997	141.6	1,560
Kisumu Central	174,145	36.8	4,737
Kisumu West	172,821	209.0	827

Seme	121,667	267.7	455
Muhoroni	154,116	657.5	234
Nyando	161,508	446.1	362
Nyakach	150,320	326.7	460

Economic Condition and Livelihood Activities

- **Trade and Finance**

Kisumu City is the headquarters and the main commercial base of western Kenya region. The main trades in Kisumu city include manufacturing; wholesale and retails (Hypermarkets and Supermarkets) as well as small and medium business enterprises, Hotel and lodgings; hawking and; transport and other services. The main financial institutions in Kisumu city include Kenya Commercial Bank, National Bank of Kenya, Standard Bank, Barclays Bank, Equity Bank, Diamond Trust Bank, Family Bank, and Cooperative Bank among others. In addition, there are Savings and Credit Cooperatives (SACCOs) as well as a number of microfinance institutions namely: Faulu Kenya, Kenya Women Finance Trust among others. It has an inland harbour connecting it to Uganda and Tanzania as well as an international airport. Notable trade within the project site include retails stores, hotels, Garages, school among others.

- **Agriculture**

The main economic activities are fishing and agriculture (rice, sugar cane and maize farming) as well as small scale subsistence farming. Large scale commercial agriculture is mainly concentrated in the Muhoroni and Ahero area. There is also a large hydro-electric power plant in Nyakach. Thus the economy is diverse. However, there are a large number of rural and urban poor and inequalities between urban and rural populations. Unemployment particularly of the youth is high, especially in urban areas.

- **Tourism**

Kisumu City lies in the Western Kenya tourism circuit where the major tourist attractions sites are around the lake. The city is well served by national and international trunk roads as well as Kisumu International Airport. The city also has high-class hotels and lodges including: Ciala Resort, Acacia Hotel, Grand Royal Swiss, Kisumu Hotel, Sunset Hotel, Imperial hotel, Jumuia Guest House, Great Lakes Hotel and Lasavana Hotel among others. The main tourist attractions in the city include Lake Victoria scenery and aquatic life, the Kisumu Impala Sanctuary, Kisumu Museum, Rich folk tales and songs, an easily assimilative culture and friendliness of the people. In addition, there are also diversity of landscapes, wildlife, culture and the many beaches along Lake Victoria; camping sites, water sports and tourist resorts among other

- **Settlement Patterns**

The county settlement pattern is divided between rural and urban settlements. The main wall material for houses in Kisumu county is mud/wood accounting for 49.6 per cent

followed by mud/cement 21.2 per cent, bricks/blocks 21.2 per cent and stone houses only account for 3.2 per cent. The main materials for the floor are earth 55.2 per cent; cement 42.4 per cent and tiles 1.5 per cent. Corrugated iron sheet is widely used with over 85 per cent of households using it for roofing.

- **Poverty and income level**

Over 60 per cent of the population in Kisumu County are poor compared with the national average of 46 per cent as at 2006. Poverty levels are higher in the urban areas (70 per cent) compared with rural (63 per cent). Kisumu East Constituency contributes 0.9% to the National poverty and 62% of its population live below the poverty line. Poverty in Kisumu city is characterized by the high percentage of households in the informal settlements, inaccessibility to affordable healthcare, the high rates of unemployment, low agricultural production, high rate of school drop outs and high prevalence rate of HIV/AIDs, malaria, and other diseases e.g. cholera. The main causes of high poverty within the project area include HIV and AIDS pandemic, unemployment, low agricultural and fish production, poor water and sanitation systems as well as diseases.

- **Education**

Education is an essential facet in the development of the human capital which in turn translates to increased productivity of labour per capita. Kisumu County has 997 ECD Centre's, 655 primary schools, 158 secondary schools, 3 universities, 1 national polytechnic and one medical training in addition to a number of private institutions. The literacy levels in the county are fairly high with 83.1% being able to read and write. The school dropout rate in Kisumu city stands at 4.3%Majority of the institutions of higher learning are concentrated in Kisumu City and include Maseno University, Great Lakes University (private) and various accredited colleges including Kenya Institute of Management (KIM), Kenya Medical Training Centre (KMTC), Kisumu Polytechnic, Kisumu, Ramogi Institute of Science &Technology and Tom Mboya Labour College.

- **Health**

The county has several institutions that are either private or government funded provide The Infant Mortality Rates for Kisumu County is medium, at 95/1000. The under-five mortality rates stands at 149/1,000. Life expectancy within the county is 49 years with Females having a higher life expectancy (50 years) than males (47 years) where Death rate stands at 29 per 1,000. Malaria and high rates of HIV infection are the major disease causing high deaths and mortality has been a perennial problem since time immemorial. Major health facilities are Jaramogi Oginga Odinga Teaching and Referral Hospital (popularly known as Russia since it was built by the Soviets), the Kisumu District Hospital, the Aga Khan Hospital Kisumu, the Specialist and Avenue hospital.

5. POLICY, LEGAL AND REGULATORY FRAMEWORK

5.1 General Overview

Kenya has a policy, legal and administrative framework for environmental management. Under the framework, the National Environment Management Authority (NEMA) is responsible for ensuring that environmental impact assessments (EIAs) are carried out for new projects and environmental audits on existing facilities as per the Environmental Management and Co-ordination (Amendment) Act, 2015.

ESIAs are carried out in order to identify potential positive and negative impacts associated with the proposed project with a view to taking advantage of the positive impacts and developing mitigation measures for the negative ones. The guidelines on ESIAs are contained in Sections 58 to 67 of the Act. According to Section 68 of the Environmental Management and Coordination (Amendment) Act (EMCA) 2015, The Authority will be responsible for carrying out environmental assessments and audits on all activities that are likely to have a significant effect on the environment.

The government has established regulations to facilitate the process on EIAs and environmental audits. The regulations are contained in the Kenya Gazette Supplement No. 56, Legislative Supplement No. 31, and Legal Notice No. 101 of 13th June 2003.

In the past, the government has established a number of National policies and legal statutes to enhance environmental conservation and sustainable development. *The proponent will need to observe the provisions of the various statutes that are aimed at maintaining a clean, healthy and sustainable environment***.** Some of the policy and legal provisions are briefly presented in the following sub-Sections.

5.2 Legal Framework

5.2.1 The Constitution of Kenya

Promulgated on the 27th of "August 2010, the constitution of Kenya in its preamble declares that the people of Kenya are respectful to the environment, which is their heritage and they are determined to sustain it for the benefit of future generations. The constitution which is based on the bill of rights as its backbone, states in article 42 that every person has a right to a clean and healthy environment and subsection 1 adds that this includes the right to protect environment for the benefit of present and future generations through legislative and other measures. Article 43 follows declaring economic and social rights of every Kenyan and they include in subsections: (a) the right to the highest attainable standard of health, which includes the right to health care services, including reproductive health care and (d) the right to clean and safe water in adequate quantities. Section 2 of article 43 adds that no one shall be denied emergency medical care.

The constitution also endorses the national land policy and chapter 5 which deals with land and environment states principally in article 60 that land in Kenya will be held, used and managed in a manner that is equitable, efficient, productive and sustainable. The principles are outlined in subsections of article 60 and article 61 declares that all land in Kenya belongs to the people of Kenya collectively and subsection 2 classifies land to be as either public, community or private and thus it's
important to establish in which of these the project lies. The national land commission is established in article 67 and its main function is to manage land on behalf of national and county governments.
Part 2 of chapter 5 deals with the environment and natural resources and article 69 section (1) subsection (a) states that the state will ensure sustainable exploitation, utilization, management and conservation of the environment and natural resources, and ensure the equitable sharing of the accruing benefits. The following subsections give regulations in terms of forest cover, biodiversity, cultural resources, indigenous knowledge, systems for environmental impact assessment and prevention of activities that may harm the environment. Section 2 states that every person has a duty to cooperate with state organs and other persons, to protect and conserve the environment and ensure ecologically sustainable development and use of natural resources. Article 70 deals with enforcement of environmental rights and everyone who feels their right to a clean and healthy environment has been denied has the obligation to go to court to seek redress. Article 71 and 72 deal with agreements relating to natural resources and legislation relating to the environment respectively, where parliament is given this authority.

5.2.2 Environmental Management and Co-ordination (Amendment) Act, 2015

Environmental Management and Co-ordination Act No. 8 of 1999 has hither to been providing a legal and institutional framework for the management of the environmental related matters. It is the framework law on environment, which was enacted on the 14th of January 1999 and commenced in January 2002. The Act has since been amended and replaced by Environmental Management and Co-ordination (Amendment) Act, 2015 which was enacted into a law on 3rd January, 2015.

Section 58 of the Second schedule of the Act require proponent of project to submit project reports to NEMA before financing, commencing, proceeding with, carrying out, executing or conducting projects. The Second Schedule to the Act specifies the projects for which an EIA and EA must be carried out. According to Section 68 of the Act, all projects listed in the Second Schedule of the Act must undertake an environmental audit, keep accurate records and make annual reports to NEMA or as NEMA may, in writing, require.

The main objectives of the Act are to:

- Provide guidelines for the establishment of an appropriate legal and institutional framework for the management of the environment in Kenya;

- Provide a framework legislation for over 70 statutes in Kenya that contain environmental provisions; and
- Provide guidelines for environmental impact assessment, environmental audit and monitoring, environmental quality standards and environmental protection orders.

In addition, the following regulations to the Act are also relevant to the proposed development.

Under EMCA Amendment, 2015, there are a number of regulations geared towards sustainable development. The applicable regulations to the Multi-store development project are discussed below:

a) Environmental Management and Coordination (Environmental Impact Assessment and Audit) Regulations, 2003

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. An EIA is conducted in order to identify impacts of a project on the environment, predict likely changes on the environment as a result of the development, evaluate the impacts of the various alternatives on the project and propose mitigation measures for the significant negative impacts of the project on the environment. The Project proponent pays for the entire EIA process.

Environmental Audit (EA) is the systematic documentation, periodic and objective evaluation of activities and processes of an on-going project. The goal of EA is to establish if proponents are complying with environmental requirements and enforcing legislation. The purpose of EA is to determine the extent to which the activities and programs conform to the approved environmental management plan. A comprehensive EA ensures a safe and healthy environment at all stages of project operations and decommissioning. An initial environmental audit and a control audit are conducted by a qualified and authorized environmental auditor or environmental inspector who is an expert or a firm of experts registered by the Authority. In the case of an on-going project the Authority requires the proponent to undertake an initial environmental audit study to provide baseline information upon which subsequent environmental audits shall be based. Self-Audits are carried out after the environmental impact assessment Project report has been approved by the Authority or after the initial audit of an on-going project. The proponent shall take all practical measure to ensure the implementation of the environmental management plan by carrying out a self-auditing study on a regular basis.

This Report complies with the requirements of the Environmental Regulations in the coverage of environmental issues, project details, impacts, legislation, mitigation measures, management plans and procedures. The Proponent shall be required to commit to

implementing the environmental management plan laid out in this report and any other conditions laid out by NEMA.

b) Environmental Management and Coordination (Water Quality Regulations of 2006)

Water Quality Regulations apply to water used for domestic, industrial, agricultural, and recreational purposes; water used for fisheries and wildlife purposes, and water used for any other purposes. Different standards apply to different modes of usage. These regulations provide for the protection of lakes, rivers, streams, springs, wells and other water sources. The objective of the regulations is to protect human health and the environment. The effective enforcement of the water quality regulations will lead to a marked reduction of water-borne diseases and hence a reduction in the health budget.

The regulations also provide guidelines and standards for the discharge of poisons, toxins, noxious, radioactive waste or other pollutants into the aquatic environment in line with the Third Schedule of the regulations. The regulations have standards for discharge of effluent into the sewer and aquatic environment. While it is the responsibility of the sewerage service providers to regulate discharges into sewer lines based on the given specifications, NEMA regulates discharge of all effluent into the aquatic environment.

Everyone is required to refrain from any actions, which directly or indirectly cause water pollution, whether or not the water resource was polluted before the enactment of the Environmental Management and Coordination (Amendment) Act (EMCA) Gazetted in 2015. It is an offence to contravene the provisions of these regulations with a fine not exceeding five hundred thousand shillings.

Regulation 9 of these regulations provides for water quality monitoring. It states that the Authority in consultation with the relevant lead agency, shall maintain water quality monitoring for sources of domestic water at least twice every calendar year and such monitoring records shall be in the prescribed form as set out in the second schedule to these regulations. Table two below shows the quality standards for sources of domestic water.

Table 2: Quality standards for sources of domestic water

Parameter	Guide Value (Maximum allowable)
pH	6.5 – 8.5
Suspended solids	30 (mg/l)
Nitrite – NO_3	10 (mg/l)
Ammonia – NH_3	0.5 (mg/l)
Nitrate – NO_2	3 (mg/l)
Total dissolved solids	1200 (mg/l)
Ecoli	Nil/100ml
Fluoride	1.5 (mg/l)
Phenols	Nil (mg/l)

Parameter	Guide Value (Maximum allowable)
Arsenic	0.01 (mg/l)
Cadmium	0.01 (mg/l)
Lead	0.05 (mg/l)
Selenium	0.01 (mg/l)
Copper	0.05 (mg/l)
Zinc	1.5 (mg/l)
Alkyl benzyl sulphonates	0.5 (mg/l)
Permanganate Value (PV)	1.0 (mg/l)

The proponent shall ensure that water supplied to its premises for domestic purposes meet these requirements.

c) Environmental Management and Coordination (Noise and Excessive Vibration Pollution Control) Regulations, 2009

General prohibitions of the Act provide that no person shall make or cause to be made any loud, unreasonable, unnecessary or unusual noise which annoys, disturbs, injures or endangers the comfort, repose, health or safety of others in the environment. Of importance in determining nuisance, the time of day, proximity to residential area, recurrence or intermittence of the noise, level and intensity of the noise and whether the noise can be controlled without much effort or expense to the person making the noise.

The regulations also provide that no person shall cause or cause to be made excessive vibrations which annoy, disturb, injure or endanger the comfort, repose, health or safety of others in the environment, or cause to be made excessive vibrations which exceed 0.5 centimetres per second beyond any source property or 30 meters from any moving source.

Vibrations which annoy, disturb, injure or endanger the comfort, repose, health or safety of others in the environment, or cause to be made excessive vibrations which exceed 0.5 centimetres per second beyond any source property or 30 meters from any moving source. Table 3 below indicates the maximum allowable noise levels for given zones.

Table 3: Permissible outdoor noise levels for residential and other areas

Zone	Sound level limit dB(A) Leq, 14h)		Noise Rating Level (NR) (leq, 14h)	
	Day	Night	Day	Night
Residential indoor	45	35	35	25
Residential outdoor	50	35	45	25
Places of worship	40	35	30	25

Silent zone	40	35	30	25
Commercial	60	35	55	25
Mixed residential (with some commercial and places of entertainment)	55	35	50	25

Day: 6:01 am – 8:00 pm; Night: 8:01 pm – 6:00 am

The regulations however exempt the emission of noise for the purpose of alerting persons to the existence of an emergency.

Through the contractor and tenants to the proposed facility, the proponent shall ensure strict adherence to these regulations during the construction and operation phases respectively. Annual environmental audit of the facility will also be carried out to monitor observation of these regulations.

d) Environmental Management and Coordination (Air Quality Regulations, 2008)

This regulation is referred to as "The Environmental Management and Coordination (Air Quality) Regulations, 2008". The objective is to provide for prevention, control and abatement of air pollution to ensure clean and healthy ambient air. It provides for the establishment of emission standards for various sources, including as mobile sources (e.g. motor vehicles) and stationary sources (e.g. industries) as outlined in the Environmental Management and Coordination (Amendment) Act, 2015. It also covers any other air pollution source as may be determined by the Minister in consultation with the Authority. Emission limits for various areas and facilities have been set. The regulations provide the procedure for designating controlled areas, and the objectives of air quality management plans for these areas. The following operations (provided they are not used for disposal of refuse), are exempt from these regulations:

- Back-burning to control or suppress wildfires;
- Firefighting rehearsals or drills conducted by the Fire Service Agencies
- Traditional and cultural burning of savannah grasslands;
- Burning for purposes of public health protection;

e) Environmental Management and Coordination (Waste Management) Regulations, 2006

Part II, 4 (1) of the Regulations states that no person shall dispose of any waste on a public highway, street, road, recreational area or in any public place except in a designated receptacle. Regulation 4 (2) further states that a waste generator shall collect, segregate and dispose such waste in the manner provided for under these regulations. Regulation 5 (1) provides for cleaner production methods. It states that a waste generator shall minimise the waste generated by adopting the following cleaner production methods:

a) Improvement of production process through:

- Conserving raw materials and energy;
- Eliminating the use of toxic raw materials; and
- Reducing toxic emissions and wastes.

b) Monitoring the product cycle from beginning to end by:

- Identifying and eliminating potential negative impacts of the product; and
- Enabling the recovery and re-use of the product where possible.

c) Incorporating environmental concerns in the design and disposal of a product.

The proponent shall adopt appropriate waste management system throughout the life cycle of the proposed project including hiring services of licensed waste collectors and transporters and disposal at licensed sites.

5.2.3 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.

5.2.4 Public Health Act (Cap. 242)

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

constructed as in the opinion of the medical officer of health to be offensive or injurious to health.

5.2.5 Urban and Cities Act No 13 of 2011

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

Moreover, in the first schedule, the Act enlists the services the services that the any municipality/ City shall provide to its residents which include but not limited to traffic control and parking, water and sanitation, refuse collection, solid waste management, pollution abatement services among others. The Kisumu County Planning and Environment Department have been actively involved in the planning of this development as from its initial stages.

5.2.6 Water Act, 2016

The Water Act No. 43 of 2016 was assented to on 20th September 2016 and repealed the Water Act 2002. The enactment of this law aimed at aligning national water management and water services provision with the requirements of the Constitution of Kenya 2010 particularly on the clauses devolving water and sanitation services to the county governments.

The Water Act 2016 provides for the management, conservation, use and control of water resources and for acquisition and regulation of rights to use water; to provide for the regulation and management of water supply and sewerage services.

Section 11. (l) states the establishment of the Water Resources Authority (WRA) whose function in section 12 (d) include; to receive water permit applications for water abstraction, water use and recharge and determine, issue, vary water permits; and enforce the conditions of those permits.

Section 143 of the Act makes it an offence an offence to obstruct, interfere with, divert or obstruct water from any watercourse or any water resource, or negligently allow any such obstruction, interference, diversion or abstraction. It also prohibits anyone to throw or convey or cause or permit to be thrown or conveyed, any rubbish, dirt, refuse, effluent, trade waste or other offensive or unwholesome matter or thing into or near to water resource in such a manner as to cause, or be likely to cause, pollution of the water resource.

According to the Water Resources management Rules (2007), Fifth schedule Part A Water use activities that require approval by authority (d) Diversion of a water course, ANY PERSON shall obtain approval from the Authority to undertake the activity: In addition Part II-approval, authorisation and permits (2) no water works approval, authorization and permit shall be issued or renewed for the purposes of supplying water for domestic, public, commercial or industrial use within the limits of supply of a water service provider without the applicant having received consent of the licensed water service provider for the area.

The proponent will source water from a licensed water service provider, Kisumu Water and Sewerage Company (KIWASCO).

5.2.7 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 defence, 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
i) 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.

5.2.8 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.

5.2.9 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.

This Act shall of great essence to the proponent, public, interested or affected party that may want to litigate against the development on settlement issues, location of project or even effects of the project to the public

5.2.10 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.

5.2.11 The Energy Act of 2006

The Energy Act 2006 was enacted on 2nd January 2007. The Act establishes an Energy Regulatory Commission mandated to perform all function that pertains to energy production, transmission, setting and enforcing of energy policies, Public education and enforcing energy conservation strategies, prescribing the energy licensing process and issuing of licenses that pertain to energy sector in Kenya. Section 30 of the Act provides the factors that shall be taken into consideration prior to issuance of license. It states the need and expression of an entity to conserve and protect the environment and natural resources in accordance to the Environmental and Coordination (Amendment) Act of 2015, moreover, the Act gives provisions for the need to protect health and safety of users of energy by providing an enabling environment of operation that protects the health and safety of users of the service for which the license or permit is required and other members of the public affected by the undertaking.

The provisions of this Act have and will be enforced by the proponent in consultation with the project EHS experts, planners and electrical consultants in ensuring the best practices are ensured for sustainable energy use while attaining public health and safety.

5.2.12 Building Code 2000

Section 194 requires that where sewer exists, the occupants of the nearby premises shall apply to the Local Authority for a permit to connect to the sewer line and all the wastewater must be discharged into sewers. The proponent will dully make the necessary application to the KIWASCO for the connection of the sewer to the proposed development.

5.2.13 Occupational Safety and Health Act (OSHA 2007)

Before any premises are occupied, or used a certificate of registration must be obtained from the chief inspector. The occupier must keep a general register. The Act covers provisions for health, safety and welfare.

Health

The premise must be kept clean, daily removal of accumulated dust from floors, free from effluvia arising from any drain, sanitary convenience or nuisance and without prejudice to the generality of foregoing provision. A premise must not be overcrowded, there must be in each room 10 meters of space for each employee, not counting space 14 feet from the floor and a 9 feet floor-roof height. The circulation of fresh air must secure adequate ventilation of workrooms. There must be sufficient and suitable lighting in every part of the premise in which persons are working or passing. There should also be sufficient and suitable sanitary conveniences separate for each sex, must be provided subject to conformity with any standards prescribed by rules. Food and drinks should not be partaken in dangerous places or workrooms.

Provision of suitable protective clothing and appliances including where necessary, suitable gloves, footwear, goggles, gas masks, and head covering, and maintained for the use of workers in any process involving expose to wet or to any injurious or offensive substances.

Safety

Fencing of premises and dangerous parts of other machinery is mandatory. Training and supervision of inexperienced workers, protection of eyes with goggles or effective screens must be provided in certain specified processes. Floors, passages, gangways, stairs, and ladders must be soundly constructed and properly maintained and handrails must be provided for stairs. Special precaution against gassing is laid down for work in confined spaces where persons are liable to overcome by dangerous fumes. Air receivers and fittings must be of sound construction and properly maintained. Adequate and suitable means for extinguishing fire must be provided in addition to adequate means of escape in case of fire must be provided.

Welfare

An adequate supply of both quantity and quality of wholesome drinking water must be provided. Maintenance of suitable washing facilities, accommodation for clothing not worn during working hours must be provided. Sitting facilities for all female workers whose work is done while standing should be provided to enable them take advantage of any opportunity for resting. Section 42 stipulates that every premise shall be provided with maintenance, readily accessible means for extinguishing fire and person trained in the correct use of such means shall be present during all working periods.

Section 45 states that regular individual examination or surveys of health conditions of industrial medicine and hygiene must be performed and the cost will be met by the employer. This will ensure that the examination can take place without any loss of earning for the employees and if possible within normal working hours. Section 55B provides for development and maintenance of an effective programme of collection, compilation and

analysis of occupational safety. This will ensure that health statistics, which shall cover injuries and illness including disabling during working hours, are adhered.
The proponent will ensure that safety is put first through by contacting at least four on-site EHS officer who will ensure adherence to proposed EHS bet practices and ESMP recommendations on all sections of the development.

5.2.14 Physical Planning Act (Cap 286)

An Act of Parliament to provide for the preparation and implementation of physical development plans and for connected purposes enacted by the Parliament of Kenya Under this Act, 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. 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. 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. The developer has ensured this is affected and enforced at the initial stage.

5.2.15 Employment Act No 11 of 2007

The Act is enacted to consolidate the law relating to trade unions and trade disputes, to provide for the registration, regulation, management and democratization of trade unions and employers organizations and federations. Its purpose is to promote sound labour relations through freedom of association, the encouragement of effective collective bargaining and promotion of orderly and expeditious dispute the protection and promotion of settlement conducive to social justice and economic development for connected purposes. This Act is important since it provides for employer – employee relationship that is important for the activities that would promote management of the environment within the housing sector. The developer, the contractor and the employees' relationship during the construction and later phases of this project shall be guided by this Act.

5.2.16 Penal Code Cap 63

Section 191 of the penal code states that if any person or institution that voluntarily corrupts or foils water from 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, dwelling or business premises in the neighbourhood or those passing along public way, commit an offence.

5.2.17 The Tourism Act, No. 28 of 2011

In the Ninth Schedule of the Act, Hotels are classified under the Class 'A' Enterprises as tourist attraction areas hence governed by the provisions in the regulations provided in the Act. Part III, section 4 to 7, through the Act the Tourism Regulatory Authority was formed with a mandate of overseeing all tourism related activities in Kenya which include but not limited registration, licensing and developing and implementing of a code of conduct within the tourism sector.

5.2.18 The National Construction Authority Act, 2011

This act establishes the national construction authority, a state corporation under the Public Works Ministry. The authority is mandated to regulate and aid development of the construction industry through registration and accreditation of contractors, skilled construction workers and construction site supervisors and regulate their activities. It is also mandated to monitor the construction process as detailed in the Physical Planning Act. The proponent shall ensure that any hired contractors are registered by this authority.

5.2.19 County Governments Act, 2012

This Act vests responsibility upon the County Governments in planning of development projects within their areas of jurisdiction be it 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. The project proponent has initiated the process of County Government engagement in the initial project planning through application of essential development approvals from Kisumu County Government.

5.3 Environmental policy framework

The Kenya Government's environmental policy is geared towards sound environmental management for sustainable development. This is envisaged in the principle of prudent use, which requires that the present day usage should not "compromise the needs of the future generations".

The policy emphasis is on environmental protection in order to ensure sufficient supplies for the present and future generations. The policy envisages the use of the "polluter pays principle", where one is expected to make good any damage made to the environment.

The Kenya Government's environmental policy aims at integrating environmental aspects into national development plans. The broad objectives of the national environmental policy include:

- Optimal use of natural land and water resources in improving the quality of human environment;
- Sustainable use of natural resources to meet the needs of the present generations while preserving their ability to meet the needs of future generations;
- Integration of environmental conservation and economic activities into the process of sustainable development; and
- Meet national goals and international obligations by conserving bio-diversity, arresting desertification, mitigating effects of disasters, protecting the ozone layer and maintaining an ecological balance on earth.

5.3.1 Kenya's Vision 2030 and the Big 4 Agenda

Kenya Vision 2030 is the country's new development blueprint covering the period 2008-2030. It aims to transform Kenya into a newly industrialising, ''middle income country providing a high quality life to all its citizens by the year 2030''. The vision was developed through an all inclusive and participatory stakeholder consultative process, involving Kenyans from all parts of the country

The Vision 2030 is based on 3 key pillars; Economic Pillar, Social Pillar, and Political Pillar. The economic, social and political pillars of Kenya Vision 2030 are anchored on the following foundations: macroeconomic stability; continuity in governance reforms; enhanced equity and wealth creation opportunities for the poor; infrastructure; energy; science, technology and innovation (STI); land reform; human resources development; security and public sector reforms.

The 2020 vision for housing and urbanisation is "an adequately and decently housed nation in a sustainable environment". The medium-term goal for 2012 is to increase the annual production of housing units from the current 35,000 annually to over 200,000. In addition, an initiative for high quality urban planning will be undertaken. The proposed development will be in line with this broad national goal.

The big 4 agenda focus on provision of affordable houses to Kenyan citizen as one of the fours key result areas.

5.3.2 Climate Change Act, 2016

The Climate Change Act of 2016 was enacted to provide for a regulatory framework that catered for an enhanced response to climate change in addition to establishing mechanisms and measures to achieve low carbon climate development. Additionally the Act was enacted

to build resilience and enhance an adaptive capacity as to the impacts of climate change through the formulation of programs and plans that primarily focus on achieving enhanced resilience and adaptive capacity of human and ecological systems to the impacts of climate change. Act were enacted to facilitate capacity development for public participation in climate change responses through awareness creation, consultation, representation and access to information in addition to mainstreaming intergenerational and gender equity in all aspects of climate change responses and mainstreaming the principle of sustainable development into the planning and decision making on climate change response.

Furthermore, the provisions were established to mobilize and transparently manage public and other financial resources for climate change response as well as to provide for mechanisms and facilitate climate change research and development, training and capacity building.

Finally, the provisions of the Act were to integrate climate change into the exercise of power and functions of all levels of governance, and to enhance cooperative climate change governance between the national government and county governments.

Compliance: The proponent and all the relevant stakeholders shall ensure that the proposed project impacts on the environment shall be mitigated in accordance to the proposed mitigation plan at all stages during the entire project.

5.3.3 Sustainable Waste Management Act, 2022

Sustainable Waste Management refers to using material resources efficiently as prioritized by waste hierarchy, circular economy and clean production in order to reduce the amount of waste that is generated, deposited or discarded in the environment including the management of materials that would otherwise have been dumped or wasted in a way that contributes to environmental, social and economic goals of sustainable development.

The Act was established to provide a legal and institutional framework for sustainable waste management and among its objects. The Act was to; promote sustainable waste management and procurement services as well as establish environmentally sound infrastructure for sustainable waste management in addition to creating an enabling environment for employment in green economy, waste management, recycling and recovery industry. Furthermore, the Act was established to promote and ensure effective delivery of waste services.

Compliance: The proponent shall ensure that all the waste segregated during the phases of the project shall be reused, recycled, reduced and recovered appropriately to improve and maintain the quality of environment.

5.3.4 he National Land Policy

The National Land Policy adopted by the cabinet as Sessional Paper No. 3 of 2009, acknowledges environmental problems faced by Kenya. These include degradation of natural resources such as forests, wildlife, water, marine and coastal resources as well as soil

erosion and the pollution of air, water and land. In its section 129 the policy provides for ecosystem protection, urban environment management, environmental assessment and audits to be undertaken to conserve and manage the environment.

5.4 Institutional and administrative framework

The environmental institutional and administrative frameworks have been established by EMCA and include the following.

5.4.1 National Environment Management Authority (NEMA)

The objective and purpose for which NEMA was established is to exercise general supervision and co-ordination over all matters relating to the environment and to be the principal instrument of the government in the implementation of all policies relating to the environment,

5.5 Environmental Impact Assessment (EIA) Process in Kenya

In applying for an Environmental Impact Assessment Licence, the proponent has to first submit at least 10 copies of the Study Report, duly filled Form 1 and the prescribed EIA processing Environmental (Impact Assessment and Audit) Regulations, 2003. Figure 2 below is a schematic presentation of the current EIA process in Kenya.

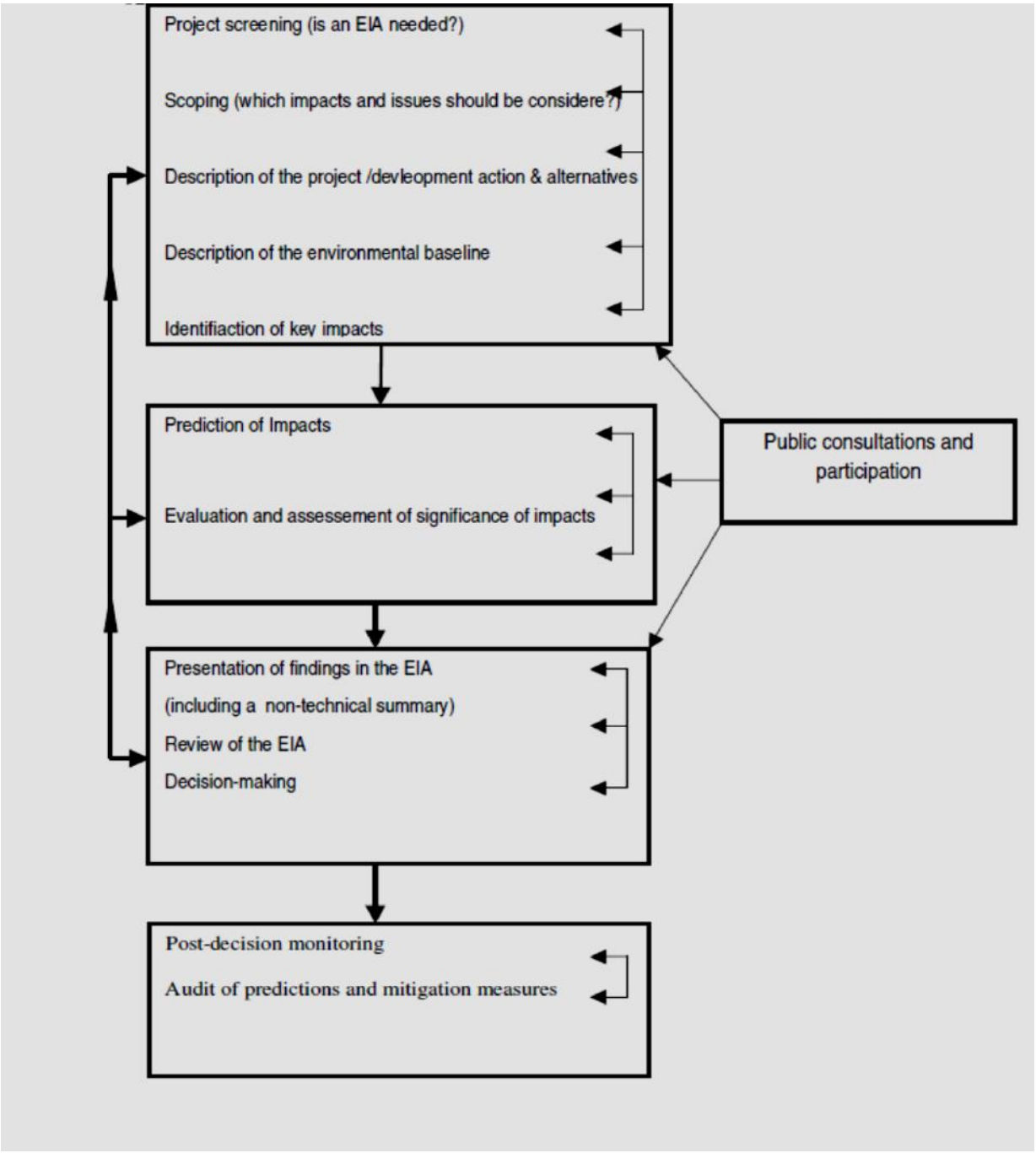

Figure 2 ; schematic presentation of the current EIA process in Kenya.

5.6 Relevant Multilateral International Treaties

5.6.1 The Rio Declaration and Agenda 21

The Rio Declaration and Agenda 2, the action plan for the 21st century are two non-legally binding instruments adopted by the 1992 United Nations Conference on the Environment and Development (UNCED). While the Rio Declaration contains general principles and objectives, Agenda 21 contains detailed guidance on their practical implementation. Principle 4 of the Rio Declaration provides that in order to achieve sustainable development environmental protection shall constitute an integral part of the development process and cannot be considered in isolation from it. Principle 25 accentuates this by stating that peace, development and environmental protection are interdependent and indivisible.

5.6.2 The World Commission on Environment and Development (The Brundtland Commission of 1987)

The Commission in its 1987 report dubbed "Our Common Future" focused on the environmental aspects of development, in particular the emphasis on sustainable development that produces no lasting damage to the biosphere and to particular ecosystems. In addition to environmental sustainability is economic and social sustainability. The concept of EIA is embodied in many multilateral environmental agreements. Principle 17 of the Rio Declaration provides that environmental impact assessment as a national instrument shall be undertaken for proposed activities that are likely to have a significant impact on the environment and are subject to a decision of a competent national authority.

5.6.3 United Nations Framework Convention on Climate Change (UNFCC)

The United Nations Framework Convention on Climate Change provides the basis for concerted international action to mitigate climate change and to adapt to its impacts. Its provisions are far-sighted, innovative and firmly embedded in the concept of sustainable development. With 189 Parties, the Convention has nearly a universal membership.

According to Article 2, the Convention's ultimate objective is "to achieve, in accordance with the relevant provisions of the Convention, stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic [originating in human activity] interference with the climate system". This objective is qualified in that it "should be achieved within a time frame sufficient to allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened and to enable economic development to proceed in a sustainable manner". In stating this objective, the Convention reflects concerns that the earth's climate system is threatened by a rise in atmospheric greenhouse gas (GHG) concentrations, which is caused by increased anthropogenic GHG emissions.

5.6.4 World Bank Environmental and Social Performance Standards

The World Bank's environmental and social performance standards are a cornerstone of its support to sustainable poverty reduction. The objective of these policies is to prevent and mitigate undue harm to people and their environment in the development process. These

policies provide guidelines for Bank and borrower staffs in the identification, preparation, and implementation of programs and projects. In essence, the performance standards ensure that environmental and social issues are evaluated in decision making, help reduce and manage the risks associated with a project or program, and provide a mechanism for consultation and disclosure of information.

a) Performance Standard 1 (Environmental Assessment)

Performance Standard 1 underscores the importance of managing environmental and social performance throughout the life of a project. An effective Environmental and Social Management System (ESMS) is a dynamic and continuous process initiated and supported by management, and involves engagement between the developer/proponent, its workers, local communities directly affected by the project and, where appropriate, other stakeholders. The Standard covers impacts on the natural environment (air, water and land); human health and safety; physical cultural resources; and trans-boundary and global environment concerns. A range of instruments can be used to conduct Environmental Assessments i.e. EIA, Environmental Audit, hazard or risk assessment and Environmental Management Plan (EMP).

b) Performance standard 2 (Labour and Working Conditions)

This standard's provisions have been guided by the International Labor Organization (ILO) and the United Nation and it recognizes that the pursuit of economic growth through employment creation and income generation should be accompanied by protection of the fundamental1 rights of workers. For any business, the workforce is a valuable asset, and a sound worker-management relationship is a key ingredient in the sustainability of a company. Failure to establish and foster a sound worker-management relationship can undermine worker commitment and retention, and can jeopardize a project.

Conversely, through a constructive worker-management relationship, and by treating the workers fairly and providing them with safe and healthy working conditions, project proponents/developer may create tangible benefits, such as enhancement of the efficiency and productivity of their operations.

c) Performance Standard 3 (Resource Efficiency and Pollution Prevention)

This performance standard recognizes that increased economic activity and development often generate increased levels of pollution to air, water, and land, and consume finite resources in a manner that may threaten people and the e environment at the local, regional, and global levels. There is also a growing global consensus that the current and projected atmospheric concentration of greenhouse gases (GHG) threatens the public health and welfare of current and future generations. At the same time, more efficient and effective resource use and pollution prevention and GHG emission avoidance and mitigation technologies practices have become more accessible and achievable in virtually all parts of the world. These are often implemented through continuous improvement methodologies

similar to those used to enhance quality or productivity, which are generally well known to most industrial, agricultural, and service sector companies.

d) Performance Standard 4 (Community Health, Safety, and Security)

The standard recognizes that project activities, equipment, and infrastructure can increase community exposure to risks and impacts. In addition, communities that are already subjected to impacts from climate change may also experience an acceleration and/or intensification of impacts due to project activities. While acknowledging the public authorities' role in promoting the health, safety, and security of the public, this Performance Standard addresses the developer's responsibility to avoid or minimize the risks and impacts to community health, safety, and security that may arise from project related-activities, with particular attention to vulnerable groups. .

e) Performance Standard 5 (Land Acquisition and Involuntary Resettlement)

Performance Standard 5 identifies that project-related land acquisition and restrictions on land use can have adverse impacts on communities and persons that use this land. Involuntary resettlement involves both to physical displacement (relocation or loss of shelter) and to economic displacement (loss of assets or access to assets that leads to loss of income sources or other means of livelihood) as a result of project-related land acquisition and/or restrictions on land use. Resettlement is considered involuntary when affected persons or communities do not have the right to refuse land acquisition or restrictions on land use that result in physical or economic displacement. This occurs in cases of (i) lawful expropriation or temporary or permanent restrictions on land use and (ii) negotiated settlements in which the buyer can resort to expropriation or impose legal restrictions on land use if negotiations with the seller fail.

f) Performance Standard 7 (Indigenous People)

Performance Standard 7 recognizes that Indigenous Peoples, as social groups with identities that are distinct from mainstream groups in national societies, are often among the most marginalized and vulnerable segments of the population. In many cases, their economic, social, and legal status limits their capacity to defend their rights to, and interests in, lands and natural and cultural resources, and may restrict their ability to participate in and benefit from development. Indigenous Peoples are particularly vulnerable if their lands and resources are transformed, encroached upon, or significantly degraded. Their languages, cultures, religions, spiritual beliefs, and institutions may also come under threat. As a consequence, Indigenous Peoples may be more vulnerable to the adverse impacts associated with project development than non-indigenous communities. This vulnerability may include loss of identity, culture, and natural resource-based livelihoods, as well as exposure to impoverishment and diseases. Private sector projects can create opportunities for Indigenous Peoples to participate in, and benefit from project related activities that may help them fulfill their aspiration for economic and social development. Furthermore, Indigenous Peoples may

play a role in sustainable development by promoting and managing activities and enterprises as partners in development.

g) Performance Standard 8 (Cultural Heritage)

Performance Standard 8 affirms the importance of cultural heritage for current and future generations. Consistent with the Convention Concerning the Protection of the World Cultural and Natural Heritage, this Performance Standard aims to ensure that developers protect cultural heritage in the course of their project activities. In addition, the requirements of this Performance Standard on a project's use of cultural heritage are based in part on standards set by the Convention on Biological Diversity. Objectives:

- To protect cultural heritage from the adverse impacts of project activities and support its preservation.
- To promote the equitable sharing of benefits

h) **ESS10: Stakeholder Engagement and Information Disclosure** recognizes the importance of open and transparent engagement between the Borrower and project stakeholders as an essential element of good international practice. Effective stakeholder engagement can improve the environmental and social sustainability of projects, enhance project acceptance, and make a significant contribution to successful project design and implementation.

6. PUBLIC CONSULTATION AND PARTICIPATION

6.1 Government's policy on community consultation and participation

The Government of Kenya policy on community consultation and participation is to involve communities in policy formulation and implementation at the local level. More specifically, the Community Action Planning Programme's objective is to put in place a durable system of intra-community co-operation through collective action, which creates communal discussion forums for the implementation of development activities.

The Kenya government has enshrined the need for human societies' involvement in project development in the Constitution. This has been also set out in the EMCA, Amendment 2015 and Environmental (Impact and Audit) Regulations, 2003. Community consultation and participation ensures that communities and stakeholders are part and parcel of the proposed developments and in so doing assures the sustainable use of resources. It has also demonstrated successfully that projects that go through this process will acquire high level of acceptance and accrue benefits to a wider section of the society.

Public consultations form a useful component for gathering, understanding and establishing likely impacts of projects determining community and individual preferences and selecting alternatives. Furthermore, through public participation, it is possible to enhance project designs and ensure sustainability of the projects.

6.2 Objectives of the public consultation

The objective of the Consultation and Public Participation (CPP) as required in EMCA, Amendment 2015 was to:-

1. Disseminate and inform the public and other stakeholders about the proposed Multi-Storey Housing Development Project with special reference to its key components, location and anticipated impacts.
2. Create awareness among the public on the need for the EIA for the proposed project.
3. Gather comments, concerns and suggestions of the interested and, would be affected/interested parties.
4. Ensure that the concerns of the interested and, would be affected/interested parties were known to the decision-making bodies and the proponent at an early phase of project development planning.
5. Establish a communication channel between the interested, would be affected/interested parties, the team of consultants and the Government.
6. Incorporate the information collected in the study by ESIA Experts.

The purpose for such a process was to identify the positive and negative impacts of the project and subsequently suggest mitigation measures. It also helped in identifying other miscellaneous issues which may bring conflicts during project implementation phase.below is a stakeholder's engagement plan for the project;

A stakeholder Engagement Plan is a formal strategy to communicate with project stakeholders to achieve their support for the project.

It specifies the frequency and type of communications, media, contact persons, and locations of communication events. It is created at the beginning of the project and updated frequently as stakeholder communication needs change.

STAKEHOLDER	POTENTIAL ROLE IN THE PROJECT	ENGAGEMENT STRATEGY	FOLLOW-UP STRATEGY
County Government of Kisumu	• Approval of change of use from residential single dwelling to residential multi-dwelling • Approval of building plans for the proposed apartment • Issuance of construction permit	• Application of development permission from the Kisumu County Government • Structured Key Informant interviews (KII)	• The proponent shall notify the county government of any changes on approved Plans. • County government officers to inspect/monitor activities of the project on regular bas
National Construction Authority	• Issuance of NCA Approval	• Registration of the project with NCA	• NCA officials to inspect/monitor activities of the project on regular basis
National Environment Management Authority(NEMA)	• Licensing the project	• The proponent to Undertake Environmental Impact Assessment Study and submit for evaluation by NEMA.	• NEMA Officials to inspect/monitor activities of the project on regular Basis.
Local Residents	• Project acceptance/ownership	• The proponent to organize Public baraza meetings to notify the locals about the proposed project.	• The proponent to work with some of the locals in different phases of the project.

		• The locals will also be engaged through structured questionnaires	
The General Public	• The end user	• Through public notices inviting members of the public to submit oral or written comments to NEMA on the EIA study Report for the proposed project in the Kenya gazette, Newspapers circulating in the area and over the Radio.	• The public will be notified of any changes on the project through public notices in print media and radio announcement

6.3 Key informants

Key informants included the current residents of the project area, and owners of the neighbouring facilities. The open ended questionnaires were administered to key stakeholders between 21st and 23rd June 2023.(questionnaires attached in annex).

A separate stakeholders meeting was held at at the project site on 23rg June 2023 to discuss the proposed Multi-Storey Housing Development Project. The minutes of the meeting, attendance list and pictures are attached in Annexes of this Study report.

Plate 2: Pictures of stakeholders meeting held at the site

6.4 Positive issues raised

6.4.1 Creation of Employment Opportunities

The stakeholders were optimistic that the construction of the proposed Multi-Storey Housing Development Project will open up new fields of employment. Despite the fact that most of the project will need skilled labour force, the people expressed hope that they will be able to access employment 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.

6.4.2 Increased accommodation units

Neighbours and the general public interviewed were of the opinion that the proposed Multi-Storey Housing Development Project will come along with a gain in the general accommodation units which are not adequate at the moment. Such facilities are limited within the project area, and Kisumu at large, hence the implementation of the proposed project will be beneficial.

6.4.3 Potential growth of the economy

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

6.4.4 Provision of market for supply of building materials

During the construction phase of the proposed project, it was found out that the neighbouring businesses and locals interviewed who dealt with supply of building materials will benefit from supplying the materials and this will improve their business opportunities.

6.4.5 Increase in government revenue

The public and the various stakeholders interviewed expressed their optimism that there will be an increase in revenue collection due to the fact that there will be an increase in business opportunities within the project area and beyond.

6.4.6 Optimal use of land

The public interviewed were optimistic that the construction of the Multi-storey housing development will make better use of the site and even increase land values around. The project area is also expected to open up.

6.4.7 Increased value of land

The public thought that with the modern Multi-Storey Housing Development Project in place, the general value of land in the area will increase. Other similar projects will also be attracted to the project area.

6.4.8 Increased Security in the area due to lighting provision at night and 24 hour CCTV surveillance.

The stakeholders thought that the area will be more lit up especially during night time with the building in place. This is expected to lead to improved security situation in the neighbourhood due to the lighting provisions at night and 24 hours CCTV surveillance which is currently not in place.

6.4.9 Improvement of road infrastructure

The stakeholders expect that the proponent will widen a section of Ondiek Highway to allow easy entry of traffic to the site. Other roads leading to the proposed Multi-Storey Housing Development Project will have to be well maintained. The current Ondiek Highway is narrow and does not have a paved pathway.

6.5 Negative Issues

6.5.1 Potential Water Pollution

From the public consultation conducted, it was found out that there will be a potential pollution of the water resources nearby. The waste water which will emanate from the construction activities together with the storm water runoff will all contribute to the water pollution of the nearby rivers.

6.5.2 Noise Pollution

The residents and neighbours expressed their concern over noise pollution that would emanate from the construction works and the vehicles during the operation phase. Sensitive

neighbouring businesses like Bishop's Gate stated that noise will interfere with their normal operations. The lead expert indicated that appropriate measures to minimize noise impacts will be put in place. Construction activities that produce too much noise will be limited to daytime. Appropriate protective equipment will be issued to construction workers to protect them from construction noise. Proper planning will also minimize the frequency of materials transportation. The contractor and/or the proponent should ensure that works are carried out during daytime i.e. from 8 a.m. to 5 p.m.

6.5.3 Vibrations

The most immediate residents expressed concern over vibration produced by the construction machines and other moving machines in the construction site and this has likely effects on the strength of the buildings nearby. Most of them were worried about the blasting activities and excessive vibrations from construction and compaction activities that may cause buildings and structures develop cracks and well as interfering with normal office works in the nearby building. .

6.5.4 Pollution from dust

Another concern from those interviewed was that of dust pollution during construction works. This will cause a lot of nuisance and disturbance to the neighbouring residential units. The residents were informed that dust mitigation measures have already been put in place including installation of dust screens. Other measures will include sprinkling water in areas being excavated and along the trucks used by the transport trucks and diversions within the site and use of dust nets. These measures will be supervised by the on-site EHS officers.

6.5.5 Increased pressure on the existing water and energy resources

Those interviewed expressed their concerns over energy and water resources which will immensely be utilized during construction and operation phase. This also includes the underground water resources available in Dago Village. The design architect and client indicated that the project will utilize borehole water to reduce the overconsumption of water supplied by KIWASCO when it eventually connects.

6.5.6. Displacement of residents

The current resident shall be required to vacate the houses and pave way for proposed development, they feared that they would not get alternative housing units at the current social housing rate of KSH 1,150 per month and hence this posed anxiety amongst them. The proponent assured them of some small allowance to help them settle in the new homes and also promised them first priority allocation on the new housing units.

6.6 Conclusion

The stakeholders interviewed welcomed the development and were optimistic that the project will provide standard residential facilities and services, create employment opportunities, stimulate the local and national economy by boosting other sectors of business

and lead to better standards of living. There was no major negative issue raised as far the new development is concerned except for loss of current cheap accommodation that they enjoyed. The proposed project is therefore commendable for approval by NEMA.

7. ASSESSMENT OF POTENTIAL ENVIRONMENTAL IMPACTS

The environmental baseline information and the project characteristics discussed earlier form the basis for impact identification and evaluation. The impacts that are expected to arise from the project could either be termed as positive, negative, direct, indirect, short-term, long-term, temporary and permanent depending on their area of cover and their stay in the environment. This assessment is done for all the project phases namely; construction, operational and decommissioning phases.

7.1 Positive impacts during planning and design phase

7.1.1 Employment opportunities

With the planning and design phase of the proposed Project, there will be employment opportunities for professionals. Those to be employed include architects, engineers, surveyors and environmentalists. Those employed will improve their standards of living from the charge they will be paid for their services.

7.1.2 Creation of awareness

During the ESIA process on the proposed Project, the immediate neighbouring community was informed of the Project and their views sought on what they think about the Project. In this way, awareness was created for both the neighbouring community and the Proponent. The Proponent was also in a position to incorporate the useful views from the community when planning and designing the Project.

No negative project impacts are envisaged during the design phase.

7.2 Positive impacts during construction phase

7.2.1 Employment opportunities

The project will create a number of job opportunities especially to casual workers. Employment opportunities are a benefit both in economic and social sense. In the economic sense it means abundant unskilled labour will be involved in economic production. In the social sense these young and energetic otherwise poor people will be engaged in productive employment other than being jobless. Idleness in society may attract the unemployed to social vices like drug abuse and other criminal activities like robberies. Several workers including casual labourers, masons, carpenters, joiners, electricians and plumbers are expected to work on the site for a period that the project will start to the end. Apart from casual labour, skilled, semi-skilled and unskilled labour and formal employees are also expected to be hired during the period of construction.

7.2.2 Expansion of market for construction materials

The Project will require materials, some of which will be sourced locally and some internationally. These include steel, pipes, valves, cement, timber and timber products, sand,

hardcore, roofing materials and paints. This will provide a ready market for suppliers with multiplier effects on the local economy.

7.2.3 Gains in the Local and National Economy

There will be great gains to the County and National economy. Through consumption of locally available materials including: steel, concrete, tiles, timber and cement. The consumption of these materials and others will attract taxes including VAT which will be payable to the government. The cost of the materials will be payable directly to the producers as income through profits gained.

7.2.4 Improved local trade

The construction activities will involve buying of materials from both the local and international market. Local Market will benefit from selling the construction materials to the contractor and as a result boost the local trade. Waste products from the construction activities will also be handled by local NEMA registered waste handlers and this will also enhance local trade.

7.2.5 Increased business opportunities for the informal sector

During construction period the informal sector will benefit from the operations. This will involve kiosk operators who will be selling food to the workers on site and *Juakali* entrepreneurs in the local areas. In turn, this will considerably improve their living standards from the income they get from their businesses.

7.2.6 Improved Security

With the coming up of the proposed Multi-Storey Housing Development Project, cases of insecurity will reduce given that the project will attract more people hence improving security of the area. The project will come along with security details including night time lighting, installation of CCTVs and employing of security guards which will be a benefit to the surrounding as well.

7.3 Negative impacts during construction

The following negative impacts are associated with the construction of the proposed Project. Most of them are temporary with some only occurring intermittently during the construction period.

7.3.1 Noise and vibration generation

The construction works will most likely be a noisy operation due to the moving machines (mixers, tippers, communicating workers) and incoming vehicles to deliver construction materials and workers to site. To be affected mostly are the site workers and immediate neighbours since noise beyond some level is itself a nuisance if not maintained within acceptable limits (an exposure 85 Db/ 8 hours as WHO standards). Excessive vibration also from the construction activities of blasting and excavation can cause economic and physical

damage of the neighbouring properties such as Polyview estate. Exposure of workers beyond the specified limits will lead to hearing complication such as tinnitus, partial even complete hearing loss.

7.3.2 Dust emissions

Dust will be generated during, site clearance, demolition of the existing house on site, excavation / earthworks and aggregate/sand transportation to and around the site. Though temporary, this is likely to affect site workers and the nearby residential and commercial properties. There is a possibility of PM10 suspended and settle able particles affecting the site workers and even neighbours health. Particulate matter and dust depending on the content can pose a serious health hazard (respiratory and even carcinogenic) unto the workers and neighbours if not well contained and controlled.

7.3.3 Increased storm water

Paving of the ground structures and roofing will increase water collection and runoff as opposed to the infiltration. The increased storm water runoff will as a result lead to soil erosion if proper channels will not be put in place.

7.3.4 Soil Erosion

The site slopes gently to Bishop's Road. Possibilities of soil erosion occurring during construction are high especially during rainy seasons. Lost soil will be deposited on the road as silt. The location of the run-off load will create a traffic hazard along Bishop's Road. It may also pose a water quality issue directly as a result of siltation and indirectly from contaminants carried with or attached to soil particles.

7.3.5 Increased traffic along Ondiek Highway and possible traffic accidents

The proposed development is located along Ondiek Highway. The road is common with long trails of traffic jams especially in the morning and afternoon. With the proposed construction and its associated traffic intensity for material and staff mobilization will even exacerbate the situation. An appropriate Traffic Management plan will be developed for the same and plausible as a mitigation measure to ensure traffic congestion and possible accidents are kept to minimum. This will also include limiting the number of trips made by the construction vehicles during peak hours and this will be ensured through proper planning on material acquisition.

7.3.6 Disposal of excavated soil

Site excavations shall be done and some excavated materials will be rendered as wastes. These rejected materials will be collected as waste for disposal. Disposal of this category of waste may have adverse impacts on the receiving environment depending on their type and intensity. This waste may compromise the aesthetic value, air quality and even water quality at the receiving end if not handled as per the laid regulations and proposed EMP as best practice.

7.3.7 Oil spills

The motor- powered construction machines on site will need to be regularly serviced. This thus requires continuous oiling to minimize the usual corrosion or wear and tear. Possibilities of such oils spilling and contaminating the soil and water on site are real. Likewise, moving vehicles on site may require oil change. But these dangers are contained by maintaining the machinery in specific areas designed and designated for this purpose. In event of soil contamination it will be prudent for the service to contact the project EHS staff for advice on how to handle such as per the EMP table provided in this report.

7.3.8 Interference with road drainage

The proposed project is located next to a graded public road and excavation and materials spilling could result in blockage of section of the road's open drainage if no caution is exercised.

7.3.9 Increased water demand

During the construction phase of the proposed Project, both the construction workers and the construction works will create demand for water in addition to the existing demand. Water will be mostly used in the construction of the sub base and the building structure.

Water will also be used by the construction workers to wash and drink. Consultations revealed that there are no water supply problems in the area and hence the impact will not be very significant.

7.3.10 Construction accidents and hazards

Both construction workers and the general public using the road near the site are likely to have injuries and hazards as a result of the construction of the Building if no proper precautions are taken. The construction works unavoidably expose workers to occupational health and safety risks. The construction workers are also likely to be exposed to risk of accidents and injuries resulting from accidental falls, injuries from hand tools and construction equipment.

The general public may also be exposed to falling construction objects if access to or passage through the site is not adequately controlled.

7.3.11 Extraction and use of construction materials

Construction materials that will be used in the construction such as hard core, cement and masonry stone will be obtained from quarries, hardware shops and sand harvesters who extract such materials from natural resource banks such as lakes and land. The proposed development is being carried out at a level that can create some damage due to materials extraction. The materials shall be sought from licensed suppliers.

7.3.12 Waste generation

Solid wastes generated during construction include papers used for packing cement, plastics, cuttings and trimmings off materials among others. Dumping around the site will interfere with the aesthetic status and can have a direct effect on the surrounding community. Disposal

of the same solid wastes off-site could also be a social inconvenience if done in the wrong places. The off-site effects could be aesthetic, pest breeding, pollution of physical environment, invasion of scavengers and informal recycling by communities.

The construction workers will generate faecal waste during their day-to-day operations. The generated waste needs proper handling to prevent contamination with water and other environmental parameters hence which may otherwise cause diseases, such cholera, diarrhoea , typhoid and dysentery..

7.3.13 Floracover clearance

The proposed project site is covered with grass and approximately 120 mature trees of different species and other indigenous trees. The construction process will involve clearing of these existing vegetation cover. The developer intends to replace this with planting of many indigenous and other useful trees and grass in all the gardens and strategic green areas as proposed in the landscape plan. The project architectural designs have been modeled in such a way to avoid clearing of all the existing vegetation, among other green building technologies which have been adopted to replace the vegetation to be cleared.

7.3.14 Increased power demand

Constructions works will create more demand for electricity especially for welding purposes. Energy wastage can occur is proper management and conservation measures are not put in place.

7.3.15 Generation of exhaust emissions and air pollution

Exhaust emissions are likely to be generated by the construction equipment during the construction phase. Motor vehicles used to mobilize the work force and materials for construction would cause a potentially significant air quality impact by emitting pollutants through exhaust emissions. Because large quantities of building materials are required, some of which will be sourced outside Kisumu area, 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 gunning of vehicle engines, frequent vehicle turning and slow vehicle movement in the loading and offloading areas.

7.3.16 General Occupational Health and Safety Issues.

During construction of the proposed project, it is expected that construction workers are likely to have accidental injuries and hazards due to human and workplace interactions. 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. It’s recommended an appropriate approach to ergonomics

be sought PPE's should be issued to all workers on site. Trainings on Fire Management, First Aid, occupational Health and Safety also be conducted occasionally. Additionally, in ensuring workers' safety hazard/risk assessment should be done comprehensive hazard/ risk management plans documented and certified by DOSHS. These plans will complement the ESMP developed and the NEMA license conditions in managing EHS issues at the site.

7.3.17 HIV/AIDS and other Infectious Diseases

Construction activities usually involve people from different regions, with different backgrounds, whereby they interact on daily basis. If these workers are not properly educated on HIV/AIDS, their health will be at risk. Provisions of such contraceptives by a licensed institution and frequent trainings on prevention methods will reduce the risks that the workers will be exposed to. Both workers and local communities must be sensitized on Covid 19 prevention measures in line with the government directives and workers provided with the requisite PPEs and sanitizers at their work stations.

7.4 Positive impacts during operation

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

7.4.1 Creation of employment

Employment opportunities are one of the long-term major impacts of the development project that will be realized after construction and during the operation and maintenance of the tower and associated facilities. These will involve security personnel, solid waste management staff, businesses that will be located within the project. Other sources of employment will involve direct service provision to the office services

7.4.2 Optimal use of land

Being state of the art Multi-Storey Housing Development Project, the project will see optimal use of land. Land is a scarce resource in Kenya and through implementation of the proposed project will ensure optimal use of land to the great benefit of the country and its people.

7.4.3 Increase in housing stock

In Kenya the housing space demand by far outstrips the unit supply. This has led to the scramble for the fewer available spaces, which are usually charged expensively. The greatest positive thing with the project is that it will contribute to the housing stock. These will add to the supply of housing, and parking space which is currently a major socio-economic problem for Kenya and especially in Nairobi's Metropolis and its vicinity.

7.4.4 Increased security in the area

With the installation of the CCTVs, night time lighting and recruitment of security attendants, the general security of project site will be greatly improved with the project implementation.

7.4.5 Increased property value

The proposed development together with its associated facilities will enhance the general look of the surrounding and this will have an impact on the neighbouring land and property value. The proposed development will generally increase the property value of the neighbouring resources.

7.5 Negative impacts during operation phase

The following negative impacts are associated with the proposed building development:

7.5.1 Air pollution from vehicles

The proposed development has a provision for parking within the compound. Traffic is likely to be expected from the users of this proposed development and this might pose a problem to the nearby residents due to the exhaust emissions if not well contained and controlled.

7.5.2 Increased domestic waste generation

The project is expected to generate enormous amounts of solid waste during its operation phase. The bulk of the solid waste generated during the operation of the project will consist of paper, plastic, 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 hence may cause long-term injurious effects to the environment. Even the biodegradable ones such as organic wastes may be injurious to the environment if not well managed. As the organic wastes decompose, they produce methane gas, a powerful greenhouse gas known to contribute to global warming.

7.5.3 Increased demand for domestic water

Once commissioned, clients to the building will require water to meet their needs including for use in washrooms, drinking and for cleaning their apartments. This will increase demand for more water supply in the area.

7.5.4 Increased energy consumption

The project shall consume large amount of electricity due to the number of units being proposed and the activities that will take place once the project is complete. Since electric energy in Kenya is generated mainly through natural resources, namely water and geothermal resources, increased use of electricity will have adverse impacts on these natural resources base and their sustainability.

7.5.5 Increased storm water flow and water use.

The building roofs and pavements will lead to increased volume and velocity of storm water or run-off flowing across the area covered by the units. This will lead to increased amounts of storm water entering the drainage systems, resulting in overflow and damage to such systems in addition to increased erosion or water logging in the neighbouring areas.

7.5.6 Fire risks

Fire risks will be created from domestic operations using liquefied petroleum gas and electrical appliances especially from kitchens and from car park at the building levels.

7.6 Impacts during decommissioning phase

Decommissioning refers to the formal process of removing something from the operational status. It requires time in order to properly deal with potentially hazardous materials and risks that may be encountered.

Decommissioning a building means to set up an "unneeded-for-now" segment so that it does not require maintenance and its potential destruction, both chronic and catastrophic, is eliminated or greatly reduced The construction investment is preserved, and should we wish to reconstruct, the cost is minimal.

Decommissioning impacts are closely related to the reason for the decommissioning and include but are not limited to:

- Positive:
    - Employment opportunities
    - Rehabilitation and restoration of the site to its original status
- Negative
    - Noise and vibration;
    - Generation of waste;
    - Dust emission; and
    - Accidents and hazardous exposures.

8 PROPOSED MITIGATION MEASURES AND MONITORING PROGRAMMES

This Chapter highlights the mitigation measures proposed for the anticipated negative impacts of the proposed project. The potential impacts and the possible mitigation measures have been analysed under three categories: Construction, Operation and Decommissioning.

8.1 Mitigation of construction related impacts

The following will be considered as mitigation measures of the negative impacts associated with the proposed Project during construction phase.

8.1.2 Minimize the effect of Air quality

Controlling dust during construction is useful in minimizing nuisance conditions. It is recommended that a standard set of feasible dust control measures be implemented for all construction activities. Emissions of other contaminants (NOx, CO_2, SOx, and diesel related PM10) that would occur in the exhaust from heavy equipment are also included. The proponent is committed to implementing measures that shall reduce air quality impacts associated with construction. All personnel working on the project will be trained prior to starting construction on methods for minimizing air quality impacts during construction. This means that construction workers will be trained regarding the minimization of emissions during construction. Specific training will be focused on minimizing dust and exhaust gas emissions from heavy construction vehicles. Construction vehicles drivers will be under strict instructions to minimize unnecessary trips, refill petrol fuel tanks in the afternoon, and minimize idling of engines.

Dust emissions will be controlled by the following measures:

- Watering all active construction areas as and when necessary to lay dust.
- Cover all trucks hauling soil, sand and other loose materials or require all trucks to maintain at least two feet of freeboard.
- Pave, apply water when necessary, or apply (non-toxic) soil stabilizers on all unpaved access roads, parking areas and staging areas at construction sites.
- Sweep daily (with physical sweepers) all paved access roads, and staging areas at construction sites.
- Fast growing trees will be planted around the project area to act as a wind breaks to reduce the uplift of particulate matter that lead to respiratory diseases.

8.1.3 Minimize the effects of noise emitted and vibration from the site

Significance of noise impacts depends on whether the project would increase noise levels above the existing ambient levels by introducing new sources of noise. Noise impacts would be considered significant if the project would result in the following:

- Exposure of persons to, or generation of, noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.

- Exposure of persons to, or generation of, excessive ground-borne vibration or ground-borne noise levels.
- A substantial permanent increase in ambient noise levels (more than five dBA) in the project vicinity above levels existing without the project.
- A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.

The proponents shall put in place several measures that will mitigate noise pollution arising during the construction phase. 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).
- Install sound barriers for pile driving activity.
- Limit pickup trucks and other small equipment to a minimum idling time and observe a common-sense approach to vehicle use, and encourage workers to shut off vehicle engines whenever possible.
- Construction/Demolition works should be done during the day when the outside environment is also noisy.
- Adhere to the Environmental Management and Coordination (Noise and Excessive Vibration Pollution (Control) Regulations, 2009) regarding noise limits at the workplace.
- Application of modern methods of construction that avoids excessive vibrations
- Ensuring the contractor has a good insurance policy that covers accidental damage of neighbours' properties.

8.1.4 Minimization of run-off and soil erosion

The proponent will put in place some measures aimed at minimizing soil erosion and associated sediment release from the project site during construction. These measures will include terracing and leveling the project site to reduce run-off velocity and increase infiltration of rain water 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.

8.1.5 HIV/AIDS and other Infectious diseases.

During the construction phase, workers will come from different places with different backgrounds. The workers will be at risk if proper training of HIV/AIDS is not conducted by trained experts/individuals. The distribution of the necessary contraceptives and training on their proper usage is highly recommended.

Both workers and local communities must be sensitized on Covid 19 prevention measures in line with the government directives and workers provided with the requisite PPEs and sanitizers at their work station.

All WHO and MOH Covid -19 Rules will be observed during the project implementation.

8.1.6 Minimization of construction waste

It is 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 this regard, the proponent is committed to ensuring that construction materials left over at the end of construction will be used in other projects rather than being disposed of. In addition, damaged or wasted construction materials including cabinets, doors, plumbing and lighting fixtures, marbles and glass will be recovered for refurbishing and use in other projects. Such measures will involve the sale or donation of such recyclable/reusable materials to construction companies, local community groups, institutions and individual residents or home owners.

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

It is further recommended that the proponent should consider the use of recycled or refurbished construction materials. Purchasing and using once-used or recovered construction materials will lead to financial savings and reduction of the amount of construction debris disposed of as waste.
Additional recommendations for minimization of solid waste during construction of the project include:-

a. Use of durable, long- lasting materials that will not need to be replaced as often, thereby reducing the amount of construction waste generated over time
b. Provision of facilities for proper handling and storage of construction materials to reduce the amount of waste caused by damage or exposure to the elements
c. Purchase of perishable construction materials such as paints incrementally to ensure reduced spoilage of unused materials
d. Use of building materials that have minimal packaging to avoid the generation of excessive packaging waste
e. Use of construction materials containing recycled

8.1.7 Reduction of energy consumption

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

Complementary to these measures, the proponent shall monitor energy use during construction and set targets for reduction of energy use.

8.1.8 Minimization of water use

The proponent shall ensure that water is used efficiently at the site by sensitizing construction staff to avoid irresponsible 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.

8.1.9 Controlling oil spills during construction phase

The proponent will control the dangers of oil, grease and fuel spills during construction by maintaining the machinery in specific areas designed for this purpose. Machinery site repair will be discouraged and repair work restricted to only approve garages to avoid pollution from oil, grease and fuel.

8.1.10 Public Health safety and Awareness

The following measures are aimed at ensuring wellness and safety of employees within the construction site and general safety and suitability of the development:-

i. The contractor should provide a small section of the construction site with a shed and a water stand where the food can be served to the construction workers to promote hygiene and health of the employees.
ii. A fully equipped first aid kit should be provided at the site.
iii. The contractor must have workmen's compensation cover as required by law (The Workmen's Compensation Act), as well as relevant ordinances, regulation and union's agreements.
iv. The workers, immediate neighbour and other stakeholders should be sensitized on the dangers and risk associated with the construction works for enhanced self-responsibility on personal safety.
v. The proponent should ensure that the completed buildings are fitted with safety facilities including fire detectors, firefighting equipment, fire exits, adequate access and buffer between the residential premises.
vi. Sanitizers and hand washing facilities will be availed to curb the spread of Covid -19
vii. Disabled access features and safety signage should be placed strategically around and within the buildings.
viii. Appropriate sanitation conveniences should be provided at the site as required in the OSHA, 2007 and echoed in the Public Health Act.

8.2 Mitigation of operation phase impacts

Overall management of this Project will have a direct impact on it sustainability and ultimate success. The anticipated negative impacts associated with the Project during the operation phase will be mitigated as discussed below.

8.2.2 Domestic 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 and skips for temporarily holding domestic waste generated at the site. In addition, the proponent will ensure that such disposed of regularly and appropriately. It is recommended that the proponent puts in place measures to ensure that the occupants of the buildings manage their waste efficiently through recycling, reuse and proper disposal procedures.

The proponent will adhere to the Environmental Management and Coordination (Waste Management), Regulations 2006.

8.2.3 Management of fire risks

Appropriate fire fighting system will be installed at each level of the building and in common public areas before its commissioning. This will integrate both automatic and manual fire detection and arrest systems. These will include automatic overhead sprinkler systems and portable fire extinguishers.

8.2.4 Wastewater management

The proponent will ensure that there are adequate means for handling the large quantities of sewage generated at the building levels. It will also be important to ensure that sewage pipes are not blocked or damaged so that the waste can be delivered to the sewer system. Such blockages or damages will be fixed expeditiously. Waste water shall be disposed in compliance with the provisions of the Environmental Management and Coordination (Water Quality), Regulations 2006.

8.2.5 Ensure efficient energy consumption

The proponent will install energy-efficient system in the whole project energy consuming sectors. This will contribute immensely to energy saving during the operational phase of the project. In addition, occupants of the Residential Buildings will be sensitized to ensure energy efficiency in their operations. To complement these measures, it will be important to monitor energy use during the operation of the proposed estate and set targets for efficient energy use.

8.2.6 Ensure general safety within the premises

A perimeter fence (Boundary Wall) will be erected round the plot, street lighting done, a 24 hour CCTV surveillance system and a security lighting system installed. A competent security firm may be engaged to ensure the general safety and security at all times within and around the premises.

8.2.7 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 housing units will be sensitized to use water efficiently.

8.2.8 Increased pressure on the existing infrastructure

It is recommended that the proponent should liaise closely with other development partners and relevant Government Departments and the County Government to upgrade the existing shared facilities including roads, water distribution systems etc. The proponent should as well explore alternative means which are environmentally sound like employing the Green Energy Technologies when and where applicable like the proposed use of Solar Panels in water heating among others. This will rather reduce the over dependence on fossils based energy sources which are arguably presently threatened with the idea of having a private borehole in itself being a way of relieving an existing water supply system..

8.3 Mitigation of decommissioning phase impacts

Just as in the construction phase, the anticipated negative impacts of the proposed Project during decommissioning phase shall be mitigated as follows.

8.3.2 Excessive noise and vibration pollution

Significant impacts on the acoustic environment and excessive vibrations will be mitigated as described in Section 8.1.3

8.3.3 Solid waste management

Demolition waste will be managed as described Section 8..2.2

8.3.4 Management of dust emissions

High levels of dust concentration resulting from demolition or dismantling works will be minimized by sprinkling water on loose surfaces and erecting dust screens.

8.3.5 Occupational health and safety

To reduce the demolition workers accidents and hazards during the decommissioning phase of the proposed Project, the Proponent through the Contractor will make sure that Occupational Health and Safety rules and regulations stipulated in the Occupational Safety and Health Act, 2007. The employment of appropriates PPE will be strictly stressed.

8.3.6 Site rehabilitation

The proponent will undertake rehabilitation of the site through appropriate landscaping to its original setting as much as possible.

9 ENVIRONMENTAL& SOCIAL IMPACTS MANAGEMENT AND MONITORING PLAN (ESMMP)

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

The table below provides the ESMMP of the outlined environmental and social impacts;

No	Nature of Negative environmental/social Impacts	Mitigation Measures	Responsibility	Performance Indicators Monitoring activity	Cost per year (KES)
1.	**CONSTRUCTION PHASE**				
A.	**ENVIRONMENTAL IMPACTS**				
i.	Noise and Excessive Vibration	• Use modern equipment, which produces the least noise. Any unavoidably noisy equipment should be identified and located in an area where it has least impact; • Noise shielding screens should be used and the operation of such machinery restricted to when required; • For mobile equipment, fit efficient silencers and enclose engine compartments in plant vehicles; • For fixed plants, isolate source by enclosure in acoustic structure; • Raise barriers around noisy equipment;	Contractor / Engineer in charge	-Noise Survey Audit -Permissible noise levels during constructions -No noise Complains	100,000

		• Notify the public of construction activities that may be perceived as noisy and intrusive prior to starting construction; • Establish means for the public to contact the engineers-in-charge (i.e., provide telephone number, email, etc.) and provide methods to handle complaints; • The use of hearing protection gears by workers when exposed to noise levels above 85 dB(A); • Ensure that noise & excessive vibration from construction activities are within permissible levels as per the provision of the Environmental Management and Coordination (Noise and Excessive Vibration Pollution) (Control) Regulations, 2009. This includes among others adhering to permissible noise and vibration level; • Care should be exercised when selecting equipment to avoid use of time worn or damaged machinery with high level of noise emissions that would have a negative impact in the environment.			
ii.	Airborne Emissions	• Construction equipment will be maintained in good operating condition to reduce exhaust emissions; • Construction sites, transportation routes, diversions and materials handling sites to be water-sprayed on dry and windy days, especially if near sensitive receptors, such as the Moi stadium area; • Haulage trucks must be covered or the aggregates sprayed with water before loading the haulage trucks; • All diesel fuel in use should be ultra-low sulphur diesel; • The project area will be cordoned off to minimize dust migration to nearby	Contractor / Engineer in charge.	-Regular Air quality monitoring -No material spillage on the roads -Number of complaints from neighbours	100,000

		facilities by wind; • Speed controls by temporary speed bumps on diversions where necessary within the construction site; • Staff working in dust generating activities e.g. site preparation, excavation, concrete mixing, stone dressing should be provided with personal protective equipment (PPE) the use of PPE shall be enforced; • Avoiding open burning of solid wastes.			
iii.	**Soil and water pollution**	• Open stockpiles of construction materials on site should be covered with tarpaulin or similar fabric during rainy season; • Prevent the washing away of construction materials, soil, silt or debris into any drainage system; • All machinery and equipment should be regularly maintained and serviced to avoid leak oils; • Maintenance and servicing of vehicle, machinery and equipment must be carried out in a designated area (protected service bays) and where oil is completely restrained from reaching the ground; • Oil products and materials should be stored in site stores or in the contractor's yard; • Car wash areas and other places handling oil related activities within the site must be well managed, and the drains from these areas controlled. Oil interceptors must be installed along the drainage channels leading from such areas; • There should be no flooding within the site at all to prevent seepage of contaminated water into underground water sources;	Contractor / Engineer in charge.	-Soil test analysis in spill occurrence areas	**100,000**

		• All applicable national laws, regulations and standards for the safe use, handling, storage and disposal of hazardous waste to be followed; • Storage sites for petroleum products should be secured and signage posted, which include hazard warnings, who to contact in case of a release (spill), access restrictions and under whose authority the access is restricted will be posted; • Label products and store in weather-proof containers on spill containment pallets and under a weather-proof tarp. The contractor/spill response coordinator will monitor periodically for leaks, and check to ensure that labels are still present and legible; and • Implementation of erosion and sediment control measures such as silt fences; Channel all the waste water into onsite sewerage system for treatment			

iv.	Increased solid waste.	• Adopt the method of selective demolition (for existing buildings) to the extent possible; • Waste (such as metal scrap or wood waste) that can be reused/ recycled may be donated to local people; • Segregate waste onsite; • Ensure that waste is disposed of according to EMCA (Waste Management) Regulations, 2006 and the County Government by – laws; • Contracted waste handlers should be licensed to transport and dispose waste at approved dumpsites only • During transportation of waste, it should be covered to avert dispersion along the way; and • Hazardous waste will not be mixed with other solid waste generated and should be managed by way of incineration or land-filling	Contractor / Engineer in charge.	-Contract licensed waste handlers -Waste disposal at designated sites -No reports of illegal waste dumping	200,000
B. SOCIAL IMPACTS					
v.	Temporary scenic blight	• Ensure minimal footprint of construction activities. • Project workers and activities restricted to construction site	Contractor / Engineer in charge	-Fenced construction site	

vi.	Traffic snarl up along adjoining roads	•Construction activities that might substantially disrupt traffic e.g. delivery of materials should not be performed during peak travel periods to the maximum extent practicable; • Warning signs should be used as appropriate to provide notice of road hazards and other pertinent information to motorists and the general public; • Signage and barricades should be used as part of the typical construction traffic controls; • Temporary manual traffic control should be used when construction vehicles are entering and leaving the site through valley road gate along Valley road; and • Adherence to County Government Traffic By-Laws and Kenya Traffic Laws.	Contractor / Engineer in charge.	-Well flowing traffic -Traffic marshal site access by large vehicles likely to obstruct traffic -Logs of traffic offences	100,000

vii.	Increased Safety and Health Risks	• Regular drills shall be undertaken to test the response of the involved stakeholders; • Use signage to warn staff and/ or visitors that are not involved in construction activities of areas that pose risk; • Strict instructions shall be given for drivers of heavy equipment; • Supervision of works shall be done regularly to ensure that safety conditions are met while any deviation from safety regulations is immediately reclaimed following the best practices regarding safety at work; • Develop evacuation procedures to handle emergency situations; • Truck drivers should maintain a speed limit of not more than 20Km/hr.; • Speed controls by temporary speed bumps where necessary shall be undertaken within the construction site; • Compliance to all international, national and local health and safety standards that may exist; • Clear marking of work site hazards and training in recognition of hazard symbols; • Training of all personnel in fire prevention and protection; • Regular inspection, testing and maintenance of equipment and machinery; • Provide full first aid kits at the construction yard; • Use of water sprays to arrest dust; • Containment of hazardous materials; and • Provide adequate protective gear to construction workers	Contractor / Engineer in charge.	OSH training records -Presence of informative signage -Safety and Health audits -Provision of first aid boxes, fire fighting equipment -Maintenance of equipment and plants logs -Material safety data sheets	200,000

viii.	Gender Inequality	• Equal employment opportunities will be provided for both men and women; • Expose and involve women in road construction and maintenance activities in an effort to transfer required skills to them; • Involve women groups in activities that they are good at such as landscaping; and • Enhance gender sensitivity and reduce gender discrimination in construction activities	Contractor / Engineer in charge.	Gender equality	N/A
2. OPERATION PHASE					
A). ENVIRONMENTAL IMPACTS					
i.	Waste water generation	• Discharge waste water into a waste water treatment plant to be established onsite • Ensure no residents discharges Chemical waste into the sewer system • The effluent being discharged to the sewer line should conform to the limits as provided for under Environmental Management Co-ordination (Water Quality) Regulations, 2006; Standards for effluent discharge into public sewers-Schedule five; • Minimize entry of solid waste into the waste water stream by giving tenants clear rules on waste management. • Ensure that sewerage discharge pipes are not blocked or damaged.	Proponent	- Efficient waste water management -Quarterly effluent test results - Waste segregation initiatives	300,000

ii.	Solid Waste Generation	• Consider waste minimization practices; • Segregate waste at the point of generation; • All waste to be handled and managed in accordance with the EMCA (Waste management) Regulations of 2006; • All waste containers to be labelled/ color-coded depending on waste category; • Waste storage areas to have the following design consideration: Hard, impermeable floor with drainage, and designed for cleaning / disinfection with available water supply, secured by locks with restricted access, designed for access and regular cleaning by authorized cleaning staff and vehicle, protected from sun, and inaccessible to animals / rodents, equipped with appropriate lighting and ventilation, segregated from food supplies and preparation areas; equipped with supplies of protective clothing, and spare bags / containers; • Appoint a waste handler who is licensed by NEMA and permitted by the local government to handle, transport and treat biomedical wastes at approved treatment sites using recommended treatment procedures laid down by the legal framework and respective government agencies; • Waste destined for off-site treatment facilities should be transported according to the guidelines for transport of hazardous wastes / biomedical wastes in EMCA(Waste Management) Regulations, 2006;	Proponent	-Efficient solid waste management -Contractual documents with waste handler -Records of solid waste quantities disposed -Waste management training programs	300,000

iii	Increased Water demand	•Any water abstractions in future should be as per the Water Resources Management Authority (WRMA) permit; • Conduct an EIA for the proposed borehole and acquire a WRMA permit to abstract water; • Conduct a hydrogeological survey for any future proposed borehole; Monitor water use; • Implement water saving devices for domestic water use e.g. dual flush toilets, automatic shut-off taps, etc.; • Portable water should not be used for irrigation purposes and landscapes must be designed to absorb rainwater run-off rather than having to carry it off-site in storm water drains; • Indigenous vegetation to be used for landscaping to minimise watering requirements; • Cleaning methods utilised for the cleaning of vehicles, floors, containers, yards etc. must aim to minimise water use; • Maintenance of proper pressure within fire water systems to limit water use; • Practice rain water harvesting; • Conducting of regular audits of water systems to identify and rectify any possible water leakages; and • Implementing a system for the proper metering and measurement of water use to enable proper performance review and management	Proponent	-Borehole EIA license -Water meter readings -Practice of water saving techniques	300,000

iv	Increased Surface/Storm Runoff Generation	• Ensure that no surface wastewater is directed into the sewer system to avoid overloading the sewerage system; • Monitor effluent quality regularly to ensure that the stipulated discharge rules and standards are not violated; and • Harvest rainwater from roof for non-portable uses e.g. cleaning and watering plants	Proponent	-Efficient storm water management -Unobstructed drainage -Incidences of flooding	100,000
B) SOCIO ECONOMIC IMPACTS					
v.	Increased Traffic Volume	• Designate vehicle registration and checkpoint inside the premise to avert unnecessary traffic snarl up along adjacent roads caused by vehicles waiting to access the hospital. • There will be parking spot in front of the facility. • There are dedicated exits and entries and dedicated for emergencies and ambulance access only;	Proponent	-Well flowing Traffic	50,000
vi	Influx of people and increased demand for infrastructure	Provide adequate social and other infrastructure to meet needs of the tenants, visitors and customers;	Proponent	-No overcrowding -Adequate amenities for all	300,000

vi	Increased Risk of Occupational Health and Safety Incidences	• Conduct basic occupational training programs and specialty courses as needed; • Ensure that workers are oriented to the specific hazards of individual work assignments. Training should generally be provided to management, supervisors, workers, and occasional visitors to areas of risks and hazards; • Conduct statutory assessments i.e. risk assessments, fire safety audits and Occupational Safety and Health audits annually through licensed advisors and auditors by the directorate of occupational safety and health services (DOSHS); • Conduct statutory trainings under OSHA, 2007 and Rules under it. i.e. basic first aid, fire safety training, and Occupational Safety and Health committee training through approved training institutions by the Directorate of Occupational Safety and Health Services (DOSHS); • Provide adequate lighting in all rooms; Passageways for pedestrians and vehicles within and outside buildings should be segregated and should provide for easy, safe, and appropriate access; • Provision of fire fighting equipment in strategic and well labelled sites; • Conduct drills at reasonable intervals to test the disaster preparedness level at the workplace, using the results to improve the response mechanisms; • Provide eye-wash stations and/or emergency showers should be provided close to all workstations where immediate flushing with water is the recommended first-aid response;	Proponent	-Occupational Safety and Health audits - Annual -Fire risk assessments -occupational safety and health trainings -Safety and health committees -Incidents monitoring -No Injuries or cross-infections -Safety and health management and monitoring plan	300,000

		• Train workers on safe work practices, and provide appropriate PPE; • Enforcement of use of PPE such as gloves, dustcoats, nose masks in all workrooms requiring use; •Restriction of access to high risk areas to authorised personnel only i.e. radiation rooms, surgery rooms; • Orient all staff on safe work practices and guidelines and ensure that they adhere to them; • Training staff on how to prevent and manage incidences. This should involve proper handling of electricity, water etc. and sensitization on various modes of escape, conduct and responsibility during such incidences; • Regular safety drills to constantly follow on various possible incidences; • Use signage to warn residents and/ or visitors of dangerous places. The signage must be visible and placed strategically; Set up (fire) assembly points; and • Develop evacuation procedures to handle emergency situations.			

Note:* *This is only an estimated cost for EMMP implementation, actual cost estimates shall be calculated by the quantity surveyors and* Incorporated in the contactor's BOQ, for implementation.

ESMMP DECOMMISSIONING PHASE				
A) ENVIRONMENTAL IMPACTS				
No.	**Activity /Issue**	**Action Required**	**Responsibility**	**Estimated Cost**
i.	Generation of solid waste	• All solid waste to be collected at a central location and stored temporarily until removal by a licensed solid waste handler; • Adopt the method of selective demolition as far as practicable to enable the removal of wastes of the same category one at a time thus facilitating recycling of wastes for beneficial reuse and minimizing the burden on dumpsites; • No dumping within the surrounding area is to be permitted. Where potentially hazardous substances are being disposed of, a chain of custody document should be kept with the environmental register as proof of final disposal; • General waste is to be collected either by the County Government or via a licensed waste disposal contractor. The frequency of collections should be such that waste containment receptacles do not overflow; • Waste generated at the site should be categorised by the contractor and disposed of in a suitable manner into different waste streams (including general and hazardous waste). Wherever possible recycling should be carried out; • Litter generated by the construction crew must be collected in rubbish bins and disposed of weekly at registered waste disposal sites; • All rubble must be removed from the site to an approved disposal site as approved by the Engineer. Burying rubble on the site is prohibited; • Ensure that no litter, refuse, wastes, rubbish, rubble, debris and builders wastes generated on the premises is placed, dumped or deposited on adjacent/surrounding properties during or after the decommissioning period of the project are disposed of at dumping site as approved by the County government	Contractor, Engineer in charge	300,000

ii.	Waste Water generation	•Ensure that any wastewater generated during decommissioning is exhausted by a licensed exhauster; • Storm water should be managed in such a way that no overland flow is possible onto the site from any adjacent area; • Storm water drains in the area should be routinely inspected for solid waste to avoid blockages and associated problems.	Contractor, Engineer in charge	100,000
iii.	Soil erosion	• Re-vegetate the site with grass and trees of indigenous tree species.	Contractor,	100,000
iv.	Air pollution	• Active earth work areas, stockpiles and loads of soil being transported must be watered to reduce dust; • All areas disturbed during closure of the site that are not required for a specific activity must be re-vegetated; • Diesel exhaust emissions from heavy machinery on site (excavators, front end loaders and hauling trucks) must be controlled and minimised by regular checks and servicing of vehicles; and • Any demolition machine found to be emitting excessive smoke should be withdrawn from operation and given mechanical attention.	Contractor,	100,000
v.	Noise and excess vibrations	• Use modern equipment, which produces the least noise. Any unavoidably noisy equipment should be identified and located in an area where it has least impact; • Use noise shielding screens. The operation of such machinery restricted to when it is actually required; • For mobile equipment fit efficient silencers and enclose engine compartments in plant vehicles; • For fixed plants, isolate source by enclosure in acoustic structure; • Carefully select fixed plant site for remoteness from sensitive areas; and • Raise barriers around noisy equipment.	Contractor,	100,000

vi.	Accidental leaks and spillages	• Ensure employees are aware of the procedure for dealing with spills and leaks; • The source of the spill should be isolated and the spillage contained using sand berms, sandbags, sawdust and/or absorbent material; • Accident areas should be cordoned off and secured; • Notify the relevant authorities of any spills that occur; • Ensure that the necessary materials and equipment for dealing with the spills and leaks are available on site at all times	Contractor,	100,000
B)SOCIAL IMPACTS				
vii.	Safety and Health risks	• Decommissioning works workers be issued with appropriate PPEs and the decommissioning contractor to enforce their use; • Restrict onlookers/scavengers from site; • Develop safe work procedures for demolition works; and • Follow mitigations measures given for construction phase above	Proponent	100,000
viii.	Livelihood and economic Loss	• Businesses associated with the development should be notified of intention of decommissioning in good time to relevant adjustment; and • Redeployment of the affected workers where feasible should be undertaken.	Proponent	100,000

Note:* *This is only an estimated cost for EMMP implementation, actual cost estimates shall be calculated by the quantity surveyors and* Incorporated in the contactor's BOQ, for implementation.

EMERGENCY RESPONSE PLAN (ERP)

Emergencies and disasters can occur any time without warning. More so construction sites are prone to such, thus it is important for the proponent to prepare for them, and be in a good position to act to minimize panic and confusion when they occur. Emergency Response Plans (ERP) will have to be instituted throughout the project cycle.

EMERGENCY RESPONSE PLAN COMPONENTS	**ACTIONS/REQUIREMENTS**	**RESPONSIBILITY**
Potential Emergency	• Identification of all potential emergencies associated with the proposed project at the project site, Include, Fires, Accidents & Incidents, Security, and Terrorism etc.	• Contractor during construction and Decommissioning phases. • Proponent during operation phase.
Emergency Operations Coordinator (EOC)	• Designate a primary and secondary contact person.	• Contractor during construction and decommissioning phases. • Proponent during operation phase
Emergency contact Numbers	• Give & display contact for Fire station, Ambulance, police, Hospitals, and others	•Contractor during construction and decommissioning phases • Proponent during operation phase
Installation of emergency equipment	• Fire sensors, • Fire alarms, • Fire extinguishers, • Fire hose, • Panic alarm button, • Provision and enforcement of use of • PPEs, • Emergency Communication equipment, • such as Phone & alarm bells	•Contractor during construction and decommissioning phases • Proponent during operation phase
Training for emergency response	• Regular training for emergency response	•Contractor during construction and decommissioning phases • Proponent during operation phase
Trained in the use of emergency equipment	• Employees and residents training in the use of emergency equipment	•Contractor during construction and decommissioning phases

		• Proponent during operation phase
First Aid	• Provision of first aid kits • First aid management training	•Contractor during construction and decommissioning phases • Proponent during operation phase
Signage	• Fire sensors • Signage, action poster, alarm bell/ panic button	•Contractor during construction and decommissioning phases • Proponent during operation phase
Procedure for rescue and evacuation	• Evacuation plan, • Warning system • Assembly site • Shelter in place plan.	•Contractor during construction and decommissioning phases • Proponent during operation phase
Occupants emergency contact information	• List of all occupants, residents & their activities	• Proponent during operation phase.
ERP review	• Annual ERP review	•Contractor during construction and decommissioning phases • Proponent during operation phas

10 CONCLUSION AND RECOMMENDATIONS

This Study report has identified, assessed and presented mitigation measures for the anticipated adverse environmental impacts for the proposed Multi-Storey Housing Development Project.

Rigorous implementation of the Environmental and Social Management and Monitoring plan will facilitate the mitigation/prevention of anticipated adverse environmental impacts. Diligence on the part of contractor and proper supervision by the project proponent will be crucial for ensuring success of the environmental management plan and for ensuring that the recommended measures are implemented throughout the construction, operation and even decommissioning phases to avert any negative impacts.

The ESIA study has established that the proposed development project by Local Authorities Provident Fund is a worthy investment by the proponent and broadly with no doubt will contribute significantly to the economic development of the country. This will be achieved through the prior discussed positive impacts namely; growth of the economy, boosting of the informal sector during the construction phase, provision of market for supply of building materials, employment generation, increase in government revenue and optimal use of land.

However, the ESIA study has established that the proposed project will also come along with some negative impacts. The negative environmental impacts that will result from establishment of the proposed project which include pressure on the existing traffic and water and sewerage facilities, hydrology and water quality degradation, noise pollution, dust emissions, solid waste generation, increased water demand, increased energy consumption, generation of exhaust emissions, workers accidents and hazards during construction, possible exposure of workers to diseases, household displacements and livelihood looses, increased storm water among others, these can however be sufficiently mitigated.

The proponent of the proposed project shall be committed to putting in place several measures to mitigate the negative environmental, safety, health and social impacts associated with the life cycle of the project. It is recommended that in addition to this commitment, the proponent shall focus on implementing the measures outlined in the ESMMP through providing sufficient budgetary allocation on the same and hiring an Environment, health and safety expert to supervise implementation through out the project cycle, he will also adhere to all relevant national and international environmental, health and safety standards, policies and regulations that govern establishment and operation of such projects. It is expected that the positive impacts that emanate from such activities shall be maximized as much as possible as exhaustively outlined within the report. These measures will go a long way in ensuring the best possible environmental compliance and performance standards.

From the foregoing, no adverse environmental impacts are anticipated that cannot be mitigated. It is the recommendation of Hope Urban Environmental and Research Investment Limited that the project be allowed to go on provided the mitigation measures outlined in the report are adhered to, the developer must adhere to the conditions of approval of the project.

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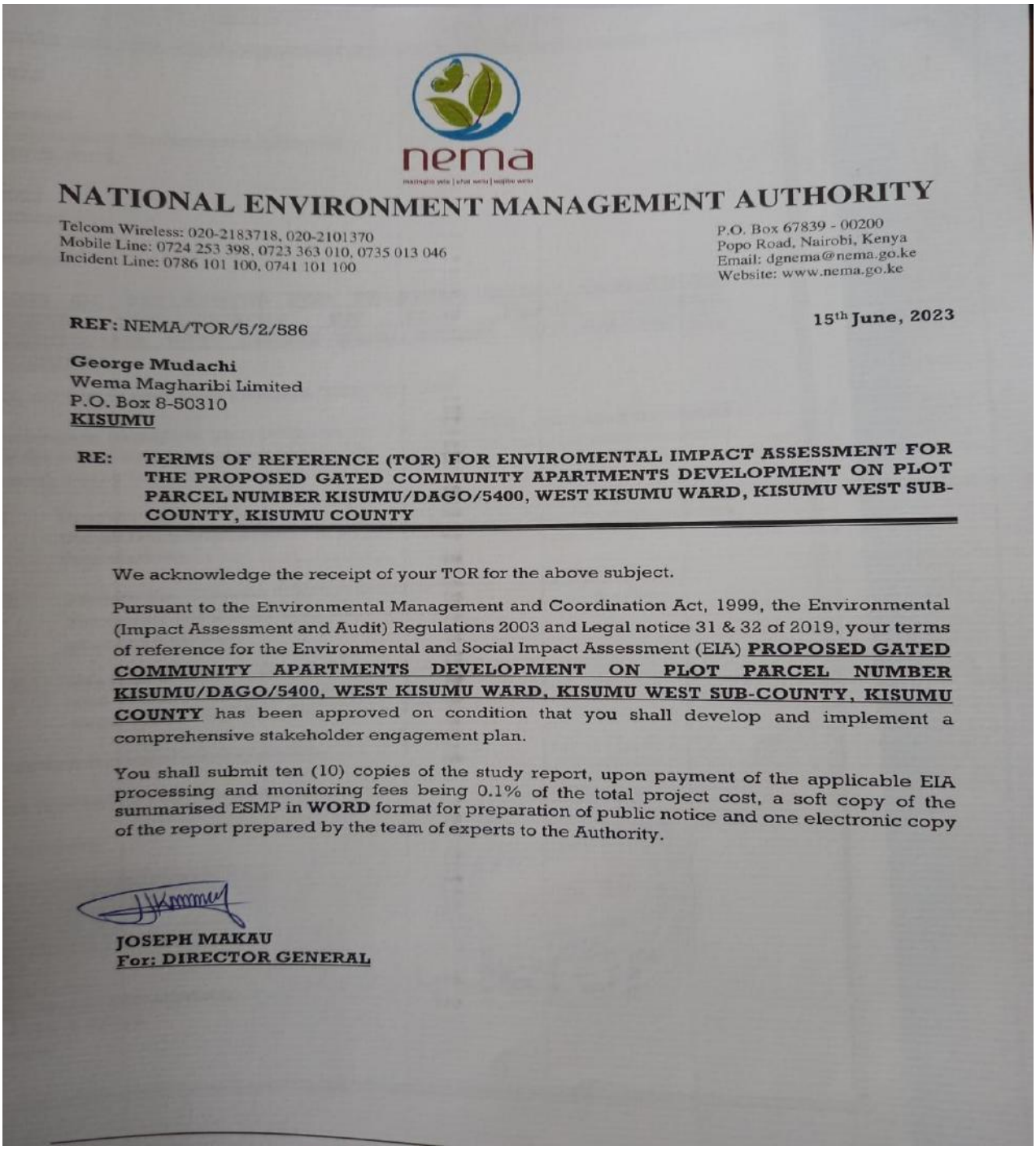
ANNEXES;

Annex 1: TOR APPROVAL LETTER



nema

NATIONAL ENVIRONMENT MANAGEMENT AUTHORITY

Telcom Wireless: 020-2183718, 020-2101370
Mobile Line: 0724 253 398, 0723 363 010, 0735 013 046
Incident Line: 0786 101 100, 0741 101 100

P.O. Box 67839 - 00200
Popo Road, Nairobi, Kenya
Email: dgnema@nema.go.ke
Website: www.nema.go.ke

REF: NEMA/TOR/5/2/586

15th June, 2023

George Mudachi
Wema Magharibi Limited
P.O. Box 8-50310
KISUMU

RE: TERMS OF REFERENCE (TOR) FOR ENVIROMENTAL IMPACT ASSESSMENT FOR THE PROPOSED GATED COMMUNITY APARTMENTS DEVELOPMENT ON PLOT PARCEL NUMBER KISUMU/DAGO/5400, WEST KISUMU WARD, KISUMU WEST SUB-COUNTY, KISUMU COUNTY

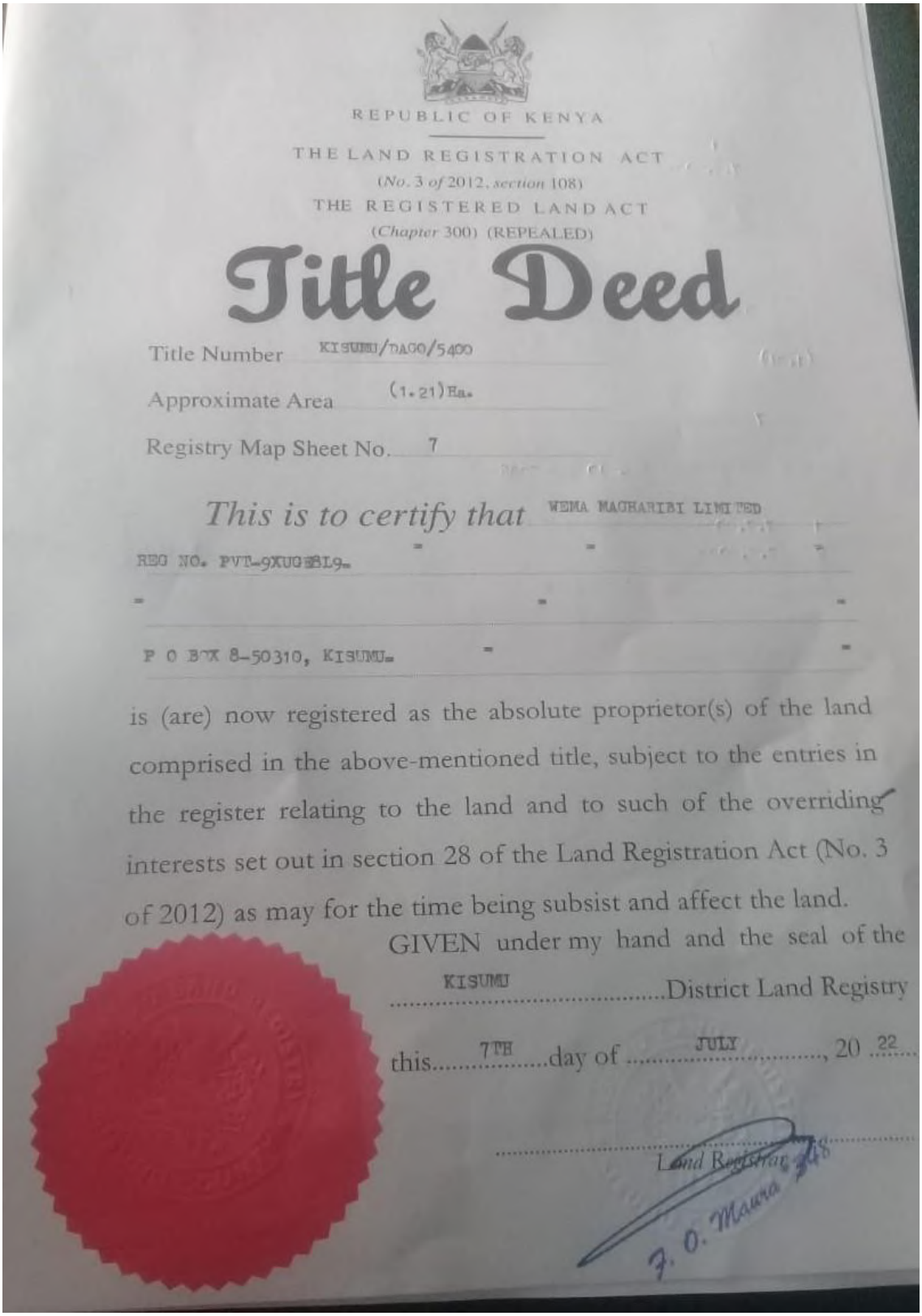
We acknowledge the receipt of your TOR for the above subject.

Pursuant to the Environmental Management and Coordination Act, 1999, the Environmental (Impact Assessment and Audit) Regulations 2003 and Legal notice 31 & 32 of 2019, your terms of reference for the Environmental and Social Impact Assessment (EIA) **PROPOSED GATED COMMUNITY APARTMENTS DEVELOPMENT ON PLOT PARCEL NUMBER KISUMU/DAGO/5400, WEST KISUMU WARD, KISUMU WEST SUB-COUNTY, KISUMU COUNTY** has been approved on condition that you shall develop and implement a comprehensive stakeholder engagement plan.

You shall submit ten (10) copies of the study report, upon payment of the applicable EIA processing and monitoring fees being 0.1% of the total project cost, a soft copy of the summarised ESMP in **WORD** format for preparation of public notice and one electronic copy of the report prepared by the team of experts to the Authority.

JOSEPH MAKAU
For: DIRECTOR GENERAL

Annex 2 : **Land Ownership Documents/Certificate of Incorporation/PIN Cert**



REPUBLIC OF KENYA

THE LAND REGISTRATION ACT

(*No.* 3 *of* 2012, *section* 108)

THE REGISTERED LAND ACT

(*Chapter* 300) (REPEALED)

Title Deed

Title Number KISUMU/DAGO/5400

Approximate Area (1.21)Ha.

Registry Map Sheet No. 7

This is to certify that WEMA MACHARIBI LIMITED

REG NO. PVT-9XUGEBL9.

P O BOX 8-50310, KISUMU.

is (are) now registered as the absolute proprietor(s) of the land comprised in the above-mentioned title, subject to the entries in the register relating to the land and to such of the overriding interests set out in section 28 of the Land Registration Act (No. 3 of 2012) as may for the time being subsist and affect the land.

GIVEN under my hand and the seal of the

KISUMU .....District Land Registry

this 7TH day of JULY, 20 22

.....

Land Registrar

F. O. Maura

No. **PVT-9XUGE8L9**

CERTIFICATE OF INCORPORATION

I hereby **CERTIFY** that,

WEMA MAGHARIBI LIMITED

is on this date 8 Jul 2021 Incorporated under the Companies Act, 2015 and that the Company is a **PRIVATE LIMITED COMPANY.**

.....

Registrar Of Companies

This is a system generated certificate. To validate this document send the word **BRS** to **21546**

KENYA REVENUE AUTHORITY

www.kra.go.ke

PIN Certificate

For General Tax Questions
Contact KRA Call Centre
Tel: +254 (020) 4999 999
Cell: +254(0711)099 999
Email: callcentre@kra.go.ke

Certificate Date : 08/07/2021

Personal Identification Number
P052032179Y

This is to certify that taxpayer shown herein has been registered with Kenya Revenue Authority

Taxpayer Information

Taxpayer Name	WEMA MAGHARIBI LIMITED
Email Address	WEMAESTATES92@GMAIL.COM

Registered Address

L.R. Number : NA	**Building** MINI MALL SHOPPING CENTER
Street/Road APINDI	**City/Town :** NA
County : Kisumu	**District** Kisumu Town West District
Tax Area Chulaimbo	**Station** Kisumu
P. O. Box 8	**Postal Code** 50310

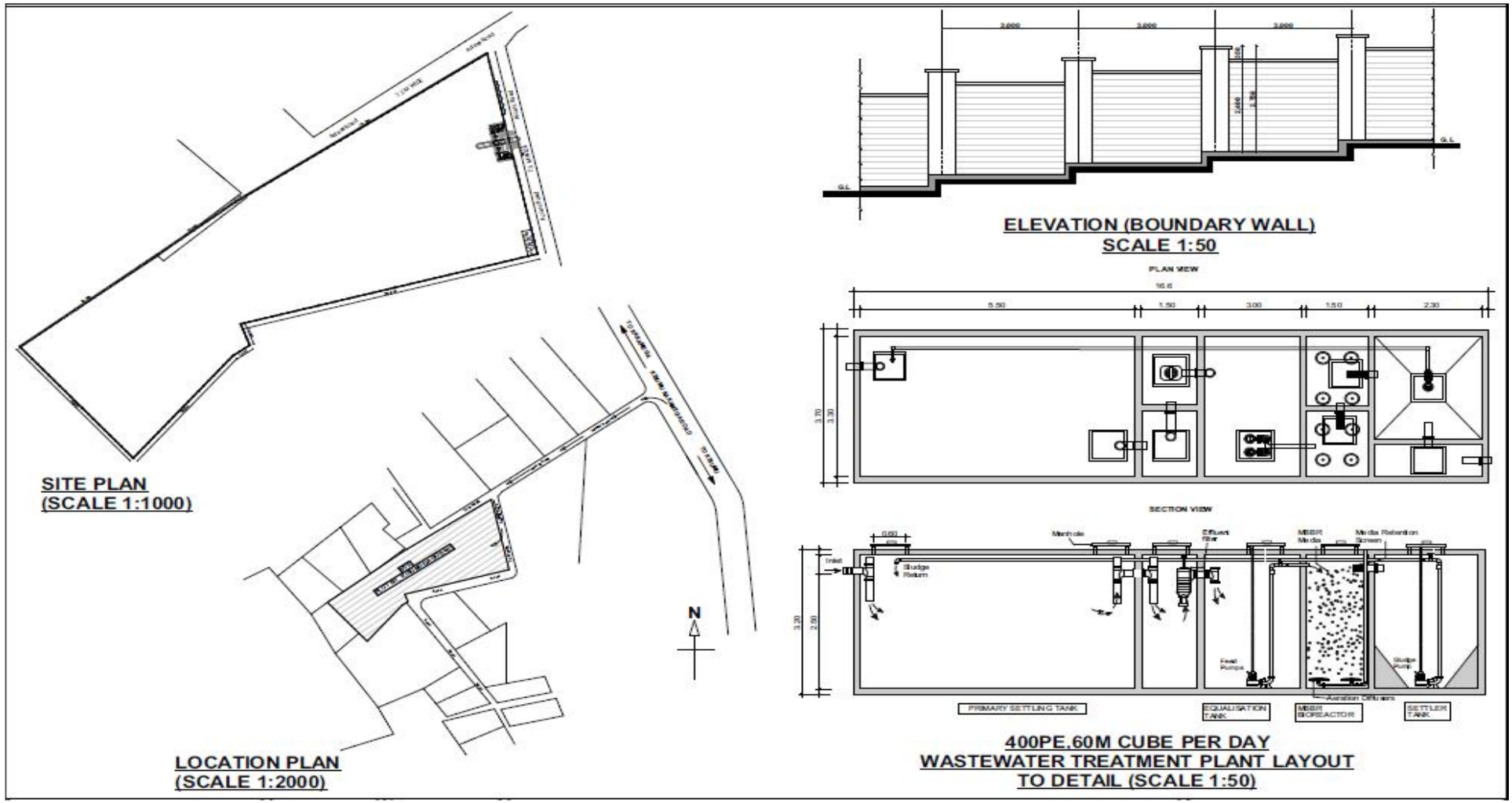
Tax Obligation(s) Registration

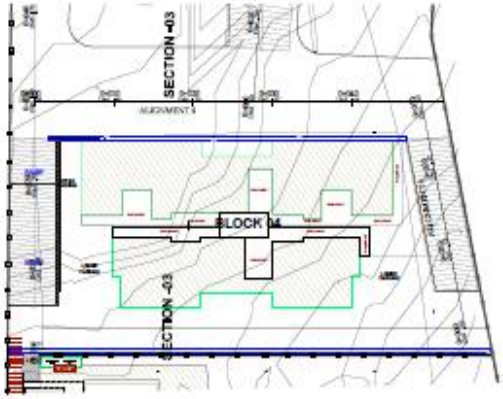
Sr.	Tax Obligation(s)	Effective Date
1	Income Tax - Company	08/07/2021

The above PIN must appear on all your tax invoices and correspondences with Kenya Revenue Authority. Your accounting end month is December unless a change has been approved by the Commissioner-Domestic Taxes Department. The status of Tax Obligation(s) with 'Dormant' status will automatically change to 'Active' on date mentioned in "Effective Till Date" or any transaction done during the period. This certificate shall remain in force till further updated.

Annex 3: Site Layout Plan and Architectural plans

Waste Water Treatment Plant Drawing

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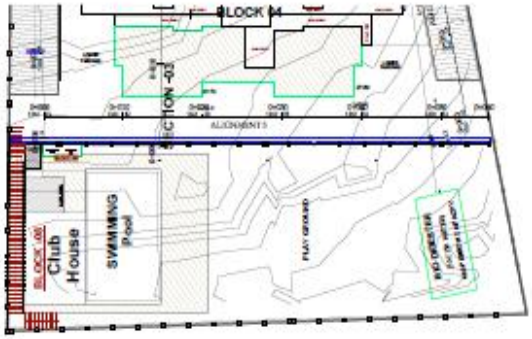
SECTION -03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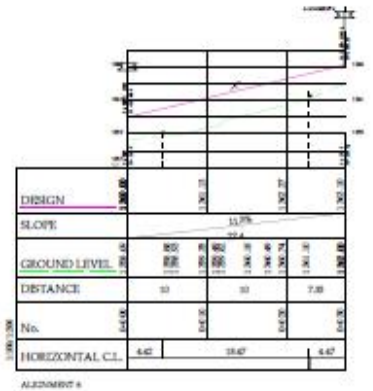
BLOCK 06
Club House
SWIMMING Pool
PLAY GROUND


PLAY GROUND


DESIGN
SLOPE
GROUND LEVEL
DISTANCE
No.
HORIZONTAL C.L.


DESIGN
SLOPE
GROUND LEVEL
DISTANCE
No.
HORIZONTAL C.L.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GROUND LEVEL
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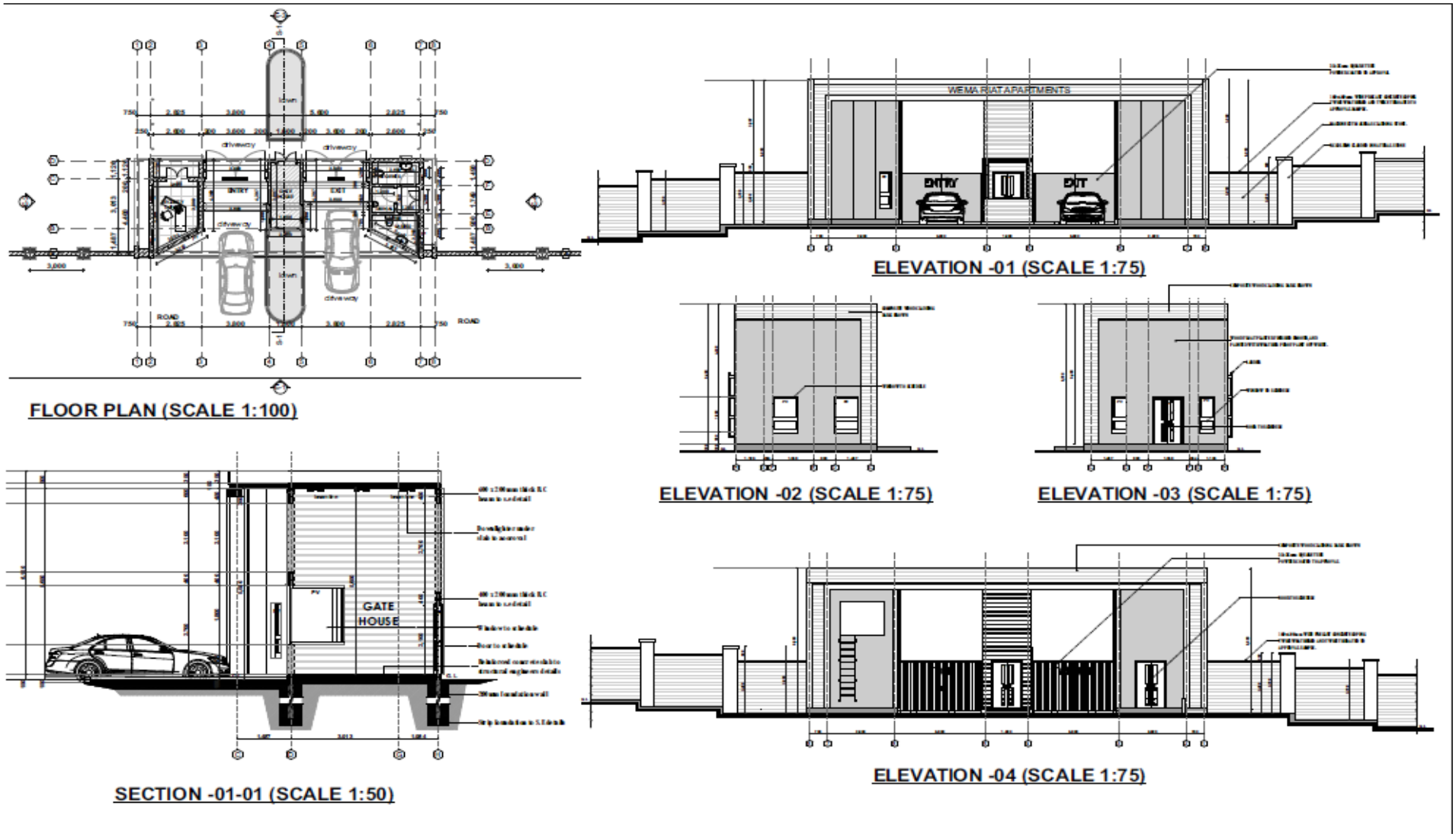
Floor Plan


WEMA RIAT APARTMENTS
ENTRY
EXIT
GATE HOUSE
FLOOR PLAN (SCALE 1:100)
ELEVATION -01 (SCALE 1:75)
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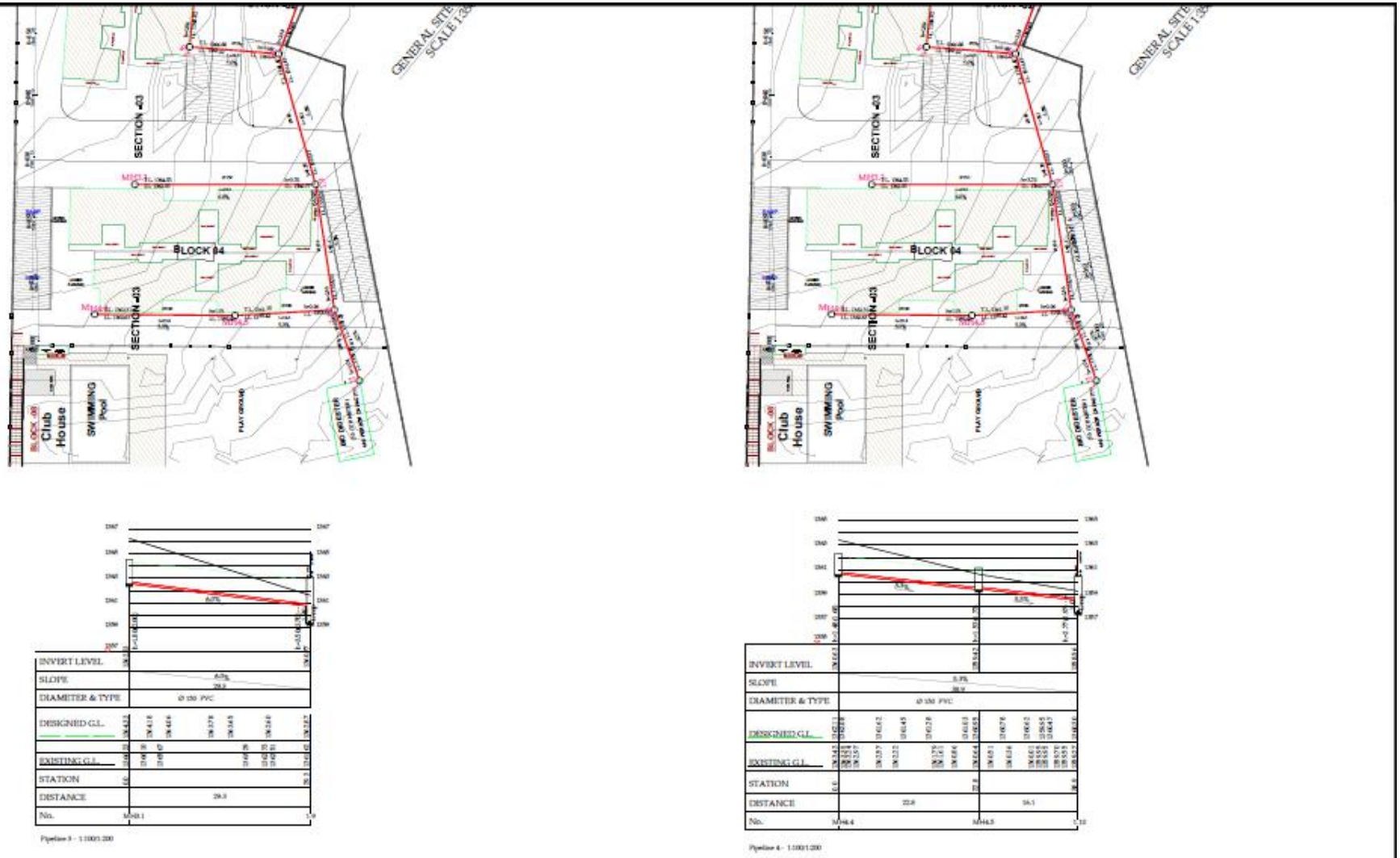
ELEVATION -03 (SCALE 1:75)
ELEVATION -04 (SCALE 1:75)
SECTION -01-01 (SCALE 1:50)


GENERAL SITE PLAN
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Club House
SWIMMING Pool
FLAT GROUND
INVERT LEVEL
SLOPE
DIAMETER & TYPE
DESIGNED G.L.
EXISTING G.L.
STATION
DISTANCE
No.
GENERAL SITE PLAN
SCALE 1:200
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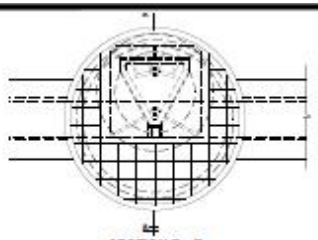

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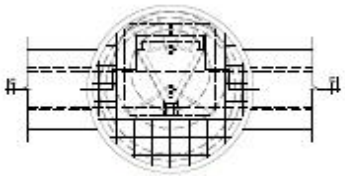

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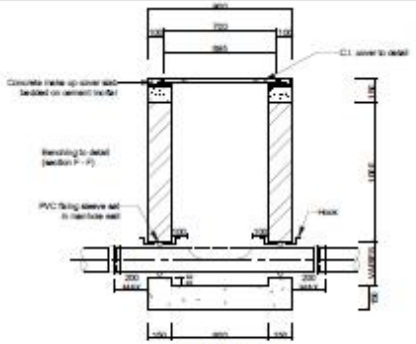

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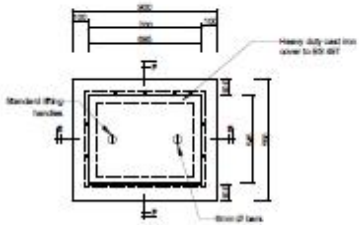

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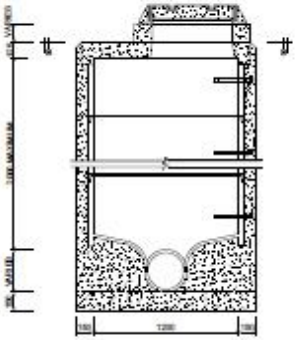

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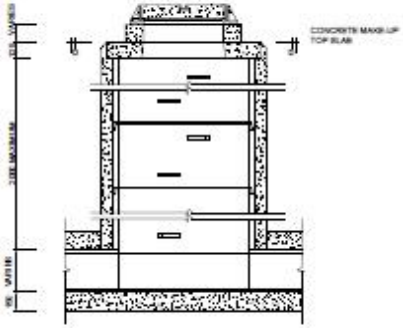

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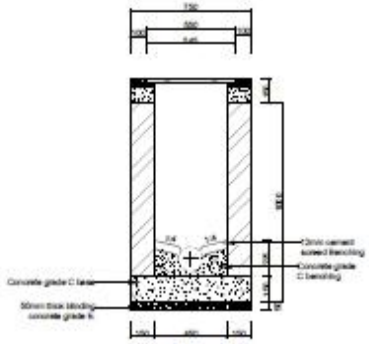

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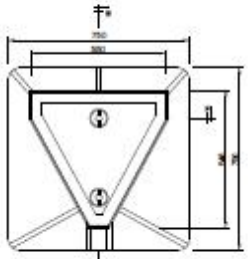
NOTES

1. INSPECTION CHAMBER SHOULD BE SIZE 600x600mm UPTO DEPTH OF 1000mm
2. FOR INSPECTION CHAMBER EXCEEDING DEPTH 1000mm SIZE SHOULD BE 600x1200mm
3. WALLS OF INSPECTION CHAMBER TO BE OF MASONRY

RING MANHOLE WITH COVER SLAB DEPTH n.e. 3.0M

NOTES

1. STANDARD STEP IRONS TO COMPLY WITH BS 497
2. CAST IN-SITU MANHOLES TO BE CAST USING STEEL MOULDS
3. THE CONTRACTOR MAY CONSTRUCT MANHOLES USING STANDARD CONCRETE RINGS TO BS 556 AND 150mm CONCRETE CLASS 20/10 (RUNCRUSH)



PLAN
SCALE 1:10

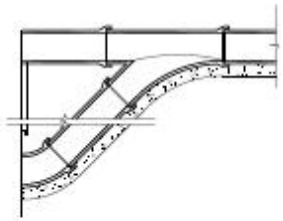
SECTION E - E
SCALE 1:10

SECTION F - F
SCALE 1:10

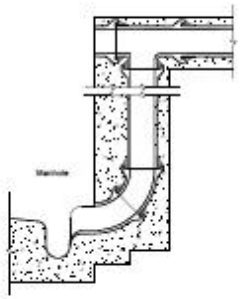
NOTE
COVER FABRICATED FROM 6mm M.S. PLATE

TRIANGULAR MANHOLE COVER FOR FOUL SEWER

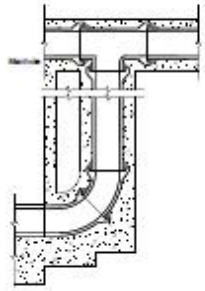
INSPECTION CHAMBER DETAILS



MANHOLE DROP LEAD
SCALE 1:20



SIDE ENTRANCE BACKDROP
SCALE 1:20



END ENTRANCE BACKDROP
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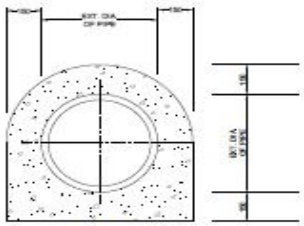
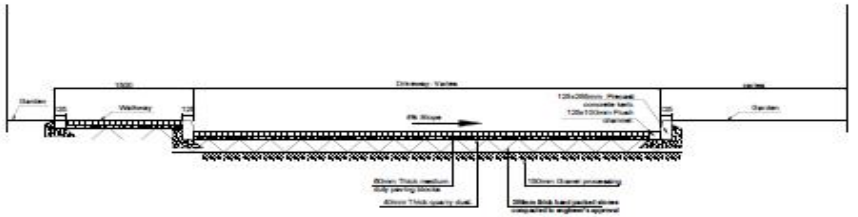
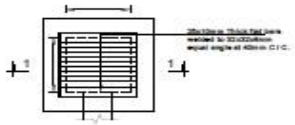


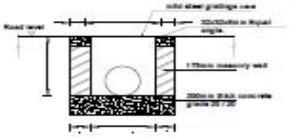
TYPE 'C'
SCALE 1:10



TYPICAL SECTION THROUGH THE DRIVEWAY

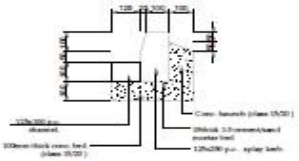


STEEL GRATING COVER LAYOUT PLAN

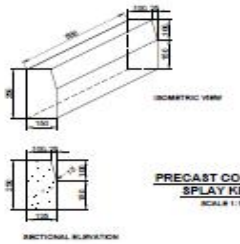


SECTION 1-1

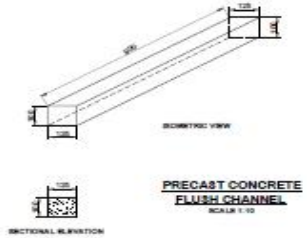
TYPICAL DETAIL OF A DROP INLET CHAMBER
SCALE 1:20



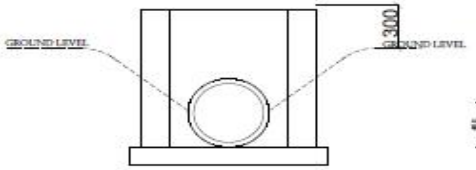
PC SPLAY KERB DETAIL
SCALE 1:10



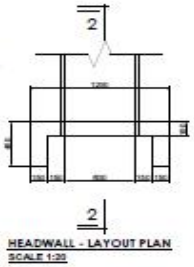
PRECAST CONCRETE SPLAY KERB



PRECAST CONCRETE FLUSH CHANNEL

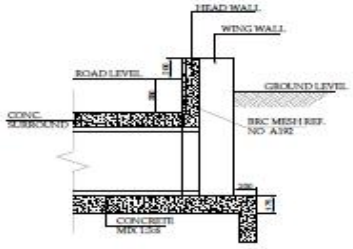


HEADWALL - ELEVATION

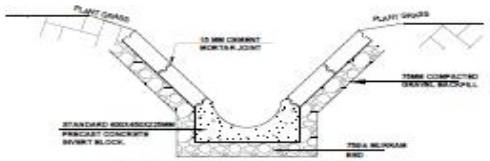


HEADWALL - LAYOUT PLAN
SCALE 1:20

CULVERT DETAILS



SECTION 2 - 2



TYPICAL SECTION OF A CIRCULAR IBD WITH SIDE SLABS (OPEN CHANNEL)

Annex 4: Public Participation Consultation Minutes, Attendance list and pictures

Image: Area Ass Chief addressing the public participation

Image: Community showing support for the project by show of hands

Image: Site entrance

Image: Access road to the site from the Kakamega-Kisumu Highway

Image: KPLC transformer opposite the site entrance.

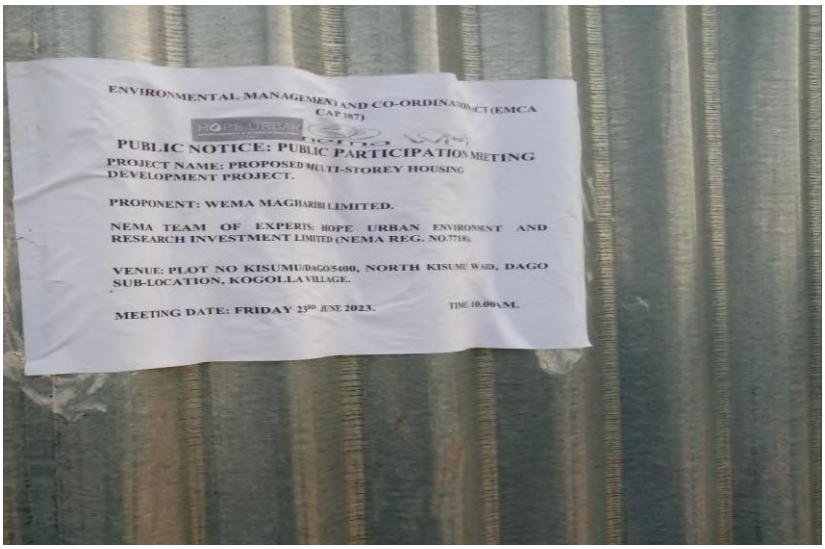


Image: Notice for public participation pinned at the site entrance

List of Participants

HOPE URBAN ENVIRONMENTAL & RESEARCH INVESTMENT LTD

nema

ATTENDANCE LIST; PUBLIC PARTICIPATION MEETING

PROJECT NAME; PROPOSED MULTI-STORY HOUSING DEVELOPMENT PROJECT

VENUE: PLOT NO KISUMU/DAGO/5400, NORTH KISUMU WARD, DAGO SUB-LOCATION, KOGOLLA VILLAGE

DATE: FRIDAY 23RD JUNE 2023; TIME: 10.00 AM

	NAME	ID;NO	OCCUPATION/ POSITION	PHONE; NO	SIGNATURE
1	NEGAN OBANO	27589415	Cook	0706351679	
2	PASCAL OCHIENG	—	Mason	0798336879	P.O
3	JOSPHINE OWUOR	28806807	Cook	0706628307	
4	SAIDI & HAMISI	12708097	Mason	0793544953	
5	OMARI SALIM	—	Mason	0700757578	
6	JOYCE OGOLA	11090520	Cook	0718123702	
7	Suzan Kwino			0797735029	
8	DENNIS EKIRU		Watchman	0768782440	
9	Salim R. Hamisi	13040388	ASSISTANT CHIEF	0726927402	
10	Beatrice Anyango Jura	20538765	V. Cedar	0728866346	
11	Paul Opiyo	21706092	Site Manager	0720253911	
12	Ludfie Hasane	25633857	Environment Officer-CI	0720035350	
13	William Mboya	25920351	11	0712658736	

HOPE URBAN ENVIRONMENTAL & RESEARCH INVESTMENT LTD

nema

ATTENDANCE LIST; PUBLIC PARTICIPATION MEETING

PROJECT NAME; PROPOSED MULTI-STOREY HOUSING DEVELOPMENT PROJECT

VENUE: PLOT NO KISUMU/DAGO/5400, NORTH KISUMU WARD, DAGO SUB-LOCATION, KOGOLLA VILLAGE

DATE: FRIDAY 23RD JUNE 2023; TIME: 10.00 AM

	NAME	1D;NO	OCCUPATION/ POSITION	PHONE; NO	SIGNATURE
1	RAMMA PEPE	26371922	Mason	0725760027	
2	PETER IKIMAT	30197818	Security	0702540697	
3	ALVAN ANJERA	39562147	Mason	0712710486	
4	BENARD ODHIAMBO	34609663	Mason	0715405110 ~~0724296345~~	
5	VINCENT ONYANGO	31156308	Barbas	0705949226	
6	WILFRIDA ATIENO	2780791		0702814719	
7	LINET ACHIENG	21655116	Fasmos	0706698410	
8	MARY ORAO	25675416	—	0708589827	
9	MOLLY ACHIENG	26333905	—	0708202272	
10	MILICENT ANYANGO	29364066	Cook	0724247074	~~[illegible]~~
11	PEREZ XGAI	13231800	—	0708103513	
12	LORNA AKINYI	26512197	Fasmos	0716658645	
13	SYPROSE ATIENO	23956624	Cook	0795662460	

HOPE URBAN ENVIRONMENTAL & RESEARCH INVESTMENT LTD

ATTENDANCE LIST; PUBLIC PARTICIPATION MEETING

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VENUE: PLOT NO KISUMU/DAGO/5400, NORTH KISUMU WARD, DAGO SUB-LOCATION, KOGOLLA VILLAGE

DATE: FRIDAY 23RD JUNE 2023; TIME: 10.00 AM

	NAME	1D;NO	OCCUPATION/ POSITION	PHONE; NO	SIGNATURE
1	JACKLINE AKOTH	26334552	Cook	0704978326	
2	ROSELINE ANYANGO	32941335	Farmer	0710281462	
3	AMOS WERE	26524523	Driver	0740808193	
4	RICHARD OLUOCH	22998487	Mason	0726701324	
5	MATILDA AKINYI	—	Farmer	0707516328	
6	HERY OLWENY	2644433		0724613578	
7	JOHN OGOL	12707100	Security	0714732383	
8	ASEBIUS MANGORO	3979613	V.E	0723877170	
9	LUCAS OGOLA	22969674	Cook	0729473688	
10	JANET SANGORO	24411439	Cook	0727877117	
11	STEVE OGOLA	31266361	Mason	0716520419	
12	ROSE AMAGOVI	29806925	—	0111804863	
13	SELINE OGOLA	2545422	Cook	0725759240	

HOPE URBAN ENVIRONMENTAL & RESEARCH INVESTMENT CO.

nema

ATTENDANCE LIST; PUBLIC PARTICIPATION MEETING

PROJECT NAME; PROPOSED MULTI-STOREY HOUSING DEVELOPMENT PROJECT

VENUE: PLOT NO KISUMU/DAGO/5400, NORTH KISUMU WARD, DAGO SUB-LOCATION, KOGOLLA VILLAGE

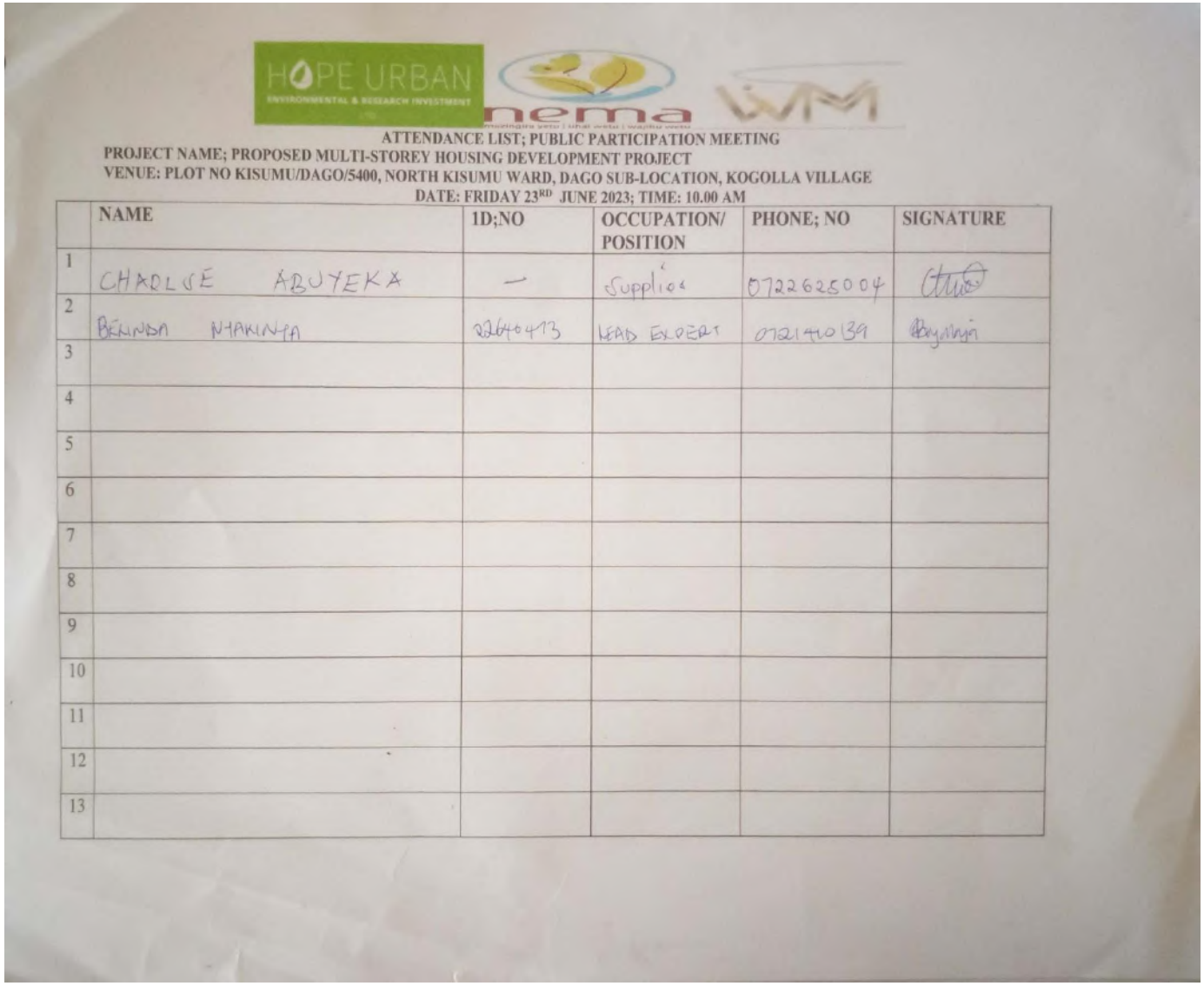
DATE: FRIDAY 23RD JUNE 2023; TIME: 10.00 AM

	NAME	1D;NO	OCCUPATION/ POSITION	PHONE; NO	SIGNATURE
1	JACKLINE AKOTH	26334552	COOK	0704978326	
2	ROSELINE ANYANGO	32941335	FARMER	0710281462	
3	ANNOS WERE	26524523	DRIVER	0740808193	
4	RICHARD OLUOCH	22998487	Mason	0726701324	
5	MATILDA AKINYI	—	FARMER	0707516328	
6	HERY OLWENY	2644433		0724613578	
7	JOHN OGOL	12707100	Security	0714732383	
8	ASEBIUS MANGORO	3979613	V.E	0723877170	
9	LOCAS OGOLA	22969674	Cook	0729473688	
10	JANET SANGORO	24411439	Cook	0727877119	
11	STEVE OGOLA	31266361	Mason	0716520419	
12	ROSE AMAGOVI	29806925	—	0111804863	
13	SELINE OGOLA	2545422	Cook	0725759240	

HOPE URBAN ENVIRONMENTAL & RESEARCH INVESTMENT LTD

ATTENDANCE LIST; PUBLIC PARTICIPATION MEETING
PROJECT NAME; PROPOSED MULTI-STOREY HOUSING DEVELOPMENT PROJECT
VENUE: PLOT NO KISUMU/DAGO/5400, NORTH KISUMU WARD, DAGO SUB-LOCATION, KOGOLLA VILLAGE
DATE: FRIDAY 23RD JUNE 2023; TIME: 10.00 AM

	NAME	1D;NO	OCCUPATION/ POSITION	PHONE; NO	SIGNATURE
1	BARNABAS OGWA	6799429	Mason	071662193 49	
2	PENINAH ATIENO	13707436	Cook	0746401346	
3	DENNIS OTIENO	40699650	Mason	071752581	
4	SYLVANUS OCHIENG	—	Mason	0729624545	
5	JOSEPH OBIERO	22999078	Mason	0797698274	
6	PAULINE KHAMETE	11093048	Cook	0112052425	
7	ABISALOM NJIRI	35926088	Transpost	071286 1253	
8	DANIEL LARE	33895288	Transpost	0791653002	
9	BEATRICE JUMA	20538765	Cook	0728805344	
10	BENARD ~~LAN~~ LALA	27470121	Mason	0743437484	
11	THOMAS NDARE	26215736	Transpost	0714057613	
12	DENNIS ATUDO	26117079	~~Facilitator~~	0718640184	
13	MARGRET ACHIENG	32726877	Cook	0711463432	



ATTENDANCE LIST; PUBLIC PARTICIPATION MEETING

PROJECT NAME; PROPOSED MULTI-STOREY HOUSING DEVELOPMENT PROJECT

VENUE: PLOT NO KISUMU/DAGO/5400, NORTH KISUMU WARD, DAGO SUB-LOCATION, KOGOLLA VILLAGE

DATE: FRIDAY 23RD JUNE 2023; TIME: 10.00 AM

	NAME	1D;NO	OCCUPATION/ POSITION	PHONE; NO	SIGNATURE
1	CHARLSE ABUYEKA	—	Supplier	0722625004	
2	BELINDA NYAKINYA	23640413	LEAD EXPERT	0721410139	
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					

PROPOSED SITE DECOMMISSIONING , ONSITE DISPOSAL OF ASBESTOS AND PROPOSED MULTI-STOREY HOUSING DEVELOPMENT PROJECT, PLOT NO KISUMU/DAGO/5400

MINUTES OF HOPE URBAN ENVIRONMENTAL AND RESEARCH INVESTMENT PUBLIC PARTICIPATION MEETING WITH RESIDENTS OF KOGOLLA B VILLAGE OVER THE PROPOSED SITE DECOMISSIONING AND CONSTRUCTION OF A MULTI-STOREY HOUSING DEVELOPMENT PROJECT IN KOGOLLA B VILLAGE, DAGO SUB-LOCATION, NORTH KISUMU WARD ON PLOT KISUMU/DAGO/5400; **DATE:** FRIDAY, 23RD JUNE 2023; **VENUE:** PROJECT SITE

PRESENT
Assistant Chief
Village elders
Residents/Neighbours
Site manager
Site security
Belinda Nyakinya – Lead Expert
John Sande -Sociologist
Caroline Mboga Associate Expert
Denis Atudo – Urban Planner
Ludfine Kosome – Associate Expert
William Mboya - Facilitator

AGENDA	
01	Inform the community of the upcoming project including site decommissioning and onsite asbestos disposal
02	Discuss with the community the impact of the project
03	Plenary and community consent on project.

PRELIMINARIES

The meeting was called to order at 10:00 a.m. by Hope Urban & Environmental Research Investment and started with a prayer by Mrs Joyce Ogola, followed by a brief introduction of the participants, Facilitators, village elders and the ass chief.

The area village elder Mr Asebius Nyang'oro welcomed everyone to the meeting before then called Belinda to proceed.

Mrs Belinda Nyakinya gave a brief on the purpose for the meeting.

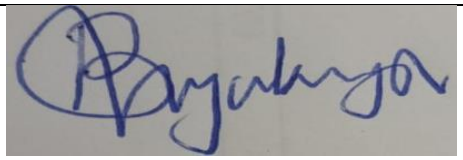
MIN	PARTICULAR	ACTION
MIN 1; Inform the community about the upcoming project and Design		
1	• By show of hands, Belinda asked the community if they were aware of the upcoming project at the present site. • Belinda confirmed to them that the information they had was true andfurther explained to them that the multi-storey	• Majority raised their hands and when few were asked to explain, Steve Ogola who was the first to answer said the project was a multi-

	buildings project entails 120 units, Swimming pool, and borehole, club house and landscapping with a cabros road connecting the site with the Kakamega-Kisumu road. • The designs were also shared and drawings shown to the participants. • She further informed them that there would be decommissioning of the 8 abandoned houses and onsite disposal of asbestos as per NEMA guidelines before the project commences, siting that asbestos are hazardous with special handling mechanisms to eliminate public exposure,	storey building for rentals. • Janet Sangoro also had the information that a multi-storey building was to be constructed on the site. • The Ass Chief appreciated that the asbestos would be handled professionally to avoid exposure to any risks.

MIN ;2	**Discuss with the community the impact of the project**	**ACTION**
2.1	• Belinda stressed on the importance of the community being aware of the positive and negative impacts of the upcoming project. • Asked the community if they are aware of any positive impact the project carries. • Belinda also added, increased land value and borehole water which depending on the yield will be open to community usage. • On the negative impact, Belinda informed them on the possibility of having noise and air pollution from the site. • There is also a health risk when decommissioning asbestos roofs. • Solid waste during and after construction. • Waste and storm water maybe witnessed.	• Vincent Onyango talked of job opportunities for community members. • Saidi Hamisi talked of money circulation in the community within that period. • Perez Agai talked of small businesses booming as a result of increased human traffic. • Perez Agai also mentioned business opportunities like food kiosks for workers. • Peninah Atieno talked of improved livelihoods as a result of locals working at the site being able to pay for their bills eg NHIF, school fee etc.

	• Possibility of social exploitation by the visiting workers. • Increased infidelity and family breakups during the project. •	**Negative impacts solutions** • Belinda assured the community that there will be a follow-up to ensure the contractor minimize as possible noise and air pollution. • Asbestos roofs will be carefully buried as per the public health requirement. • Proper waste management must be undertaken during and after construction. • Proper waste and storm water channels will be considered to control any effect. • Contractor will be advised to avoid as possible exploitation case either by himself or the workers. • A help desk will be placed on site to held in reporting such cases, for proper grievance redress.
MIN 3;	**Plenary and community consent**	
3.1	• Pascal Ochieng asked whether the project can help in connecting KIWASCO water into the community since this has been a challenge • Susan Awino wanted to know if those with kiosks along the road that is to be constructed using cabros will be affected/displaced. • Syprose Atieno asked wether one can be allowed to do a food kiosk within the site. • On the possibility of contractor allowing local subcontracts. • Mr Asebius brought up a headsup on the condition of borehole water within that area as being a challenge since the existing ones are either salty or oily hence not healthy for domestic use.	• Belinda told the community that this will depend with KIWASCO's response to the proponent's application. • On the issues of those with Kiosks along the road being affected, Belinda assured them that their stalls are safe as construction will only happen within the road on use. • Belinda responded to her that most contractors prefer not allowing such to happen inside the site due to liabilities which may occur. • Belinda confirmed that subcontracts will be allowed but only for those who have the capacity to deliver. • Suggestion that a water treatment machine be installed but a

	• He also questioned how the contractor should be handled in case he decide not to hire locals in the middle of the project as has happened in some other projects within. • Village elder Henry Olweny asked the community to embrace and own such a noble project and also asked whether it is possible for locals to purchase the houses once done. • Village elder Beatrice Anyango challenged the community members who will seek for employment to hold on discipline as this was the only sure way of being absorbed for a longer period. • Area Ass Chief called on the community to protect the project against any negativity as it was an opportunity opener. • Made clarity to the community that the site of the project is private and not public land. • Challenged youths who will be lucky to be employed to avoid going to work while drunk as he will be keen to ensure this do not happen. • Chief promised to be on the look for thieves who rob sites at night and steal building materials. • He also pleaded with both parties to ensure no family breakup or immorality occurs as a result of this project. • Challenged Amani Pamoja Women group to take advantage of the food kiosk and run with the opportunity.	confirmation that should it be contaminated then it will only be used for construction purposes. • Belinda told the community that the houses were for individuals who had already paid the purchasing fee pending construction but will still enquire if locals who are capable can get few of them. 

	• Requested the contractor to also consider skilled labour around as there are persons who have the skills within. • Pointed out the need to clear out bushes around the site so as to make it secure. **Community Consent** • By a show of hands, Belinda asked the community if they want the project to happen or not, following the discussions. • Ass Chief thanked the community for embracing the project.	**Community consent** By show of hands, all community members approved that the contractor should proceed with the project.
AOB	NEMA need to check on the encroachment of riparian lands within the area.	
ADJOURNMENT	There being no other business, the meeting was adjourned with a Prayer from Beatrice Anyango.	
	NAME ; POSITION	**SIGNATURE** **DATE; 23RD JUNE 2023**
CHAIRPERSON:	Belinda Nyakinya	
SECRETARY	William mboya	

Annex 2: Summary of Bills of Quantities		
ITEM	**DESCRIPTION**	**AMOUNT INLUSIVE OF VAT**
1.	General Preliminaries	Included in ex ,Wks
2.	Particular Preliminaries	Included in ex ,Wks
3.	BLOCK 1	80,000,000
4.	BLOCK 2	80,000,000
5.	BLOCK 3	80,000,000
6.	BLOCK 4	80,000,000
7.	BLOCK 5	80,000,000
8.	BLOCK 6	50,000,000
9.	BLOCK 7 (Gate house)	5,001,500
10.	BLOCK 8 (Club House)	15,000,000
11.	BLOCK 9 (Generator Room)	3.000.000
12.	External works	27,000,000
	Grand Tota1	**500,001, 500**