PROPOSED FLOATING BEACH APARTMENTS

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA) STUDY REPORT

A view of the Project Site off Nkurumah Road, Kisumu

Location	Plot No. KISUMU/KOGONY/4076 off Nkurumah Road, Kogony Sub-location, East Kisumu Location, Kisumu West Sub county, Kisumu County.
Site GPS Coordinates	Latitude: 00º05'24.88"S, Longitude: 34º44'14.59"E

Environmental Consultants:

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Project Proponent:

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May, 2022

Declarations

ENVIRONMENTAL CONSULTANTS

I, on behalf of Agoa Elolinks Associates Limited, submit the following Environmental and Social Impact Assessment Study Report for the Proposed Floating Beach Apartments Project on Plot No. KISUMU/KOGONY/4076 off Nkurumah Road, Usoma area, Kogony Sub-location, East Kisumu Location, Kisumu West Sub county, Kisumu County. This report has been prepared in accordance with the requirements of the Environmental (Impact Assessment and Audit) Regulations, 2003 and Environmental Management and Co-ordination (Amendment) Act, 2015. To my knowledge, all the information contained in this report is accurate and a truthful representation of all findings as relating to the proposed project.

Name: George Adhoch

NEMA REG NO. 2356

Signature.....

AGOA ECOLINKS ASSOCIATES LIMITED
EIA/EA FIRM OF EXPERTS.
NEMA REG. NO. 12476
TEL: 0725 237189

Date:.....16/05/2022

THE PROJECT PROPONENT

I, ...GAD OPIYO....., on behalf of Gad Works Projects Limited. submit this Environmental Impact Assessment Study Report for the Proposed Floating Beach Apartments on Plot No KISUMU/KOGONY/4076 off Nkurumah Road, Usoma area, Kogony Sub-location, East Kisumu Location, Kisumu West Sub county, Kisumu County. To my knowledge, all the information contained in this report is accurate and a truthful representation of all findings as relating to the proposed project.

Signature: .....

Designation: .....DIRECTOR

Date.....15/05/2022

Acronyms

ºC	***:Degrees Celsius***
IEA	***:Initial Environmental Audit***
EA	***: Environmental Audit***
EHS	***: Environmental Health and Safety***
ESIA	***: Environmental and Social Impact Assessment***
ESIA	***: Environmental and Social Impact Assessment***
EMCA	***: Environmental Management Coordination Act***
EMP	***: Environmental Management Plan***
KNBS	***:Kenya National Bureau of Statistics***
Km^2	***:Square Kilometres***
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***
m^2	***:Square Meter***
NEAP	***:National Environment Action Plan***
NEC	***:National Environment Council***
NGOs	***:Non-Governmental Organizations***
KIWASCO	***:Kisumu 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***
WRA	***:Water Resources Authority***

Table of Contents

List of Tables

List of Figures

List of Plates

ACKNOWLEDGEMENTS
I, the Environmental consultant, would like to register my sincere appreciations to all those who made the entire Environmental and Social Impact Assessment (ESIA) study a success. In this regard I would extend my thanks to the Management of Gad Works Projects Limited for appointing me to develop this detailed Study Report for the proposed Floating Beach Apartments in Usoma area, off Nkrumah Road, Kisumu, for the support they gave us during the study period.

I would like to appreciate the contribution of all the stakeholders, government agencies and residents from project area that we interacted with in the course of the ESIA study for the proposed Project.

George Adhoch
Environmental Consultant

Participating Experts

NAME	Background qualifications	Signature	Date
George Odhiambo Adhoch	Natural Resource Scientist EIA Lead Expert Team Leader		13/05/2022
Moses Onyango Okode	Environmentalist EIA Lead Expert		13-5-2022
Samuel Osawa Kotingi	Environmentalist EIA/EA Associate Expert		13-5-2022
Edward Santos Onyino	Civil Engineer		13th MAY 2022
Alphonce Adongo	Sociologist		13/5/2022
George Otieno Ageng'o	Water Quality Specialist		13/5/2022

Page | xi

EXECUTIVE SUMMARY

Project background

The Proponent, Gad Works Projects Limited has proposed to embark on an iconic project development to construct a Residential Apartments and a restaurant comprising three blocks. Each of the three blocks will be Eight (8) storeys and a penthouse. Block C will have a restaurant on the ground floor. The project will have a total of 119 self contained units plus a restaurant. The Proposed Project is designed by Diaspora Design and Build Ltd. The proposed project site is on Plot No. KISUMU/KOGONY/4076 in Usoma area, off Nkrumah Road, Kogony Sub-location, East Kisumu Location, Kisumu West Sub county, Kisumu County. The parcel is absolutely owned by the Proponent, Gad Works Projects Limited. The Project site borders the shores of Lake Victoria. Immediate neighbors of the site are National Cereals and Produce Board, Kenya Fisheries Service, Globology Limited, Amsterdam 2 Hotel, Kenya Marine and Fisheries Research Institute, Equators bottlers and Kenya Pipeline Corporation. Currently, the site has no structures and mainly covered with vegetation consisting of grasses, forbs and a few tree species namely *Thevetia peruviana, Teclea nobilis*, *Musa species, Psidium guajava, Croton megalocarpus, Pteridium esculentum*, and *Azadirachta indica.* The vegetation will be cleared to pave way for the new development

The project shall be an upscale project that will fully showcase the urban vitality and modern atmosphere of Kisumu.

The main activities to be carried out in the development of the proposed project includes: clearance of the site, excavation/earthwork, actual construction and landscaping. The project is expected to **cost Ksh 539,121,163.36, (Five Hundred and Thirty Nine Million, One Hundred and Twenty One Thousand, One Hundred and Sixty Three, Thirty Six Cents)** as per the attached Summary of Bills of Quantity.

ESIA Objective

Agoa Ecolinks Associates Limited, EIA Firm of Experts, 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 impacts that are likely to ensue from the implementation of the proposed Floating Beach Apartments 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 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 environmental
- 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 and Social 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.

The project will access electricity from the national grid on top of having a backup power generator whereas water access will be from KIWASCO supply.

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 ESIA licence and ensuring sustainable development. 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 project 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 residential units in Usoma area, Kisumu County and regionally.
- Will provide a modern recreation area for tourists

Anticipated Negative Impacts

From the project assessment, the anticipated adverse negative impacts and recommended mitigation measures are summarized 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; • 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; • 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

Anticipated negative impact	*Recommended mitigation measures*
	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	• 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; • Strict adherence to speed limits of 10 km/hr; and • Clearly marking parking spaces, installation and maintenance of traffic guide signage.
Increased energy demand	• Sensitization 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

Anticipated negative impact	*Recommended mitigation measures*
	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	• Leveling the disturbed site areas to reduce run-off velocity and increase infiltration of rain water into the soil; • 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 residential units in Kisumu, country 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 and stakeholders or between it and the natural world. In relation to the proposed mitigation and environmental management and planning measures that will be incorporated during construction and operation phases; and the developments' input to the proponent and the general society, the proposed project is considered beneficial and important. 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 herein and will further still implement the proposed Environmental Management and monitoring Plan (EMP) to the letter.

CHAPTER ONE: INTRODUCTION

1.1 Introduction and background

Gad Works Projects Limited, herein referred to as the proponent, has proposed to develop a landmark Residential Apartments and a hotel in Kisumu. The project is designed to provide three blocks comprising a restaurant and total of 119 self contained units and a restaurant. The Project will also comprise a floating swimming pool in the lake and an aqua park. The Proposed Project is designed by Diaspora Design and Build Ltd. The proposed project site is on Plot No. KISUMU/KOGONY/4076 adjacent to the shores of Lake Victoria, in Usoma area, Kogony Sub-location, East Kisumu Location, Kisumu West Sub county, Kisumu County.

The Environmental Management and Co-ordination (Amendment) Act, 2015 provides for the preparation and submission of a Study Report before undertaking a project of the proposed nature. Part VI section 58 of the Act requires that a project proponent submit a Study Report to National Environment Management Authority (NEMA) and an Environmental and Social Impact Assessment (ESIA) Study Report, should NEMA deem it necessary. 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 Objectives, Scope and Terms of Reference for the ESIA

1.2.1 Objectives

The overall objective of the ESIA is to carry out an assessment of constructing and operating a 119 unit residential apartments and a restaurant 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.

1.2.2 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.

1.2.3 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) Study 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 (EMP).

Agoa Ecolinks Associates 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.

1.3 Methodology

The general steps followed during the assessment were as follows:

1.3.1 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.

1.3.2 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.

1.3.3 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 Kisumu City, National Development and Economic Surveys, relevant legislations, regulations and guidelines and standards.

1.3.4 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.

1.3.5 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. Public consultations were undertaken through open-ended questionnaires administered to interested and affected parties (IAP) mainly the owners and proprietors if the neighbouring establishments. The consultations were meant to give an indication of whether the Project is welcome, and the perceptions held by the IAP on the Project. The Consultant conducted two meetings, one 31st March 2022 at the Kisat Water Resources Users Association offices, during the preparation of the Terms of Reference and another on 11th April, 2022 the project site.

1.3.6 Determining Baseline Lake Water quality

Floating Swimming pool and an Aqua Park in the lake is envisaged to cause disturbance and pollution of the lake water. The pollution, if not contained, may affect the physico-chemical and biological parameters of the water quality. These parameters are important in assessing habitat conditions for fish and planktonic organisms. The Consultant sampled water at the beach near Impala Park and at KMFRI site close to the project site. Sampling was done in order to determine baseline water quality condition that will provide basis for future monitoring of the project activities especially the structures to be installed in the water. Water quality parameters that were measured included pH, Turbidity, Color, Total Dissolved Substance (TDS), Electrical Conductivity (EC), Total Hardness, Calcium, Magnesium, Total Alkalinity, Choride, Iron, Manganese, and Fluoride. The samples were analyzed at Lake Victoria South Water Works Development Agency Laboratory, a NEMA registered laboratory in Kisumu.

Water samples from the two points were analyzed against Water Quality Regulation Third Schedule. Results showed that the two water samples were slightly turbid with good mineral content and may chemically be recommended for domestic use after treatment. The findings of the analysis are attached in Annex 12 of this study report.

1.3.7 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.

1.3.8 Reporting and documentation

This Environmental and Social Impact Assessment Study 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.

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

1.4 ESIA Team

The Environmental and Social Impact Assessment was undertaken by Agoa Ecolinks Associates Limited, NEMA Registered Firm of Experts Number 12478 as required under Regulation 14 of the Environmental (Impact Assessment and Audit) Regulations 2003. Copy of practicing license for the Firm of Experts and Experts are presented in Annex 1 of this Study report.

CHAPTER TWO: PROJECT DESCRIPTION

2.1 Introduction

This ESIA Study report is for an upscale project that will fully showcase the urban vitality and modern atmosphere of Kisumu. The project shall be composed of Three Blocks comprising a total of 119 self contained units and a restaurant. This ESIA Study 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 (attached at the Annex).

2.2 Project Location

The proposed project site is on Plot No. KISUMU/KOGONY/4076 in Usoma area, off Nkrumah Road, Kogony Sub-location, East Kisumu Location, Kisumu West Sub county, Kisumu County. The project site is about 4km from Kisumu Central Business District. The proposed project site is located approximately 50m off Nkurumah Road on the shores of Lake Victoria.

The site GPS coordinates are: Latitude: 00º05'24.88"S, Longitude: 34º44'14.59"E

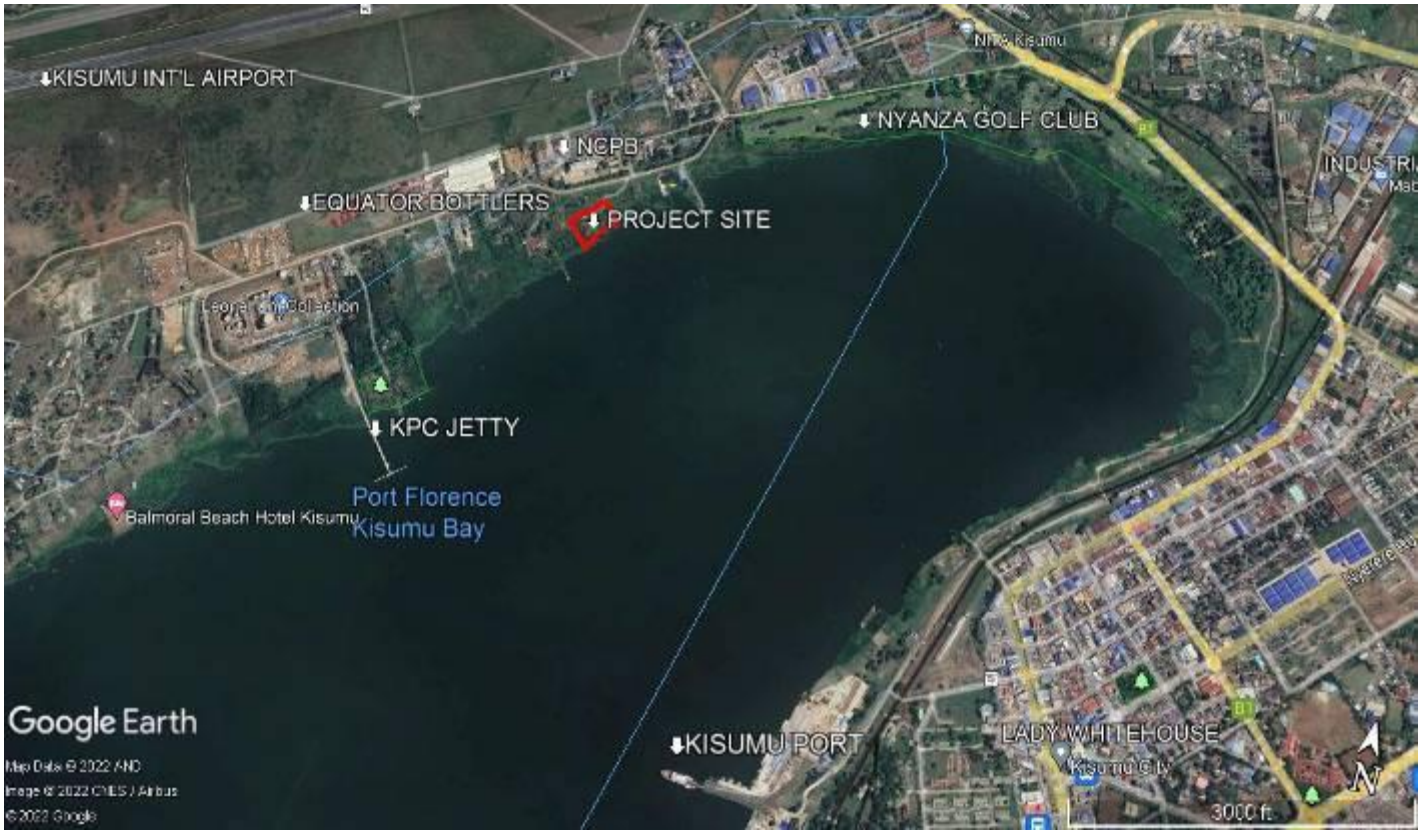

Figure 1: A satellite view of a section of Kisumu showing the proposed project site

Plate 1: Section of Nkurumah Road

2.4 The project site neighbourhood

It was also found that the proposed project is in tandem with its neighbors, which are mostly residential developments. The area has been zoned as commercial/Offices/Residential by the County Government of Kisumu, Physical planning department. The Project site borders the shores of Lake Victoria. Immediate neighbors of the site are National Cereals and Produce Board, Kenya Marine and Fisheries Research Institute, Equators bottlers and Kenya Pipeline Corporation.

Plate 2: NCPB opposite the project site

Plate 3: Amsterdam Hotel adjacent to the project site

2.5 Land ownership

The plot, Parcel Number KISUMU/KOGONY/4076, is owned and registered under Gad Works Projects Limited's name, the Project Proponent. A copy of the land Title Deed and official search are attached in Annex 2 of this ESIA study report.

2.6 General Site Analysis

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 vegetation will be removed to pave way for the new Floating Beach Apartments Project. The general terrain slopes gently towards the lake. The proposed project site is well connected to the national electric grid (KPCL) and Kisumu Water and Sewerage Systems.

The site is currently planted with a few individual trees and shrubs. These 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 *Musa species, Psidium guajava, Croton megalocarpus, Pteridium esculentum*, and *Azadirachta indica.*

Plate 4: Current site condition

2.7 Designs of the Proposed Project Development

The proposed development will be a landmark Residence in Usoma area, Kisumu. The building is designed to an international mid-scale, market business standards, with 119 units. The details of the development are as follows.

Table 2: Project Space distribution details

	BLOCK A (9Floors)	**BLOCK B (9Floors)**	**BLOCK C (9Floors)**	**TOTAL NO OF UNITS**
GROUND TO 8TH FLOOR	36 units	36	32	104
PENTHOUSE	5 bedsitters	5 bedsitters	5 bedsitters	15
Total	41	41	37	**119**

The project will also have:

- An aqua park
- Floating Swimming Pool
- Restaurant on the ground floor of Block C,
- Child play area,
- Landscaped lawns for outdoor events, and
- Conferences and Changing rooms

2.8 Perimeter Wall and Access Gate

The project will also include a perimeter wall for security purposes and have one main entrance.

2.9 Parking Spaces

The proponent has provided for parking spaces within the compound.

2.10 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.

2.10.1 Water

The project area is already connected to the KIWASCO water main. The Proponent will connect to KIWASCO water main feeding the current establishments in the area. Therefore, the feed from water main to the project site will be maintained and the residual volume and pressure will be available for the development from this main will be determined in liaison with KIWASCO. However the project will also consider other sources of water due to the known high demand on water infrastructure in Kisumu. Thus the following are some of the sources of water that the project will use.

KIWASCO Mains Supply

The most direct source of potable water will be from the water main which currently serves the facilities along Nkrumah Road. Storage would then be mostly within the buildings, with very little requirement for additional water storage on the site and little need for onsite water treatment. If water is supplied purely from the KIWASCO main site water, the on-site

reticulation will be adopted by KIWASCO after construction and proponent billed directly by the authority. This would mean the site management team will be involved in the activity including allowing access for the utilities to repair the pipe work etc. as required.

Rainwater Harvesting

Rainwater harvesting could be used to reduce the volume of water extracted from the KIWASCO supply times of rainfall, thus conserving the underground aquifer supply. Harvested rainwater will be used for potable uses, thus will be stored and treated. Alternatively, harvested rainwater could be used for irrigation of soft landscape areas only.

Borehole

The Proponent can also consider sinking a borehole to supplement waster from KIWASCO.

2.10.2 Fire fighting Systems

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 local water leak detection, major water leak protection, water supply protection 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 buildings.

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.

2.10.3 Electricity

The project will be served by power from Kenya Power electricity mains. It will be easy to connect the new development to power from the mains passing nearby.

Plate 5: KPLC main grid passing at the project site

2.10.4 Back-up Power

As an initial recommendation, 100% back up power capacity will be provided for apartment facilities.

2.10.5 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 sewage. 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. Given site area is supplied with sewer line; the proponent will apply for connection to KIWASCO sewer line for disposal of liquid wastes from the apartmU . ents and restaurant. The Proponent will raise the ground to obtain the gravity to channel the sewage to public sewer line.

2.10.6 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 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 licensed private contractors from a common collection point for self-incineration and compositing.

2.10.7 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.

2.10.8 Transport and Traffic Management

Activities related to construction works will undoubtedly induce uncharacteristic levels of additional vehicular traffic along the access road to the site. Related issues of vehicle congestion and reckless driving by truck drivers delivering construction materials to the site will be sources of annoyance, if not accidents, to local residents during the construction phase. This is likely to be the case where drivers speed particularly on loose or uneven road surface posing a safety threat to animals and people. Furthermore, increased traffic flow in and out of the proposed project site may cause some inconveniences to the flow of traffic along the access roads.

It is anticipated that the development will increase traffic Nkrumah road. All vehicles and people entering the site will need to pass security checks positioned strategically within the project.

2.10.9 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 development should have well designed drains within the facility to ensure its proper drainage.

2.11 Description of the Project's Construction Activities

2.11.1 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 Residential Apartments. Investigations also covered identification of any existing legal and regulatory requirements that may affect the project at any stage of its implementation.

2.11.2 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.

2.11.3 Storage of Materials

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.

2.11.4 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.

2.11.5 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.

2.11.6 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.

2.11.7 Electrical Work

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

2.11.8 Plumbing

Installation of pipe work for water supply and distribution will be carried out from the existing supply and then to associated facilities. In addition, pipe work will be installed to connect sanitary facilities to public sewer system, and for drainage of storm water from the rooftop into the peripheral drainage system. Plumbing activities will include metal and plastic cutting, the use of adhesives, metal grinding and wall drilling among others.

2.11.9 Installation of Equipment

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

2.12 Description of the Project's Operational Activities

2.12.1 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 etc.

The ground floor of Block C will serve as a restaurant providing catering services and quality meals for various clientele. A floating swimming pool and an aqua park will also be installed in the lake.

2.12.2 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 municipal's dumping site. Sanitary waste from the premises will be discharged into sewer system passing nearby, while storm water from the roof of the premises will join storm water drainage system.

2.12.3 Cleaning

The proponent will be responsible for regular washing and cleaning the entire building components, common lavatories and pavements. Tenants will be expected to maintain general cleanliness in their respective apartments. Cleaning operations will involve the use of substantial amounts of water and detergents.

2.12.4 General Repairs and Maintenance

The Residential buildings 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.

2.13 Description of the Project's Decommissioning Activities

2.13.1 Demolition Works

During decommissioning phase, the project components including buildings, pavements, drainage systems, and perimeter wall will be demolished. This will produce a lot of solid waste, which will be reused where feasible for other construction works or if not reusable, disposed of appropriately by a licensed waste disposal company.

2.13.2 Dismantling of Equipment

All equipment including electrical installations, furniture, partitions, pipe work and sinks among others will be dismantled and removed from the site. Priority will be given to the reuse of this equipment in other projects. This will be achieved through resale of the equipment to other building owners or contractors or donation of this equipment to charitable institutions.

2.13.3 Site Restoration

Once all the waste resulting from demolition and dismantling works is removed from the site, the site will be restored/rehabilitated through replenishment of the top soil and vegetation using indigenous plant species.

2.14 Project Design and Cost

The Proponent, Gad Works Projects Limited, has commissioned qualified consultants to undertake detailed investigations and detailed design for the proposed development project to prepare tender documents and determine the project cost among other aspects as per specified project timelines. The project is expected to cost **Ksh 539,121,163.36,** (Five Hundred and Thirty Nine Million, One Hundred and Twenty One Thousand, One Hundred and Sixty Three, Thirty Six Cents) as per the attached Summary of Bills of Quantity.

CHAPTER THREE: 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 away from Plot No, KISUMU/KOGONY/4076 Usoma area off Nkrumah Road, Kisumu 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, 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 Usoma area, Kisumu 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 project development area and Kisumu at large.
- Increased urban poverty and crime in Kenya.
- Discouragement for investors thus leading to reduced rental spaces in Kisumu

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 Floating Beach Apartments. This alternative is not preferred considering the magnitude of the project and hence will not be economical since the project area is served by KIWASCO public sewer system.

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 the most viable option since the project area is served by KIWASCO public sewer system.

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 another viable option for the proponent to adopt.

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 tenants. 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. 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 Floating Beach Apartments would be issued with an ESIA 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.

CHAPTER FOUR: BASELINE ENVIRONMENTAL AND SOCIO-ECONOMIC CONDITIONS

4.1 Introduction

The study information was gathered through discussions with the proponent, site visits and environmental status of the immediate neighborhood. The physical observation taken into consideration was the geological status, drainage system, water supply; waste disposal in the area, settlement patterns as well as the typical socio-economic activities around the project area. The datasheet was adopted from the International Environmental Protocol, tailored to address issues listed in the Regulations on EIA/audits under the Kenya Gazette Supplement No. 56 of 13th June 2003.

4.2 Project Site Location

The project area falling within Kisumu West Subcounty whose headquarters are in Ojola some 12 Kilometres from the project site. The project site is in Kogony Sub-location, East Kisumu Location, Kisumu West Sub county, Kisumu County. Kisumu County borders Lake Victoria to the West, Siaya, Vihiga and Nandi counties to the North, Kericho County to the East and Homa Bay County to the South.

4.3 Overview of Lake Victoria

Lake Victoria is Africa's largest lake by area occupying a surface area of about 60,000 square kilometers holding 2,424km^3 of water at an average depth of 40m. It's also the world's largest tropical lake and the world's second largest fresh water lake by surface area after Lake Superior in North America. The lake's area is divided among three countries which are; Kenya (6%), Uganda (45%) and Tanzania (49%). Its catchment area within the three countries covers 169,858km^2 and the shoreline is 7,142km including the islands. Despite the substantial catchment area drained by major rivers and streams, the Lake receives 80% of its water from rainfall. The Lake is drained solely by River Nile whose corridor constitutes the Nile Basin and serves other countries in Africa including South Sudan, Ethiopia, Sudan and Egypt.

4.4 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.

4.5 Physical Environment

a) Climate condition

Kisumu is warm throughout the year with a mean annual temperature of 23^{0}C. The temperature ranges between 20^{0}C and 35^{0}C but seldom falls below 19^{0}C. 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 fulfill 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.

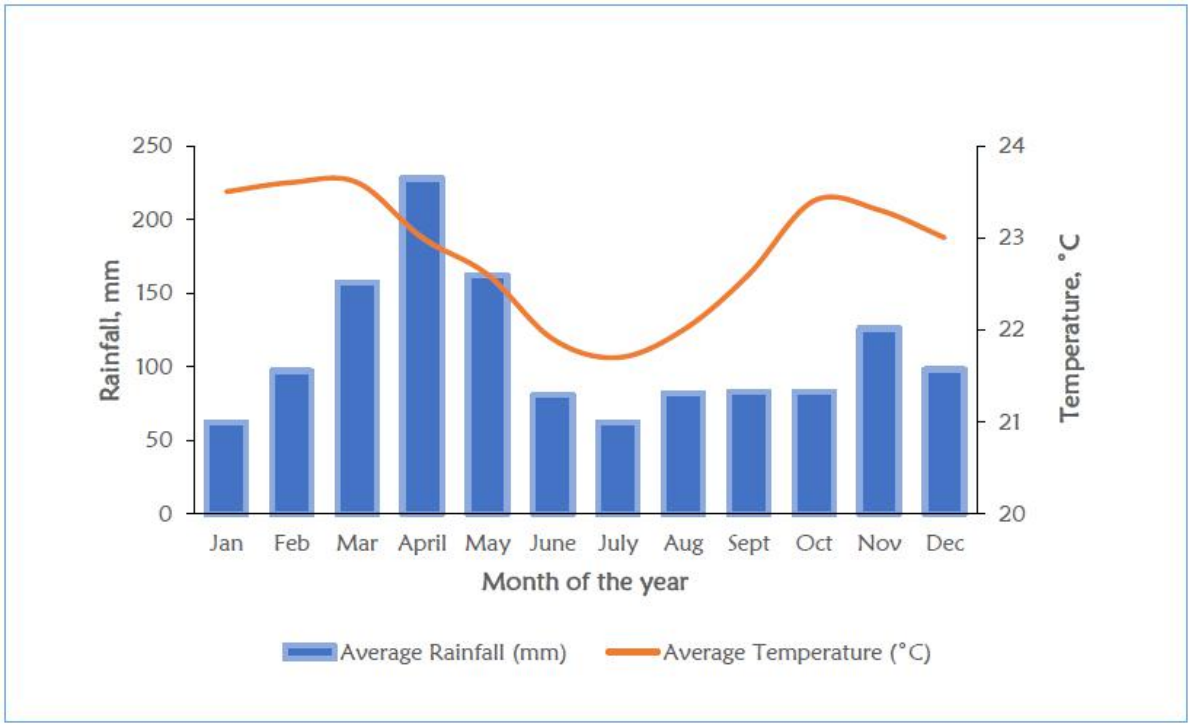

Figure 2: Average rainfall and temperature distribution in Kisumu City

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.

4.6 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 Kisumu town. The plot is accessed through Nkrumah Road which joins Kisumu-Busia Highway.
- **Electricity**: There area has power lines running along the road of access. Connection will be easily done.
- **Water Supply**: area is served by municipal tapped water supply from KIWASCO. The connection will be easily done.
- **Sewerage**: there are adequate sewer drainage system within the project area. The proponent proposes to channel all effluent to the existing municipal sewer drainage.
- **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 channeled to the public drainage system.

4.7 Socio-Economic Aspects

4.7.1 Population Density and Distribution

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

Table 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

4.7.2 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 Lasavanna 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 others.

- **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.

4.8 Ecological Survey

4.8.1 Introduction

The survey was carried out along the lake shore in the month of April, 2022 to determine the nature and extent of biodiversity and how proposed Floating Beach Apartment project could impact on the ecology of the shoreline ecosystem.

Freshwater resources and wetlands form an important part of the county's natural resources with considerable provisioning, regulatory and supporting services. Their provisioning services include the storage and retention of water for domestic, agricultural and industrial use. Their regulating services include modifying water flows, recharging and discharging groundwater resources and diluting or removing pollutants. Their supporting services are important for soil formation and retention as well as nutrient cycling. These ecosystems also provide habitats for a great number of plant and animal species. The ecosystems face numerous threats from human population pressure and land use changes. Some of them have been converted for agricultural use, settlements and commercial developments. Other threats include pollution, sedimentation and over-exploitation of wetland resources, introduction of alien species and encroachment of riparian reserves and adverse effects of climate variability. These have caused extensive degradation, reduction in water quality and quantity and loss of freshwater and wetland ecosystem goods and services.

The ecological survey gave special attention to various plant species including shoreline wetlands, shrubs, forbs, woody trees and farmland vegetation. Representative areas of each habitat were surveyed by direct observation on foot. The shoreline has an influence the state and dynamics of terrestrial and aquatic ecosystems through being a resource or habitat for biota, a vector for connectivity and exchange of energy, materials, and organisms, and acting as an agent of geomorphic change and disturbance.

Relevant literature within the project area was reviewed to identify information gaps relating to the ecological characteristics of the aquatic and terrestrial environment. Photographs of habitats (terrestrial and aquatic) and ecological features of special importance were taken. Surveys of animals were conducted by active searching at riparian and shoreline areas during daytime. Plant species and their relative abundance have been recorded with special attention to rare, protected and threatened species and other species of conservation.

Locals from the community was used in the search and identification of plant and animal species in the shoreline ecosystems.

4.8.2 Biological Environment

4.8.2.1 Vegetation

The natural biological environment of the shoreline area has been considerably changed due to encroachment and land fragmentation. Swamplands, Wood lots, mixed open woodlands, farmlands, grasslands and glades form most of the shoreline and riparian vegetation.

The original swamplands and bush lands of the project area are progressively being replaced by cultivation and are impacted by charcoal burning and logging as sources of income and construction materials.

Vegetation cover form important wildlife habitats in addition to serving other ecological and economic functions. The following are the major plant species found growing the Lake Victoria shoreline.

a) Grasses, Forbs and shrubs

Botanical name	**Common/local name (Luo)**
Cyperus papyrus	Togo
Phoenix reclinata	Othith
Echinochloa pyramidalis	Saka
Phragmites mauritianus	Odundu
Vernonia amygdalina	Olusia
Carissa edulis	Ochuoga
Mystroxylon aethiopicum	Ochol
Teclea nobilis	Ondati
Ricinus communis	Obala Ndagwa
Amaranthus hybridus	Ododo
Sesbania sesban	Asawo
Securinega virosa	Kagna
Tagetes minuta	Nyanjagra/Anyach
Psidium guajava	Mapera
Ocimum suave	Mieny
Tylosema fassoglensis	Ombasa
Indigofera erecta	Olando
Leonitis mollissima	Nyanyodhi
Achyranthes aspera	Ayuch Ayuch
Tithonia diversifolia	Akech
Bidens pilosa	Anyiego
Grewia similis	Powo
Rhus natalensis	Sangla
Lantana camara	Onyalobiro
Thevetia peruviana	Mafua
Solanum incamum	Ochok

Source: field assessment

b) Tree species in Lake Shoreline

The survey found out that much of the riparian and shoreline vegetation had been destroyed by the local residents. The identified woody tree species were scattered with some riparian section completely devoid of natural vegetation. The local people have extended their farming activities to the lakeshore thereby causing erosion and siltation. The tree species identified are listed in the table below.

To determine the tree species density in the project area, an area of about one hectare (100 square meter) along the lakeshore was selected as the sampling point. The actual vegetation was extrapolated for areas under the proposed project. The following are the major tree species observed and densities:

Tree species in the project area

Botanical Name	**Common/Local Name (Luo)**	**Average density (Individual Plants/Ha)**
Albizia coriara	Ober	5
Euphorbia tiraculli	Ojuok	1
Erythrina abbysinica	Orembe	6
Eucalyptus spp	Ndege	12
Acacia polycantha	Ogongo	*5*
Kigelia africana	Yago	*1*
Mangifera indica	Maembe	*2*
Ficus benjamina	Ngow	*5*
Markhamia lutea	Siala	*6*
Croton megalocarpus	Manera	*3*
Senna didimobotrya	obino	*2*

Source: field assessment

c) Farmland Vegetation

The main socio-economic activities along the lakeshore comprise subsistence and commercial farming. Commercial farming mainly involves growing of bananas, sugarcane, cassava and horticultural crops. Sugarcane is used for local consumption. Horticultural crops which mature within short period for example, three months such as kales, tomatoes and onions leave the soil uncovered for most part of the year. This makes the soil susceptible to erosion during the rainy season and thus reducing soil fertility on farms and increasing sedimentation of the lake.

The main subsistence crops along the lakeshore include maize, cassava and beans. The harvested fields of these subsistence crops are often grazed by cattle while waiting for the next season. Grazing of cattle, especially during the dry period loosens the soil and makes it susceptible for erosion during wet season.

Farmland vegetation in the project area

Common name/Botanical name	Local name (Luo)
Musa spp (Banana)	Rabolo
Brassica oleracea acephala (Kales)	Sukuma
Ipomoea batatas (Sweet potation)	Rabuon
Phaseolus vulgaris (Beans)	Oganda
Pennisetum glaucum (Millet)	Bel
Vigna unguiculata (cowpea)	Boo
Elesine coracana (Finger millet)	Kal
Zea mays (Maize)	Oduma
Cucurbita pepo (Pumpkin)	Budho
Allium cepa (Onions)	Otungu
Manihot esculenta (Cassava)	Mariewa/Muhogo
Maranta arundinaceae (Arrow root)	Nduma
Sacharrum spp (Sugarcane)	Niang

Source: field assessment

d) Riparian wetland vegetation/Macrophytes

The shoreline vegetations are characterized by rooted herbaceous and glasslike plants largely consisting of papyrus (*Cyperus papyrus*), reeds (*Phragmites sp.*) and hippo grass (*Vossia cuspidata*). These swamp systems are complemented by shrubland systems dominated by perennially green shrubby vegetation. This vegetation has various ecological and economic functions. In addition to their ecological contribution as riparian and shoreline wetland habitats, especially for various birds, the riparian vegetation also provides a filter for sediments in water entering the lake. Other local resources exploited from this vegetation class include fodder for livestock especially during dry conditions, building (thatching) materials, raw materials resource for handcrafts (including marts, chairs and baskets).

Plate 6: *Cyperus papyrus* (Togo) on the shores of Lake Victoria

e) Woodlots

Though woodlots serve both economic and ecological functions, they were found no to be well established in the study area. The few ones that were noted were small in size and with few

individual trees. The most common vegetation observed are eucalyptus spp. Ecologically, the woodlots do not form a key habitat for any wildlife other than in isolated cases where weaver birds were noted nesting on eucalyptus woodlots. The sizes of the woodlots were estimated to be between 10m by 10m to 40m by 40m. The species densities within woodlots were estimated to range from 250 plants per hectare to 5500 plants per hectare.

4.8.2.2 Fauna

The proposed project area has modified natural environment and is predominantly a rural settlement. The survey established that the numerous vegetation, especially the riparian and shoreline support many faunal species. These include terrestrial wild fauna of influence like Hippopotamus and Crocodiles. The wetlands are also home of many insects including the *Chaoboridae, Chironomidae, Ephemeroptera, Odonata and Trichoptera* as well as many invertebrates. Further, *Gastropoda, Hirudinea and Oligochaeta* are found abundantly in wetlands. Some invertebrates found in the shoreline ecosystem include *lepidopterans* (butterflies) and *coleopterans* (beetles). Domesticated animals in the area include cattle, goats, pigs, chickens and various pets.

Wild animal species confirmed within the project area during this survey are discussed under the following classes.

a) Mammals

Surveys of mammals were conducted by active searching along the shoreline, swamps, and woodlots during daytime. During the field survey, confirmation was mostly via direct sightings and supplemented by spoor or droppings.

Considering the size of the area, there were relatively low confirmations of mammalian species. This is likely due to the land use practice which occupies and disturbs a substantial area of the project area. A few mammal species werer confirmed for the study area and were common across the riparian and wetland areas. A list of mammalian species confirmed in the area during the study is shown below:

Mammalian species in the project area

Common and Local name	Scientific name
Vervet Monkeys (Ong'er)	*Cercopithecus aethiops*
Hippopotamus (Rao)	*Hippopotamus amphibius*
African hare (Apuoyo),	*Lepus capensis*
Jackal (Kibwe)	*Canis mesomelas*
Mongoose, (Ogwang')	*Mungos mungo*
Dick (Mwanda)	*Madoqua guentheri*
Rats (Oyieyo)	*Rattus norvegicus*

Source: field assessment

The mammalian species are common and distributed throughout the project area.

b) Reptiles and amphibians

Reptiles are cold-blooded vertebrates. They serve as both predator and prey within an ecosystem depending on their size and exist within various habitats.

Reptiles favour low-lying rocky habitats, ridges, termite mounds, tree stumps, bark and/or holes in which to hunt, feed and seek shelter. Reptiles that were confirmed include, Crocodiles -*Crocodylus*

niloticus (Nyang'-Luo), Monitor Lizard- *Varanus salvator* (Ng'ech-Luo), Frogs (Ogwal-Luo), Chameleons- *Pogona vitticeps* (Ong'ongruok-Luo), Rats- *Rattus norvegicus* (Oyieyo- Luo), Black and green mambas and house gecko. Local guides also confirmed the presence of other reptiles like savannah monitor and snakes such as pythons especially within sugarcane farms.

c) Fishes

Lake Victoria is a home for a number of fish species on which the surrounding communities depend. Fish species harvested from the lake include the African Catfish (*Clarias anguillaris)* (Mumi-Luo), *Haplochromis spp* (Fulu-Luo), Nile perch (*Lates niloticus*), *Oreochromis esculenta* (Ngege-Luo), and Alestes nurse (Osoga-Luo). There are benthopelagic and potamodromous, migrating between upstream and downstream sections of the river. When water levels recede, catfish hibernate in mud, only coming out when there is sufficient water levels. Most of the fish species within the project area are known to spawn at sheltered sections of the river and lake with calm waters.

d) Avifauna

The riparian vegetation, woodlots, and swamplands form good habitats for avifauna. Several bird species were observed during the site survey.

Notable species observed within the project area during the ecological assessment is presented in the table below:

Avifauna species identified in the project area

Common name (Local Name)	**Scientific name**
Heron *(Aluoluo)*	*Ardea melanocephala*
Hamerkop (*Onyinjo)*	*Scopus umbretta*
Owl *(Tula)*	*Athene noctua*
Sunbird *(Nyanyodhi)*	*Nectarinia mariquensis*
Hadada ibis *(Ng'anga')*	*Bostrychia hagedash*
Eagle *(Ongo)*	*Polemaetus bellicosus*
Crested crane *(Ongowang')*	*Balearica pavonina*
Speckled Mouse birds *(Oluru)*	*Colius striatus*
Guinea fowl *(Awendo)*	*Numida meleagris*
Doves *(Akuru)*	*Streptopelia semitorquata*
Swallow *(Opija)*	*Hirundo spp*
King fisher (Kirindi)	*Ispidina lecontei*
Crow (Agak)	*Corvus albus*
Weavers (Osogo)	*Ploceus spp*
Cattle egret (Okok)	*Bubulcus ibis*
Hawk (Otenga)	*Buteo jamaicensis*
Northern Olive Thrush (Hundhwe)	*Turdus abyssinicus*

Source: field assessment

Plate 7:Hamerkop (*Scopus umbretta)* seen at the shoreline during site assessment

CHAPTER FIVE: POLICY, LEGAL AND REGULATORY FRAMEWORK

5.1 General Overview

Globally there has been a growing concern over the rate at which the environment is increasing becoming damaged or degraded as a result of various development activities. In this regard the UN Sustainable Development Principle, an accepted order world over that stipulates that all development projects must not only be economically viable, but must also be the socially acceptable and environmentally feasible before consideration for implementation done. To this regard the government in effort to ensure environmental conservation and protection of human health has put in place all the frameworks necessary for the legislative and regulatory controls of environmental management.

The proposed development and similar project such is guided and governed by a number of laws, regulations and policies in the country. These determine the nature of the project in terms of setting, number of units per unit land, height of the structure as well as land use activity which it will be put use.

Some of the key national laws that govern the management of environmental resources in the country are hereby discussed, however it is worth noting that wherever any of the laws contradict each other, the Environmental Management and Co-ordination Act Cap 387 prevails.

5.2 Policy Framework

5.2.1 Policy Paper on Environmental and Development (Sessional Paper No. 6 of 1999)

This policy was formulated on the basis of the National Environment Action Plan (NEAP) process of 1994. The policy's major objective is to harmonize environmental and developmental concerns to ensure sustainability. Furthermore, this policy ensures that environmental issues are taken into consideration before the commencement of development policies, programmes, plans and projects. The proposed project is therefore consistent with the Sessional Paper No. 6 of 1999.

5.2.2 National Policy on Water Resources Management and Development (Sessional Paper No.1 of 1999).

The management of water resources in Kenya is guided by four specific policy objectives, namely:

- Preserve, conserve, and protect available water resources and allocate it in a sustainable rational and economic way;
- Supply water of good quality in sufficient quantities to meet the various water needs, including poverty alleviation, while ensuring the safe disposal of wastewater and environmental protection;
- Establish an efficient and effective institutional framework to achieve a systematic development and management of the water sector; and
- Develop a sound and sustainable financing system for effective water resources management, water supply and sanitation development.

5.2.3 Physical Planning Policy

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

5.2.4 Public Health Policy

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

5.2.5 Kenya Vision 2030

Kenya Vision 2030 is the country's long term development blueprint guiding development in Kenya from 2008 to 2030.Its objective is to transform Kenya into a newly industrialising, ''middle income country providing a high quality life to all its citizens by the year 2030'' Section 5.4 on the Environment, states that Kenya aims to be a nation living in a clean, secure and sustainable environment by 2030. It also states that Kenya will harmonize environment-related laws for better environmental planning and governance.

The 2030 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 residential development will be in line with this broad national goal.

Compliance: As part of environmental protection, mitigation measures have been formulated for this project which will ensure minimal negative effects to the environment. Development of the project is in line with the national vision of improving housing and urban development.

5.2.6 The National Environment Policy, 2013

The goal of the policy is to ensure a better quality of life for present and future generations through sustainable management and use of the environment and natural resources.

The objectives of the Policy are *inter alia* to:

- Provide a framework for an integrated approach to planning and sustainable management of Kenya's environment and natural resources;
- Strengthen the legal and institutional framework for good governance, effective coordination and management of the environment and natural resources; and
- Ensure sustainable management of the environment and natural resources, such as unique terrestrial and aquatic ecosystems, for national economic growth and improved livelihoods.

Some of the guiding principles in the implementation of the policy include:

- **Environmental Right**: Every person in Kenya has a right to a clean and healthy environment and a duty to safeguard and enhance the environment;
- **Right to Development**: The right to development will be exercised taking into consideration sustainability, resource efficiency and economic, social and environmental needs;
- **Sustainable Resource Use**: Environmental resources will be utilized in a manner that does not compromise the quality and value of the resource or

decrease the carrying capacity of supporting ecosystems; and

- **Public Participation**: A coordinated and participatory approach to environmental protection and management will be enhanced to ensure that the relevant government agencies, county governments, private sector, civil society and communities are involved in planning, implementation and decision-making processes.

5.2.7 Kisumu County Environment Policy 2019

Kisumu County Government through the department responsible for environmental issues ensures that policies are reviewed and formulated to meet the aspirations of the Constitution and emerging issues in the management of the environment for prosperity. Kisumu County Environmental Policy aim at providing a holistic framework to guide the management of the environment and natural resources in Kisumu County. The Policy further ensures that environment is mainstreamed in all county government policies in order to facilitate and realize sustainable development at all levels. This in turn helps in promoting green economy, enhance social inclusion, improve human welfare and create opportunities for employment and maintenance of a healthy ecosystem.

5.2.8 The National Land Policy (Sessional Paper No. 3 of 2009)

The overall object of the national land policy is to secure land rights and provide for sustainable growth, investment, and the reduction of poverty in line with the governments overall development objectives.

5.3 Legal Framework

There are several legal provisions on environmental protection, which touch on and regulate the development of infrastructure like the one under this proposal. A summary of the various legislations relevant to the development is given hereunder. The following pieces of legislation and regulations are applicable to the proposed of development.

5.3.1 The Environment Management and Coordination Act cap 387

This is an Act of Parliament to provide for the establishment of an appropriate legal and institutional framework for the management of the environment and for matters connected there with and incidental thereto. Part VII on Environmental Audit and Monitoring section 58 specifically detail the need to undertake Environmental Impact Assessment of all projects likely to cause negative impacts to the environment as listed in the second schedule of the ACT. Further, Part V of the Environmental (Impact Assessment and Audit) Regulations 2003; detail the guidelines for Environmental Impact Assessment process. It is therefore mandatory that an Environmental Impact Assessment must be undertaken by all proposed projects to ensure that the activities at their premises comply with all the legal and institutional frameworks that are in place to safeguard the environment, health and safety of the workers.

Compliance

Section 58 of the Act requires proponents of a development likely to have deleterious effects on the environment to prepare and submit an ESIA report to NEMA for consideration for decision making. This study report is prepared to comply with the provisions of this section. In addition, several Regulations have been enacted by the line Ministry to operationalize the Act as discussed below.

5.3.2 Environmental Management and Co-ordination (Waste Management) Regulations, 2006

Legal Notice No.121 (1) No person shall dispose off any waste on a public highway, street, road, recreational area or in any public place except in a designated waste receptacle. A waste generator shall collect, segregate and dispose such waste in the manner provided for under these Regulations. 5. (1) a waste generator shall minimize the waste generated by adopting the cleaner production methods.

Compliance:

The proponent will adopt an integrated solid waste management policy and will ensure all waste is managed as provided for in this acts.

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

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

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

These regulations also relate noise to its vibration effects and seek to ensure no harmful vibrations are caused by controlling the level of noise. Provides for the maximum noise levels permissible in various environmental set ups such as residential areas, places of worship, commercial areas and mixed residential.

Compliance:

The Proponent/management shall ensure that the provision of this regulation are strictly adhered to and measures taken to ensure minimal emission as much as possible and in consideration of permissible level set.

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

This regulation provides guidelines and procedures for carrying out Environmental and Social Impact Assessment (ESIA) and Environmental Audit (EA).

Environmental and Social Impact Assessment (ESIA) is a critical examination of the effects of a project on the environment. The goal of an ESIA is to ensure that decisions on proposed projects and activities are environmentally sustainable. An ESIA 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.

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.

Self-Audits are carried out after the environmental impact assessment study 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.

Compliance:
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. This report was prepared by a registered firm of Environmental Experts.

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. An initial environmental audit should also be carried out in the first year of operation.

5.3.5 Environmental Management and Co-ordination (water quality) Regulations, 2006

This Legal Notice on Water Quality provides that anyone who discharges effluent into the environment or public sewer shall be required to apply for Effluent Discharge License. The license for discharge is Kshs 5,000 while annual license fee for discharge into the environment will be Kshs. 20,000 or Kshs 100,000 depending on the facility. Non-compliance with the regulations attracts a fine not exceeding Kshs 500,000 and the polluter pay principle may apply depending on the court ruling.

Compliance:
The proponent shall observe policy and regulatory requirements and implement measures to safeguard the quality of water by conducting frequent monitoring of the effluent which may cause health risks and also cause pollution to the underground water.

5.3.6 Environmental Management and Coordination (Wetlands, River Banks, Lake Shores and Sea Shore Management) Regulations, 2009

These Regulations were enacted pursuant to the provisions of Section 42 (3) of EMCA. One of the key objectives of the Regulations is to facilitate the sustainable utilization and conservation of resources on river banks, lake shores, and on the seashore by and for the benefit of the people and community living in the area.

Compliance:
The Proponent will ensure that they abide by the above laws and that the lakeshore and riparian areas are well protected.

5.3.7 The Public Health Act (Cap 242)

Provides for the prevention of the occurrence of nuisance or conditions dangerous/injurious to humans. -Provides that the relevant local authority shall take all lawful, necessary and reasonably practicable measures -: for preventing any pollution dangerous to health of any supply of water which the public within its jurisdiction has a right to use and does use for drinking or domestic purposes (whether such supply is derived from sources within or beyond its jurisdiction); and for purifying any such supply which has become so polluted, and to take

measures (including, if necessary, proceedings at law) against any person so polluting any such supply or polluting any stream so as to be a nuisance or danger to health.

Compliance:
The proponent will ensure compliance with Act by providing clean, healthy and safe environment during the project implementation. The proponent shall observe policy and regulatory requirements and implement measures to safeguard public health and safety

5.3.8 Occupational Safety and Health Act (OSHA) 2007.

The Act makes provision for the health, safety and welfare of persons employed in factories and other places of work. The provisions require that all practicable measures be taken to protect persons employed in a factory from dust, fumes or impurities originating from any process within the facility. The provisions of the Act are also relevant to the management of hazardous and non-hazardous wastes, which may arise at a project site.

Compliance:
The proponent shall observe health and safety issues of the workers and tenants during construction and operational phase.

5.3.9 The Constitution of Kenya 2010.

Article 42 of the Constitution states that every person has the right to a clean and healthy environment, which includes the right: (a) to have the environment protected for the benefit of present and future generations through legislative and other measures, particularly those contemplated in Article 69; and (b) to have obligations relating to the environment fulfilled under Article 70. Article 69(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 (1) states that If a person alleges that a right to a clean and healthy environment recognized and protected under Article 42 has been, is being or is likely to be, denied, violated, infringed or threatened, the person may apply to a court for redress in addition to any other legal remedies that are available in respect to the same matter.

Compliance:
The proponent shall be in compliance with the constitution of Kenya by ensuring that the environment is conserved and protected.

5.3.10 The Standards Act (Cap 496)

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

Compliance:
The proponent shall ensure that materials and codes of practice utilized in the project adhere to the provisions of this Act

5.3.11 Kenya Ports Authority (KPA) Act 2014

Through the Kenya Ports Authority (KPA) Act, KPA has the responsibility for controlling oil pollution in the Kenyan territorial waters, which include all inshore waters and those extending up to 160km offshore.

Compliance:

The proponent will collaborate with the Kenya Ports Authority by prevention of pollution of the lake. Comments from KPA are attached in the Annexes of this Study Report.

5.3.12 The Kenya Coast Guard Service Act, 2018

The Kenya Coast Guard Service was established by The Coast Guard Service Act 2018, and was operationalized on 22nd October 2018. The Coast Guard Service is responsible for protecting the country's waters against dumping of harmful wastes and pollutants, search and rescue services, and the arrest of illegal fishermen.

Compliance:

The proponent will collaborate with the Kenya Coast Guard by reporting illegal activities and in prevention of pollution of the lake and trafficking. Comments from Kenya Coast Guard Service are attached in the Annexes of this Study Report.

5.3.13 The Fisheries Management and Development Act, 2016

The Fisheries Management and Development Act provides the framework for the development, management, exploitation, utilization and conservation of fisheries and for connected purposes. Article 49 (1) and 50 (1) of the subsidiary Regulation fisheries conservation, management and development has provisions for the prevention of pollution and protection of fish breeding areas. The overall objective of this Act is to protect, manage, use and develop the aquatic resources in a manner which is consistent with ecologically sustainable development, to uplift the living standards of the fishing communities and to introduce fishing to traditionally non-fishing communities and to enhance food security. As part of the implementation of the Act and improve community participation in the conservation and management of fisheries, the Kenya Government gazetted the Beach Management Units (BMUs) Regulations in 2007.

Compliance:

The Project site is located on the shores of Lake Victoria, which supports a thriving fishery and local livelihoods. The proponent will implement measures to prevent pollution of the lake by both solid wastes and effluent generated by port operations which would degrade water quality and affect fisheries.

5.3.14 The Wildlife Conservation and Management Act, 2013

It is the law charged with the responsibility of providing for the protection, conservation, sustainable use and management of wildlife in Kenya and for connected purposes. It designates protected areas, lists and provides for the protection of endangered, vulnerable and protected species as well as invasive species. It is critical in the study of biodiversity as it is the most comprehensive database alongside the IUCN red list of endangered species.

Compliance:

The Lake Victoria Basin is incredibly rich in wildlife including hippopotamuses and birds. The proponent should implement measures to prevent pollution from the port operations which would degrade water quality and affect the wildlife.

5.3.15 The Climate Change Act, 2016

The Climate Change Act provides a regulatory framework for the development, management, implementation and regulation of mechanisms to enhance climate change resilience and low carbon development for the sustainable development of Kenya. It provides for mainstreaming of climate change responses into development planning, decision making and implementation as well as resilience and adaptation in all governance sectors.

Compliance:

The proponent should implement measures to ensure low carbon foot at the project implementation. This could be through installation of renewable energy infrastructure for lighting and energy efficient machines during the project implementation Additionally, the proponent should support local communities in climate change adaptation measures through investments in capacity building e.g. in agriculture, forestry, conservation and fisheries as part of the Proponent's Corporate Social Responsibility (CSR).

5.3.16 Kenya Maritime Authority Act

Kenya Maritime Authority is charged with the responsibility of regulating, coordinating and overseeing maritime affairs. In fulfilling this mandate KMA is expected to:

- Advise the government on the development of international maritime conventions, treaties and agreements as well as their codification into the laws of Kenya;
- Conduct and liaise with other stakeholders in doing research, investigations and surveys relating to maritime affairs;
- Develop and maintain the national oil spill response plan in coastal and inland waterways in liaison with players in the oil industry;
- Serve as coordinators of search and rescue operations in liaison with KPA, Kenya Navy and other relevant bodies;
- Ensure sustainable exploitation of marine resources and rapid response to marine calamities;

KMA therefore provides a forum for which the various players involved in maritime affairs develop maritime policies and integrate these policies into the national development plan.

Further, KPA policy on environmental issues is governed by the provisions of The International Convention for the Prevention of Pollution from Ships, 1973 (MARPOL 73/78) to which Kenya ascribes. This is the most important instrument for preventing pollution from arising from marine transportation. It was adopted in 1973 and modified by the Protocol of 1978 relating thereto, hence MARPOL 73/78.

Compliance

The Proponent will work to abide by the above Act

5.3.17 Building Code

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.

Compliance:
All approvals will be sought before commencement of the work and regular monitoring will follow to ensure compliance with set standards and conditions.

5.3.18 The Way Leave Act

The areas zoned for communication lines, sewer lines, power lines, water pipes etc. are known as way leaves. The way leave Act prohibits development of any kind in these designated areas. Thus any developer is bound by this Act to see to it that no development takes place in these areas. The proponent will also leave an allowance of 30m riparian form the lake highest water point.

Compliance:
The proponent shall ensure that no development is done on the way leave

5.3.19 Water Act 2016

The new Water Act (2016) of the Laws of Kenya seeks to make better provision for the conservation, control of pollution; apportionment and use of the water resources in Kenya, and for purposes they are incidental thereto and connected therewith. The Act vests ownership and control of water in government subject to any rights of user. The Ministry of water is vested with the duty to conserve and regulate the use of natural water resources (estuaries, surface, ground water and marine). The Act prohibits the release of wastewater without a permit and also spells out penalties for pollution of water.

Further, it requires that "any person shall dispose the effluents or drainage from any factory or trade premises in such a manner as will prevent any such effluent or drainage from reaching such well or ground water".

The Act vests the water in the State and gives the provisions for the water management, including irrigation water, pollution, drainage, flood control and abstraction. It is the main legislation governing the use of water especially through water permit system.

Section 63 of the Act specifies that every person in Kenya has the right to clean and safe water in adequate quantities and to reasonable standards of sanitation as stipulated in Article 43 of the Constitution.

Compliance:
The proponent will get water supply from licensed water service provider, KIWASCO), However, where additional supplies are needed, abstraction licence variation with WRA has been recommended. The proponent is required to dispose waste water in accordance to the stipulated quality standards. The proponent shall ensure that the project will not have adverse impact on the local water supply during construction and operation.

5.3.20 The County Government Act (2012)

Under the new constitution of Kenya, County Governments have taken over what used to be provided by the function of local authorities. They have been given power to control or prohibit all businesses, factories and other activities including the proposed project which by reason of smoke, fumes, gases, dust, noise or other cause, maybe or become a source of danger, discomfort or annoyance to the neighbourhood and to prescribe conditions subject to which such businesses, factories etc. shall be carried.

The new constitution grants county governments the powers to grant or renew businesses licenses or refuse the same. To ensure implementation of the provisions of the new

constitution, the county governments are empowered to make by laws in respect of all such matters as are necessary or desirable for the maintenance of health, safety and well-being of the inhabitants of the area. This includes construction and maintenance of water supply, sewage and solid waste management systems

Compliance:
The proponent shall liaise with Kisumu County Government Department in enforce of various measure and environment monitoring.

5.3.21 Physical and Land Use Planning Act, 2019

The Act provides for the planning, use, regulation and development of land and for connected purposes. It was enacted to ensure that every person engaged in physical and land use planning shall promote sustainable use of land and livable communities which integrates human needs in any locality. The Act allows the County Government to prepare a local physical and land use development plan in respect of a County, Sub-County, or unclassified urban area.

Compliance:
The proponent has obtained applicable planning approvals from the Kisumu County Physical Planning department for the proposed project.

5.3.22 Employment Act 2007

This Act of Parliament prohibits discrimination in labour relations, sexual harassment, forced labour and child labour. It obligates all employers with twenty or more employees to issue a policy statement on sexual harassment.

Compliance:
All recruitment process for the proposed development shall be guided by the provisions of this Act on matters touching on equality of opportunities in employment, terms of service, age limit and prevention of sexual harassment in the work place enforced.

5.3.23 The Traffic Act, 2012

The traffic Act of gives provisions and guidelines that govern the Kenya roads transport sector. These guidelines are essential o 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.

Compliance:
The proponent shall develop traffic management plan and put up measure to reduce congestion and traffic related accident within the project and around the project area

5.3.24 The landlord and tenant (shops, commercial and catering establishment) act cap 301

This act guides the relationship between the landlord and tenants. The act set guideline for entering into tenancy agreement and provides also mechanism of addressing disputes cases.

Compliance:

All tenancy agreement or procedure shall follow strict adherence to the provisions of this act.

5.3.25 The Land Act No. 6 Of 2012

Date of commencement: 2nd May, 2012. 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. There are new land laws governing the management and administration of land in Kenya. The New Act merges the previous ones, via; Land Titles Act Cap 282, Land Control Act Cap 406, and the Local Government Act Cap 265. This Act shall apply to all land declared as—

i. Public land under Article 62 of the Constitution;
ii. Private land under Article 64 of the Constitution; and
iii. Community land under Article 63 of the Constitution and any other written law relating to community land.

5.3.26 The Land and Environment Court Act, 2012

This is an Act of Parliament 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. The principal objective of this Act is to enable the Court to facilitate the just, expeditious, proportionate and accessible resolution of disputes governed by this Act. Section 13 (2) (b) of the Act outlines that in exercise of its jurisdiction under Article 162 (2) (b) of the Constitution, the Court shall have power to hear and determine disputes relating to environment and land, including disputes.

- Relating to environmental planning and protection, trade, climate issues, land use planning, title, tenure, boundaries, rates, rents, valuations, mining, minerals and other natural resources;
- Relating to compulsory acquisition of land;
- Relating to land administration and management;
- Relating to public, private and community land and contracts, chooses in action or other instruments granting any enforceable interests in land; and
- Any other dispute relating to environment and land.

Section 24 (2) also states that the Chief Justice shall make rules to regulate the practice and procedure, in tribunals and subordinate courts, for matters relating to land and environment. Section 30 (1) states that all proceedings relating to the environment or to the use and occupation and title to land pending before any Court or local tribunal of competent jurisdiction shall continue to be heard and determined by the same court until the Environment and Land Court established under this Act comes into operation or as may be directed by the Chief Justice or the Chief Registrar.

Compliance:

During the assessment exercise, no land disputes or conflict was registered. However proponent will adhere to provision of this act and any land or/and environmental cases arising from the project will be hand/led in accordance with the provisions of this act.

5.3.27 Work Injury Compensation Benefit Act (WIBA) 2007

This is an Act of Parliament to provide for compensation to employees for work related injuries and diseases contracted in the course of their employment and for connected purposes. The Act applies to all employees, including employees employed by the Government, other than the armed forces, in the same way and to the same extent as if the Government were a private employer. It is the duty of all employers to obtain and maintain an insurance policy from an approved insurer in respect of any liability the employer may incur as provided for by the Act. The Act also stipulates that an employee who suffers an accident that leads to disablement or death is subject to the provisions of this Act and is entitled to compensation.

Compliance:

Provision of this act will be in the recruitment process for the proposed development. All worker during will have insurance and compensation cover to ensure that all the employees who will be engaged during the execution are covered as provided for in the Act.

5.3.28 Hotel Accommodation Tax, Cap 478

Under this act on Section 3;

1) every person who hires or occupies any accommodation in a hotel shall pay a tax, to be known as hotel accommodation tax; provided that where the hirer and the occupier are not the same person they shall each be liable to pay the tax but the payment thereof by one shall operate so as to discharge the liability of the other.
2) The tax payable under subsection 1) shall -
    a) in any case where the charge for the hiring or occupation includes only the accommodation, or the accommodation and breakfast, 'be equal to seventeen-and-one-half per centum of that charge;
    b) in any other case, be equal to twelve-and-one-half per centum of the charge for the hiring or occupation, but in calculating any tax, any charge for drink or for service shall be disregarded.
3) The amount of tax payable under this section shall be paid to the hotel by or on behalf of the hirer not later than twenty-one days after the last day of the month in which the hirer, or where the hirer and the occupier are not the same person, the occupier, vacates the hotel.
4) Any person who tails to pay tax in accordance with the provisions of this section Shall be guilty of an offence and liable to a fine not exceeding fifty thousand shillings or to imprisonment for a term not exceeding one year or to both Section 4 stipulates that any proprietor who, whether knowingly or by neglect permits the commission of an offence under section 3; or fails to charge the amount of any tax payable under that section; or fails to keep a visitors register showing the name, nationality and address of every guest who stays in the hotel, shall be guilty of an offence and liable to a fine not exceeding six thousand shillings or to imprisonment for a term not exceeding six months or to both.

Compliance:

The Proponent will abide by this Act during project implementation.

5.4 Institutional and Regulatory Framework

5.4.1 National Environment Management Authority

The National Environment Management Authority (NEMA) is the National body charged with coordinating matters of implementation of policy issues relating to the environment. This body was established under the Environmental Management and Coordination Act (EMCA), 1999.

Other departments that deal with environmental issues in include the Forestry Department, Kenya Wildlife Services (KWS), county government of Kisumu, among others.

Compliance:

This Environmental Impact Assessment is in compliance with environmental legislations and shall be submitted to NEMA office for consideration of relevant approval and or appropriate remedial recommendation

5.4.2 National Environment Department

Also set up under the EMCA CAP 387 the NED investigates any allegations or complaints against any person or against the authority in relation to the condition of the environment in Kenya and on its own motion, any suspected case of environmental degradation and to make a report of its findings together with its recommendations thereon, to the Council; prepares and submit to the council, periodic reports of its activities which shall form part of the annual report on the state of the environment under section 9(3); and performs such other functions and exercise such powers as may be assigned to it by the NET.

Compliance:

The proponent shall abide by the resolution or recommendation made by the committee arising from a complaint made/ lodged by to the Department arising as a result of damaged to the state of the environment due actions arising from the operation of the proposed development

5.4.3 National Environment Tribunal

The NET hears and determines the cases related to environmental offences brought before it by the complainants/litigants who are dissatisfied with the decisions made by the NECC and in case of dissatisfaction with NET's ruling, they can appeal to the High Court. The following is a summary of some laws and regulations that protect the environment from environmental degradation. The Sectoral acts are still applicable, however, for the purpose of this report; special attention should be given to the provisions in EMCA.

Compliance:

The proponent will forward his/her dissatisfaction arising from the NED resolution, disputes arising from the license by the authority and/or any misconduct of the Authority to the Tribunal for redress.

5.4.4 Public Responsibility and Participation

Part XIII (Sections 140, 142, 143, and 145) of EMCA touches on Environmental Offences relating to standards, pollution, restoration orders, easements and conservation orders. These sections spell out penalties for the various categories of environmental offences and give the public powers (ref. Locus standi) to sue environmental offenders and /or seek redress through courts of law. Legal suits could be filled against individual offenders, bodies corporate, partnerships, principals or employers.

Compliance:

Adequate Public Consultations had been undertaken

5.4.5 The National Construction Authority Regulations 2014

All construction works, contracts or projects either in the public or private sector shall be registered with the Authority in accordance with the Act. 2. An owner shall make an application

for registration of a project to the Authority in writing in thirty days from the dare on which a tender for construction works, contract or project is awarded to a contractor registered under this Act. (3) The application under this regulation shall be in the prescribed form and shall be made before the commencement of the construction works contract or project together with such fees as the Board may prescribe.

Compliance:
The proponent shall ensure to only hire contractors registered by the authority to implement the proposed development.

5.4.6 Fire Risk Reduction Rules, 2007 (Legal Notice No. 59)

These rules were promulgated by the Minister for Labour on April 16th 2007 and apply to all workplaces. Rule 5 requires Proponents to ensure that fire resistant materials are used for construction of new projects. Rule 6 requires that all flammable materials be stored in appropriately designed receptacles. Rule 17 requires a Proponent to clearly delineate fire escape exits. The regulation provides for the minimum standards to be applied in marking out all fire escape exits.

Compliance:
Proponent will develop and implement fire safety policy and have trained fire fighting teams to implement the practice within their premises.

5.4.7 County Government of Kisumu.

It constitutes various developmental approvals departments such as the planning department.

Compliance:
The project proponent had presented the project drawings and plans to the department for approval prior to the project implementation. Approvals had been obtained by the time this report was going to the print.

5.5 Multilateral Environmental Agreements / Treaties

- African Convention on the Conservation of Nature and Natural Resources
- Earth Summit on Sustainable Development Agenda 21
- International Labour Organization
- Rio Declaration on Environment and Development
- The 1992 United Nations Framework Convention on Climate Change (UNFCCC)
- The Paris Agreement
- The World Commission on Environment and Development (The Brundtland Commission of 1987)
- United Nations Convention on Biological Diversity (UNCBD)

CHAPTER SIX: 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:-

- Disseminate and inform the public and other stakeholders about the proposed Floating Beach Apartments with special reference to its key components, location, and anticipated impacts.
- Create awareness among the public on the need for the ESIA for the proposed project.
- Gather comments, concerns, and suggestions of the interested and, would be affected/interested parties.
- 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.
- Establish a communication channel between the interested, would be affected/interested parties, the team of consultants and the Government.
- Incorporate the information collected in the study by ESIA Expert.

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.

6.3 Approach and Stakeholder identification

During the study period, the ESIA team conducted visits to the project area in order to collect information on the biophysical and socio-economic environment.

Key informants included:

- Directorate of Environment, Kisumu County Government,
- Water Resources Authority, Kisumu Regional Office,
- Kenya Marine and Fisheries Research Institute (KMFRI), Kisumu office,
- Kenya Fisheries Service, (KFS)
- Local administration and Village Elders
- Kenya Marine Authority (KMA)
- Kenya Ports Authority (KPA)
- Kisumu Lake Front Development Corporation (KLFDC)
- Kenya Coast Guard Service
- Kenya Wildlife Service (KWS)
- National Cereals and Produce Board, Kisumu Depot – Neighbor
- Amsterdam 2 Hotel - Neighbor

The consultants made visits to the sites on diverse dates between 15th March, 2022 and 11th April, 2022 to gather information from the relevant offices, organizations and project site. The Consultants organized two public meetings, initial one at the TOR preparation stage at the Kisat WRUA offices and final one at the proposed project site which included the area Chief, Assistant Chief, Village Elders and other invited government agencies. The Consultant prepared notices of the public meeting and posted at strategic locations two weeks before the public meeting date. Invitation letters to government agencies were also prepared and delivered one week before the meeting date. The public meeting were held on 11th April, 2022. Open-ended questionnaires were administered to key stakeholders and local residents in the project area. Copies of the administered questionnaires are attached in Annexes of this study report. The minutes of the public meeting and list of attendance are also attached at the annexes of this study report.

Plate 8: Initial Stakeholder Consultative meeting during TOR preparation

6.4 Salient issues raised

The following issues were raised from the public meeting and by the contacted stakeholders regarding the proposed Floating Beach Apartments.

Positive impacts

- Creation of a recreation facility for children and people of all walks of life
- Provision of secure and modern housing facilities which is a deficit in Kisumu
- Creation of employment, both direct and indirect
- Improved livelihoods and living standards in the area
- It will boost the area development
- Revenue to county government
- Reduction of crime rate through engagement in employment
- Increased rural financial circulation
- Increased purchasing power of local communities

Negative impacts

- Safety risk to workers and local community
- Traffic inconvenience and accidents along Nkurumah road
- Habitat loss/interference with lake water biodiversity
- Human behavioral change – culture interactions
- Disturbance of normalcy
- Water pollution
- Noise pollution during operation

6.1 Other Stakeholders Consulted

a) Kenya Ports Authority

General Comments

- The project will promote job creation, provision of housing and recreation facilities and enhanced economic growth
- Lake water quality is likely to be affected if wastewater and sewage treatment is not done as per standards. May worsen the already heavily polluted water body.
- Increase of process of eutrophication and proliferation of aquatic macrophytes hence making the channel to the port hard to navigate.
- If there will be deposition of solid matter then this will make the channel shallow resulting in frequent need to dredge channel depth and berth deepening. Same will lower aesthetic standards of the area negating the objective of establishing a recreation facility by the proponent.
- Effluent and sewage treatment must be done to the satisfaction of applicable legal standards and results of this be available for public and stakeholders' access.
- Make water quality a central part of the project planning both at construction and operation phases of the project.

b) Globology Limited (Water Bus Company)

- Employment opportunities to the local community
- Improved land use and increased revenue to the government

- Possible increased siltation during construction phase and introduction of invasive species
- Reduced water quality due to surface run-off containing concrete
- There will be loss of flora at the shores of the lake
- Interference with breeding grounds for fish and feeding cycles
- Conduct water quality analysis before and after construction works
- Restore disturbed riparian areas
- Employ mechanisms to avoid soil erosion and siltation
- Employ mechanisms to minimize and control waste both solid and liquid
- Strict adherence to the stipulated national laws on construction
- There should be continuous stakeholder sensitization, engagement and consultation.

c) Directorate of Environment, County Government of Kisumu.

General Comments:

- The Project will be a source of employment, both temporary and permanent and a source or revenue to the government.
- The project is likely to interfere with fish habitats and breeding areas.
- Will impede transport and fishing activities in the area
- Project implementation to focus on the best ways to reduce the impacts of habitat interference by reducing space coverage to the lake and ensure that the structures are high above the lake water level.

d) Water Resources Authority, Kisumu Regional Office

General Comments:

- The Proponent to protect and conserve the riparian area and the lake water.
- Abide by the guidelines to be given on the implementation of the project with regard to the protection of the riparian area and water resources.
- Liaise with the WRA obtain Riparian Demarcation Report before project implementation.

e) Kisumu Lake Front Development Corporation (KLFDC)

- Fully supports the proposed Floating beach apartments since it is in line with the dreams of KLFDC.
- Ensure that the project is sustainable and that environmental challenges are properly addressed during project implementation.

f) Kenya Fisheries Service

General Comments:

- The project will boost aesthetic appeal of the surrounding, expand revenue generation and employment creation.

- Project is likely to interfere with breeding and nursery grounds along the shoreline
- May create water pollution if liquid and solid wastes are not properly managed.
- Reduction of traditional fishing grounds
- Closely work with the Kenya Fisheries Service and fishermen when siting of both the Aqua park and floating swimming pool in order to prevent interference with fishing activities and migratory routes
- All stakeholders should be involved and their views sought to avoid conflicts.

g) Kenya Marine and Fisheries Research Institute (KMFRI), Kisumu office

General Comments:

- Improved Lakefront Development of the site
- Improved tourism circuit of Western Kenya for local and international guests, improved accommodation and hotel facilities.
- Excess and additional liquid wastes if not properly disposed off.
- Negative disturbance of littoral breeding grounds for fish.
- Negative effect of macrophyte population.
- Reduction of space for naturally occurring aesthetic scenes in the project area.
- Effect on the serene and tranquility of the project site.
- The project once complete may block the endemic transport routes will be affected negatively.
- Reduction of space for fishing affecting Gell-netting and long liners including sport fishing in existence.
- There should be minimal disturbance of natural existing breeding grounds, macrophyte specie retention, obtain pertinent relevant permits from both National and Local County Government jurisdictions.
- Carry out successfully implemented public participation exercises, be sustainable by socially and economically self reliant, follow original city plans, observe riparian area and road reserves.

h) Kenya Wildlife Service (KWS), Kisumu Office

- Will create employment
- Generation of revenue through taxation and purchase of goods
- Will promote urban development
- Utilization of Lake Victoria for Economic Activity along its Riparian land.
- Project will cause pollution through waste disposal.
- Destruction of breeding sites of the lake organisms
- Invasive species growth due to eutrophication/sedimentation.
- Destruction of breeding grounds for fish
- Conduct Environmental Impact Assessment for the project and seek NEMA approval.
- Community involvement by giving them first priority during employment

- Ensure adequate public participation
- Provision of friendly landscape for Hippos to access grazing areas outside the water.

i) Local Administration – Chief/Assistant Chief

- Creation of employment opportunities both direct and indirect.
- Source of income that will improve lifestyle economically
- Mitigate pollution effects from the project activities.
- Give priority to the community when it comes to employment opportunities.
- Maximization of resources around the project area Waste if not well managed shall get into the lake thus result to diverse effects.
- Practice proper waste management
- Fishing industries around the lake to be empowered to enable quality and good rapport.

j) Kenya Coast Guard Service, Kisumu Station

- The project will create employment and improve the area economy.
- The project may cause environmental pollution to both human life and aquatic life.
- Floating swimming pool will be an obstacle for navigation.
- Employ proper waste management plans to avoid pollution.
- Sensitize the locals on the advantages of the facility.

To address the concerns raised during the public consultation exercise, the Proponent will undertake to ensure the following:

- The Proponent to employ proper waste management plans to ensure minimal or no pollution both to the water and the surrounding.
- The Proponent initiated an all inclusive public consultation exercise which includes all stakeholders and community.
- The Proponent is keen is listening and addressing all concerns for the interested and affected parties.
- The proponent will support local conservation initiatives and implement proper management of the surrounding beaches.
- The Proponent will engage the community and other stakeholders in forums to discuss project implementation progress and impacts arising from the works.
- The Proponent will work to restore disturbed areas
- Employment opportunities from the project will be given to the community as a first priority
- The proponent will strictly abide by the NEMA license conditions and Environmental and Social Management Plan.

6.2 Analysis of the public consultation exercise

The overall conclusion from the public meeting and interviews with the local residents and key government officers led to determination of the following:

- If the EMP is adhered to, all the potential negative impacts will be addressed conclusively.
- The project is unlikely to have adverse effects to the environment if managed properly.
- The proposed project is acceptable to all the respondents and key government stakeholders.
- The proposed project will benefit the members of the community and Kisumu County at large through boosting of the area economically and creation of jobs.

Plate 9: WRA Officials on site during riparian area demarcation exercise

Plate 10: Mr. Michael Otieno Audi representing Kisumu Lake Front Development Corporation

Plate 11: Proponent representative, David Wesonga

Plate 12: Joseph Nyaundi – KMFRI Scientist

Plate 13: Stanley Tonui representing Kenya Fisheries Service

Plate 14: East Kisumu Location Chief, Mr. Aloice Aboge

Plate 15: Kogony Sub-Location Assistant Chief, Mrs Nancy Onditi

Plate 16: Raphael Maunga, Opinion Leader

Plate 17: ESIA Lead Expert addressing the meeting

6.3 Conclusion

The participation from the stakeholders, the public and neighbours were very successful and the participants were very cooperative. The stakeholders' views and opinions were incorporated in analyzing impacts and the development of the corrective action plan.

From the various public consultations undertaken by the ESIA study team, it is obvious that the project is very welcome in the region. The public interviewed welcomed the proposed project and were optimistic that the project will create employment opportunities, stimulate the local economy by opening up sectors of business, and provide a decent site for recreation and affordable residential units for the Kisumu residents. There was no major negative issue raised as far as the sand harvesting activity is concerned. From the analyses, the Consultant concluded that there were no major negative public objections as far as the proposed project is concerned. Therefore the project is commendable for approval by NEMA.

CHAPTER SEVEN: 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, stakeholders and key government agencies were 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 Residential 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).

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 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 and lake siltation

The site is gently sloping into the lake. Possibilities of soil erosion occurring during construction are high especially during rainy seasons. Lost soil will be deposited in the lake as silt.. It may also pose lake 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 the area access roads and possible traffic accidents

With the proposed construction and its associated traffic intensity for material and staff mobilization will even exacerbate the situation. The access road is used by heavy trucks especially oil tankers and trucks transporting soft drinks from the nearby equator bottlers. 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 access 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 buildings 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 mostly shrubs. 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. 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

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.

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 apartment buildings, restaurant and associated facilities. These will involve security personnel, solid waste management staff, cleaners, and workers in other associated structures found within the project site.

7.4.2 Optimal use of land

Being state of the art Residential Buildings, 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 and hotel stock

The project will lead to Improvement of local and national restaurants stock and standards. 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 Kisumu and its vicinity. The project will act as flagship towards the fulfilment of vision 2030

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 the project area will be greatly improved with the project implementation.

7.4.5 Provision of modern recreation area

The floating swimming pool and an aqua park will create a modern recreation area hence a boost in the tourism sector.

7.4.6 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 Impacts on fisheries

There are a number of fishermen who operate in the Port Florence bay. These fishermen will lose part of their fishing ground to the new floating swimming pool and aqua park. Disruption to normal fishing activities as a result of installation works and operation may be both a short term and long-term impact. Furthermore, since a number of fishermen operate in the area it is important to preserve their beach and access route.

7.5.2 Interference with movement of goods and people along section of the lake

During the construction and operational phase there would be interference with transport activities along the section of the lake.

7.5.3 Behavior change

It is anticipated that during the construction phase, a number of immigrant workers will be employed at the site. This new population of workers who have money may influence behaviour change negatively and may accelerate the spread of communicable diseases such as HIV/Aids, Covid-19.

It is therefore necessary that the HIV/Aids awareness campaigns be promoted in the area alongside other medical services.

7.5.4 Water Contamination/degradation of water quality

This could result from poor management of solid and liquid waste from the floating structures and restaurant during operations. Untreated sanitary wastes may be discharged to lake water from the floating structures if careful measures are not taken. This can cause increase organic matter concentration in vicinal water area which can be a main source of eutrophication processes in the adjacent waters.

7.5.5 Impact on the Benthos

Anchoring the floating structures on the bed of the lake will have significant short-term impact on the benthic organisms.

7.5.6 User conflict

The proposed Floating structures may cause conflict between the proponent and other lake users, especially fishermen. This may be as a result of blocking of fishing routes, and causing accidents during night fishing.

7.5.7 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 offices and residents due to the exhaust emissions if not well contained and controlled.

7.5.8 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.

7.5.9 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 offices. This will increase demand for more water supply in the area.

7.5.10 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.

7.5.11 Increased storm water flow and water use.

The buildings 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.

7.5.12 Fire risks

Fire risks will be created from domestic operations using liquefied petroleum gas and electrical appliances especially from kitchens and from other units of the building.

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.

CHAPTER EIGHT: 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, CO2, 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

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.

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. Disabled access features and safety signage should be placed strategically around and within the buildings.
vii. 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.

Mitigating Impact on Fisheries

- The Proponent will work hand in hand with the affected fishermen. The Beach Management Unit and the Proponent will work to ensure mutual benefit.
- Community participation in solving insecurity issues through Beach Mmanagement Unit (BMU)

Mitigating Impact on Lake Transport

- Only a portion of the Port Florence Bay be occupied by the floating structures leaving adequate space for normal flow of transport vessels.
- Working in liaison with the area Beach Management Units.

Mitigating Impacts on Behavior Change

- The Proponent shall promote HIV/Aids awareness campaigns to sensitize local residents. The Proponent and the contractor will work hand in hand to create high level of HIV/Aids awareness in the area. In addition a Voluntary Counseling and Testing (VCT) station shall be set up in the vicinity of the site.
- Strict adherence to WHO and MOH prevention rules.

Mitigating impacts of Contamination/degradation of water quality

The proponent will put in place the following measures to curb effluent disposal.

- Strict adherence to waste water regulations
- All sanitary facilities will be in the mainland
- Cleanliness of the facility
- Provision of reliable water supply

- Ensure all waste water will be handled as required by the NEMA Waste Management guidelines.
- Long term monitoring programs for water quality, sediment.

Mitigating Impacts on benthos
Anchoring will be done in a specific localized area and therefore recovery of the community apparently begins soon after the anchoring activity ceases.

Mitigating user conflicts
- Install navigational markers and lights.
- Include position of the floating swimming pool and aqua park on navigational charts.
- Ongoing consultation with user groups, especially fishermen to keep them informed of the new development.

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 Residential 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.

Management of fire risks
Appropriate fire fighting system will be installed at each floor of the buildings 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.

Wastewater management
The proponent will ensure that there are adequate means for handling the large quantities of sewage generated at the buildings. 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. All waste water channelled into the pubic sewer system passing nearby. The proponent will raise the ground level to obtain graving for channelling sewage into the public sewer system.

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 Building 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 apartments and set targets for efficient energy use.

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.

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.

Managing 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.

Mitigating Excessive noise and vibration pollution
The proponents shall put in place several measures that will mitigate noise pollution arising during the decommissioning activities. The following noise-suppression techniques will be employed to minimize the impact of temporary decommissioning noise at the project site.

- 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.
- 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 demilotion that avoids excessive vibrations
- Ensuring the contractor has a good insurance policy that covers accidental damage of neighbours' properties.

Solid waste management
The proponent will be responsible for efficient management of solid waste generated by the project during its demolition phase. All debris from the demolition works will bi disposed in licensed landills.

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.

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.

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

CHAPTER NINE: ENVIRONMENTAL MANAGEMENT AND MONITORING PLAN

9.1 Introduction

The Environmental and Social Management (ESMP) Plan is prepared to show how site-specific concerns and mitigation measures are addressed through the engineering, procurement, construction and operation phases of the project. It provides a link between the impacts of project activities and the mitigation measures put in place to minimize these impacts and enhance the positive impacts.

At completion of construction, the proponent will be responsible to implement environmental management measures associated with operation of the sand harvesting activity.

9.2 Responsibilities of the ESMP

In order to ensure the sound development and effective implementation of the ESMP, it will be necessary to identify and define the responsibilities and authority of the various persons and organisations that will be involved in the project. The following entities shall be involved in the implementation of this ESMP:

- The Proponent, Gad Works Projects Limited
- County Government of Kisumu;
- NEMA;
- Directorate of Occupational Safety and Health;
- Water Resources Authority; and
- The local administration.

9.2.1 The Proponent, Gad Works Projects Limited

Gad Works Projects Limited will be the implementing company to oversee or appoint a qualified and competent team to oversee the operation phase of the proposed Floating beach apartments.

The Proponent shall co-ordinate all aspects of the environment during project implementation and operations. This should include the operation to monitor, review and verify the implementation of the project's ESMP.

9.2.2 County Government of Kisumu

County Government of Kisumu, through the department of Environment, has mandate over some environmental management aspects including environmental degradation, noise prevention, public health and sanitation.

9.2.3 Water Resources Authority (WRA)

WRA will be involved in the project through ensuring adequate protection of the riparian area and the shoreline.

9.2.4 NEMA

The responsibility of the National Environment Management Authority (NEMA) is to exercise general supervision and co-ordination over all matters relating to the environment and to be the principal instrument of government in the implementation of all policies relating to the environment.

The project requires NEMA license and shall also liaise with NEMA in monitoring ESMP implementation as well as addressing any emerging environmental issues.

9.2.5 Directorate of Occupational Safety and Health

Directorate of Occupational Safety and Health (DOSH) will be responsible for registering the project site as a work station and subsequent enforcement of relevant provisions in occupational safety and health in line with occupational safety and Health Act, 2007.

9.2.6 The Local Administration

The relevant local administrators, including are chiefs, deputy county commissioner and county commissioner, shall be called upon where necessary during project implementation to provide the necessary advisory services and support to the project implementers.

9.3 Environmental and Social Management

An Environmental and Social Management Plan has been prepared to identify and sequence environmental activities that are needed in order to complete a required construction process.

Prior to commencement of the outstanding activities, the contractor will be required to prepare his own construction Environmental and Social Management Plan.

Tables below gives a summary of the Environmental and Social Management Plan during Construction, and operation phases of the project.

Table 4: Integrated Construction and Demolition Environmental Management Plan

Expected Negative Impacts	Recommended Mitigation Measures	Responsible Party	Monitoring Means	Project phase	Time Frame	Cost (Ksh)
Minimize extraction site impacts and ensure efficient use of raw materials in construction						
Increased demand for natural resources	Source construction materials from local suppliers who use environmentally friendly processes in their operations.	Project Manager and Contractor	Inspection and Observation	Construction	Throughout construction period	20,000*
	Ensure accurate budgeting and estimation of actual construction material requirements to ensure that the least amount of material necessary is ordered.	Project Manager and Contractor	Inspection and Calculation		Throughout construction period	
	Ensure that damage or loss of materials at the construction site is kept minimal through proper storage.	Project Manager and Contractor	Observation and Inspection		Throughout construction period	
Minimize solid waste generation and ensuring efficient and safe solid waste management						
Increased solid waste generation	Construction/demolition waste be recycled or reused to ensure that materials that would otherwise be disposed of as waste are diverted for productive uses.	Contractor and Supervising Engineer	Observation	Construction and Demolition	Throughout construction / demolition period	30,000*

Expected Negative Impacts	Recommended Mitigation Measures	Responsible Party	Monitoring Means	Project phase	Time Frame	Cost (Ksh)
	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.	Project Manager and Contractor	Inspection and Observation	Construction	One-off	
	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.	Project Manager and Contractor	Inspection	Construction	Throughout construction period	
	Provide facilities for proper handling and storage of construction materials to reduce the amount of waste caused by damage or exposure to the elements.	Project Manager and Contractor	Inspection and observation	Construction	One-off	
	Use building materials that have minimal or no packaging to avoid the generation of excessive packaging waste.	Project Manager and Contractor	Inspection and Observation	Construction	Throughout construction period	
	Use construction materials containing recycled content where possible and in accordance with accepted standards.	Project Manager and Contractor	Inspection	Construction	Throughout construction period	

Expected Negative Impacts	Recommended Mitigation Measures	Responsible Party	Monitoring Means	Project phase	Time Frame	Cost (Ksh)
	Use of an integrated solid waste management system i.e. through a hierarchy of options including: 1. Source reduction; 2. Recycling; 3. Reuse; and 4. Sanitary land filling.	Project Manager and Contractor	Inspection and Observation	Construction and demolition	Throughout construction / demolition period	
	Provide adequate collection and storage of waste on site and safe transportation to disposal sites and disposal at licensed sites.	Project Manager, and Contractor	Observation	Construction and demolition	Throughout construction / demolition period	
	Contract licensed waste handler to transport and dispose the solid waste from site.	Project Manager, and Contractor	Observation	Construction and demolition	Throughout construction period	
Reducing dust emissions						
Dust emission	Watering all active construction/demolition areas as and when necessary to lay dust by use of water sprinklers.	Supervising Engineers and Contractor	Inspection and Observation	Construction and Demolition	Throughout Construction /demolition period	30,000*
	Enforce a speed limit of 10km/hr to all vehicles on the site.	Contractor	Inspection and Observation			

Expected Negative Impacts	Recommended Mitigation Measures	Responsible Party	Monitoring Means	Project phase	Time Frame	Cost (Ksh)
	Rehabilitation of disturbed areas once works are completed.	Contractor and Supervising Engineers	Observation			
Minimization of noise and excessive vibration						
Noise and vibration pollution	Restriction of work hours during from 7am to 6 pm Monday to Saturday. No work shall be undertaken outside these hours.	Supervising Engineer and Contractor	Meeting	Construction and Demolition	Throughout construction /demolition period	5,000
	Maintain in a sound mechanical condition all equipment and machinery used during construction/demolition.	Contractor	Inspection			
	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.	Contractor	Observation and meeting and Inspection			

Expected Negative Impacts	Recommended Mitigation Measures	Responsible Party	Monitoring Means	Project phase	Time Frame	Cost (Ksh)
Reduction of energy consumption						
Increased energy demand	Sensitisation of staff on energy conservation needs	Project Manager and Contractor	Observation	Construction and Demolition	Throughout construction period	5,000
	Ensure planning of transportation of materials to ensure that fossil fuels (diesel, petrol) are not consumed in excessive amounts.	Project Manager and Contractor	Inspection and Observation		Throughout construction period	
	Monitor electricity energy use during construction/welding and set targets for reduction of energy use whenever feasible.	Project Manager and Contractor	Inspection and Observation		Throughout construction period	
Minimize water consumption and ensure more efficient water use						
High water demand and use	Install a discharge meter to determine and monitor water usage if feasible.	Project Manager and Contractor	Inspection	Construction and Demolition	One-off	5,000

Expected Negative Impacts	Recommended Mitigation Measures	Responsible Party	Monitoring Means	Project phase	Time Frame	Cost (Ksh)
	Promptly detect and repair water pipes and tank leaks.	Project Manager and Contractor	Inspection and Observation		Throughout construction period	
	Sensitise construction workers to conserve water.	Project Manager, Supervising Engineer and Contractor	Meeting		Throughout construction period	
Minimisation of impacts on local traffic						
Increased traffic/ inconvenience	Undertake traffic impact studies Strategically post traffic warning signage to warn motorists of turning trucks on approaches to site.	Contractor and Supervising Engineer	Observation and Inspection	Construction and Demolition	Throughout construction period	5,000*
	Strict adherence to speed limits of 10 km/hr within the site.	Contractor	Observation			
	Construction/demolition vehicles to enter and leave the site through identified point only.	Contractor and Supervising Engineer	Observation		Throughout construction period	

Expected Negative Impacts	Recommended Mitigation Measures	Responsible Party	Monitoring Means	Project phase	Time Frame	Cost (Ksh)
Vegetation disturbance						
	Ensure proper demarcation and delineation of the project area to be affected by construction works.	Civil Engineer, Architect and Project Manager	Observation	Observation	Throughout construction period	5,000*
	Specify locations for trailers and equipment, and areas of the site which should be kept free of traffic, equipment, and storage	Civil Engineer, Architect and Project Manager	Observation	Observation	Throughout construction period	5,000*
	Designate access routes and parking within the site	Civil Engineer, Architect and Project Manager	Observation	Observation	Throughout construction period	5,000*
	Introduction of vegetation (trees, shrubs and grass) on open spaces and their maintenance	Architect Landscape specialist	Observation	Observation	Throughout construction period	5,000*
	Design and implement an appropriate landscaping programme to help in re-vegetation of part of the project area after construction	Architect and Landscape specialist	Observation	Observation	Throughout construction period	5,000*

Expected Negative Impacts	Recommended Mitigation Measures	Responsible Party	Monitoring Means	Project phase	Time Frame	Cost (Ksh)
Minimize occupational health and safety risks						
Registration of the workplace	Registration of the project under the Occupational Safety and Health Act, 2007 is mandatory.	Proponent	Review of Certificates	Construction and Demolition	One-off	To be determined
Workers hazards and accidents	Ensure that provisions for reporting incidents, accidents and dangerous occurrences during construction using prescribed forms obtainable from the local Occupational Health and Safety Office (OHSO) are in place.	Project Manager and Contractor	Inspection		Throughout construction period	20000
	Provision of appropriate Personal Protective Equipment as well as ensuring a safe and healthy environment for construction workers.	Contractor	Inspection and Observation		Throughout construction period	

Expected Negative Impacts	Recommended Mitigation Measures	Responsible Party	Monitoring Means	Project phase	Time Frame	Cost (Ksh)
	Enforcing safety procedures and preparing contingency plan for accident response. In addition, safety training shall be emphasized. The contractor will ensure the formation of a Safety & Health Committee at the construction site, on which they are represented by a senior member.	Contractor , and Project Manager	Meeting		Throughout construction period	

Expected Negative Impacts	Recommended Mitigation Measures	Responsible Party	Monitoring Means	Project phase	Time Frame	Cost (Ksh)
Workers welfare						
Sanitary inconveniences	• Ensure that all site personnel are provided with an adequate supply of safe drinking water, which should be accessible at all times; • Provide conveniently accessible, clean, orderly, adequate and suitable washing facilities within the site. • Suitable, efficient, clean, well-maintained and adequate sanitary conveniences should be provided for construction workers; and • Permit the vending of legal consumables within the work site.	Project Manager, and Contractor	Inspection and Observation	Construction	One-off	30,000*
Minimisation of impacts on other natural resources						
Increased demand of raw material	Source construction materials from local suppliers who use environmentally friendly processes in their operations.	Project Manager and Contractor	Inspection and Observation	Construction	One-off	-

Expected Negative Impacts	Recommended Mitigation Measures	Responsible Party	Monitoring Means	Project phase	Time Frame	Cost (Ksh)
	Ensure accurate budgeting and estimation of actual construction material requirements to ensure that only necessary is ordered.	Project Manager and Contractor	Inspection and Calculation		One-off	
	Ensure that damage or loss of materials at the construction site is kept minimal through proper storage.	Project Manager and Contractor	Observation and Inspection		One-off	

9.4 Operation EMP

The following is an EMP specific to the operation phase of the proposed project.

Table 5: Operation Environmental Management Plan

Expected Negative Impacts	Recommended Mitigation Measures	Responsible Party	Monitoring Means	Project phase	Time Frame	Cost (Ksh)
Domestic waste management						
Solid and Liquid wastes	• Provide appropriate domestic waste receptacles for tenants/clients and contract a licensed solid waste handler to regularly dispose of generated wastes; • Ensure effective drainage into the public sewer system • Regular maintenance checks on drainage system • Proper and constant maintenance of the building's plumbing system.	Proponent	• Inspection • Records of plumbing expert availed • Sanitary providers contracted and records availed	Operation	Throughout the operation phase	100,000
Impacts on fisheries, lake transport and Lake water quality degradation						
Impacts on fisheries	• Work hand in hand with the affected fishermen. • Proponent to ensure mutual benefit from the project and the fishermen community. • Community participation in solving issues through Beach management unit (BMU)	• Project manager	• Absence of conflicts	Operation	Throughout the operation phase	50,000

Expected Negative Impacts	Recommended Mitigation Measures	Responsible Party	Monitoring Means	Project phase	Time Frame	Cost (Ksh)
Interference with movement of goods and transport along the section of the lake	• Only a portion of the bay will be occupied by the floating structures leaving adequate space for normal flow of transport vessels. • Working in liaison with area Beach Management Unit. • Install navigational markers and lights. • Include position of the floating structures on navigational charts. • Ongoing consultation with user groups, especially fishermen to keep them informed of the new development.	• Normal transport operations.	• Project Manager	Operation	Throughout the operation phase	100,000
Water Contamination/degradation of water quality	• Strict adherence to waste water regulations • Cleanliness of the facility • Provision of reliable water supply • Ensure all waste water is handled as required by the NEMA Waste Management guidelines. • Long term monitoring programs for water quality, sediment	• Water quality maintained • Regular water analysis of water to ascertain quality.	• Project Manager	Operation	Throughout the operation phase	100,000

Expected Negative Impacts	Recommended Mitigation Measures	Responsible Party	Monitoring Means	Project phase	Time Frame	Cost (Ksh)
Management of fire risks						
Increased fire risks	Installation and regular servicing of appropriate fire detection and fighting system at all the floors of the building; Posting warning signage and fire action instructions at strategic points within the building	Proponent and tenants/clients	Inspection	Operation	Throughout the operation phase	100,000*
Minimisation of parking lot accidents						
Parking accidents	Installation and regular maintenance of signage and markings; and Strict enforcement of speed limits	Proponent	Inspection	Operation	Throughout the operation phase	100,000
Minimisation of visual impact						
Visual impacts due to new tall building	Planting of appropriate trees along the perimeter of the site to screen the development	Proponent and contractor	Inspection	Operation	Throughout the operation phase	70,000
Minimizing domestic energy needs						
Increased demand for domestic energy	Encourage use of energy saving lighting systems; and Creation of energy conservation awareness among tenants/clients and workers including caretakers	Proponent	Inspection	Operation	Throughout the operation phase	10,000

Note:* *This is estimated cost is for construction phase only. Demolition related costs will be determined while planning for the demolition phase*

9.5 Environmental and Social Monitoring

The overall objective of environmental and social monitoring is to ensure that mitigation measures are implemented and that they are effective. Environmental and social monitoring will also enable response to new and developing issues of concern. The activities and indicators that have been recommended for monitoring are presented in the ESMP.

Environmental monitoring is also carried out to ensure that all construction and operation activities comply and adhere to environmental provisions and standard specifications, so that all mitigation measures are implemented. The proponent shall employ an officer responsible for implementation of social/environmental requirements. The proponent has responsibility to ensure that the proposed mitigation measures are properly implemented during project implementation.

The environmental monitoring program will operate through the construction phase, and operation phase. It will consist of a number of activities, each with a specific purpose with key indicators and criteria for significance assessment.

Monitoring includes:

- Visual observations;
- Selection of environmental DSparameters; and
- Sampling and regular testing of these parameters.

Periodic ongoing monitoring will be required during the life of the Project and the level can be determined once the Project is operational.

Monitoring will be done in three fronts:

- Physical monitoring;
- Biological monitoring; and
- Social monitoring.

9.5.1 Internal monitoring

It is the responsibility of the proponent, Gad Works Limited to conduct regular internal monitoring of the project to verify the results of the project operations and to audit direct implementation of environmental mitigation measures contained in the ESMP.

The monitoring should be a systematic evaluation of the activities of the operation in relation to the specified criteria of the condition of approval.

The objective of internal monitoring and audit will be:

- To find out any significant environmental hazards and their existing control systems in force; and
- Meeting the legal requirements as stipulated in the Environmental Management & Coordination Act, EMCA-1999 as amended in 2015 and other relevant legal requirements as determined in this report.

9.5.2 External monitoring and evaluation

It is recommended that a consultant be hired to carry out Annual Environmental Audits in line with NEMA requirements.

NEMA has the overall responsibility for issuing approval for the Project and ensuring that their environmental approval conditions are followed during Project implementation. Its role therefore is to review environmental monitoring and environmental compliance documentation submitted by the implementing authorities and they would not normally be directly involved in monitoring the Project unless some specific major environmental issue arose.

The Proponent will therefore provide NEMA with reports on environmental compliance during implementation as part of their progress reports and annual environmental auditing reports. Depending on the implementation status of environmentally sensitive project activities, NEMA may perform annual environmental reviews in which environmental concerns raised by the project will be reviewed alongside project implementation.

CHAPTER TEN: CONCLUSION AND RECOMMENDATIONS

This ESIA Study report has identified, assessed and presented mitigation measures for the anticipated adverse environmental impacts for the proposed Floating Beach Apartments.

The ESIA study has established that the proposed development project by Gad Works Projects Limited 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, housing and tourism sector, 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.

Rigorous implementation of the Environmental 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.

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, water and sewerage facilities, hydrology and water quality degradation, noise pollution, dust emissions, solid waste generation, soil erosion and siltation, increased water demand, increased energy consumption, generation of exhaust emissions, workers accidents and hazards during construction, possible exposure of workers to diseases, increased storm water among others 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 ESMP as well as adhering to all relevant national and international environmental, health and safety standards, policies and regulations that govern establishment and operation of such projects. It is 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 the ESIA Consultant that the project be allowed to go on provided the mitigation measures outlined in the report are adhered to, Environmental Management Plan (EMP) is implemented and the developer adhere to the conditions of approval of the project.

The following are also recommended with respect to the proposed Project.

- That strict adherence to the Environmental Management Plans should be observed;
- That any unforeseen impacts shall be immediately notified to the environmental assessor to ensure that they are immediately addressed and mitigated.
- Project Construction works to commence after approval and issuance of the license.

BIBLIOGRAPHY

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- Noise Prevention and Control Rules 2005, Legal Notice no. 24, Government Printers, Nairobi
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- Environmental Management and Coordination (Noise and Excessive Vibration Pollution) (Control) Regulations, 2009, government printer, Nairobi
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- World Bank (1991), Environmental Assessment sourcebook volume I: Policies, procedures and cross-sectoral issues. World Bank, Washington.
- Kisumu County Integrated Development plan 2018-2022

ANNEXES

Annex 1: Copy of NEMA Practicing License for the Firm of Experts and EIA/EA Lead Experts

FORM 7 (r.15(2))

nema
mazingira yetu | uhai wetu | wajibu wetu

NATIONAL ENVIRONMENT MANAGEMENT AUTHORITY(NEMA)
THE ENVIRONMENTAL MANAGEMENT AND CO-ORDINATION ACT

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

License No : NEMA/EIA/ERPL/16459

Application Reference No: NEMA/EIA/EL/21456

M/S **AGOA ECOLINKS ASSOCIATES LIMITED**
(individual or firm) of address

P.O. Box 2866 - 40100, KISUMU

is licensed to practice in the capacity of a (Lead Expert/Associate Expert/Firm of Experts) **Firm of Experts** registration number **12478**

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

Issued Date: **2/7/2022** Expiry Date: **12/31/2022**

Signature…..

(Seal)
Director General
The National Environment Management Authority

P.T.O.

ISO 9001:2015 Certified

FORM 7

nema
mazingira yetu | uhai wetu | wajibu wetu

(r.15(2))

NATIONAL ENVIRONMENT MANAGEMENT AUTHORITY(NEMA)

THE ENVIRONMENTAL MANAGEMENT AND CO-ORDINATION ACT

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

License No : NEMA/EIA/ERPL/16241

Application Reference No: NEMA/EIA/EL/21062

M/S **GEORGE ODHIAMBO ADHOCH**
(individual or firm) of address

P.O. Box 2866 - 40100, KISUMU

is licensed to practice in the

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

registration number **2356**

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

Issued Date: **1/10/2022**

Expiry Date: **12/31/2022**

Signature.....

(Seal)
Director General
The National Environment Management Authority

P.T.O.

ISO 9001:2015 Certified

FORM 7 (r.15(2))

nema
mazingira yetu | uhai wetu | wajibu wetu

NATIONAL ENVIRONMENT MANAGEMENT AUTHORITY(NEMA)

THE ENVIRONMENTAL MANAGEMENT AND CO-ORDINATION ACT

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

License No : NEMA/EIA/ERPL/16270

Application Reference No: NEMA/EIA/EL/21228

M/S **MOSES ONYANGO OKODE**
(individual or firm) of address

P.O. Box 105 - 40222, OYUGIS

is licensed to practice in the

capacity of a (Lead Expert/Associate Expert/Firm of Experts) **Lead Expert**
registration number **7296**

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

Issued Date: **1/10/2022** Expiry Date: **12/31/2022**

Signature.....

(Seal)
Director General
The National Environment Management Authority

P.T.O.

ISO 9001:2015 Certified

Annex 2: Terms of Reference Approval

NATIONAL ENVIRONMENT MANAGEMENT AUTHORITY

Mobile Lines: 0724-253 398, 0723-363 010, 0735-013 046
Telkom Wireless: 020-2101370, 020-2183718
Incident Lines: 0786-101100, 0741-101100

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

NEMA/TOR/5/2/421 **19th April, 2022**

Director
Gad Works Projects Limited
P.O Box 16491-00100
NAIROBI.

RE: TERMS OF REFERENCE (TOR) FOR ENVIROMENTAL IMPACT ASSESSMENT FOR THE PROPOSED FLOATING BEACH APARTMENTS ON PLOT NO. KISUMU/KOGONY/4076, OFF NKURUMAH ROAD, KOGONY SUB-LOCATION, EAST KISUMU LOCATION, 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 Impact Assessment (EIA) for the proposed **FLOATING BEACH APARTMENTS ON PLOT NO. KISUMU/KOGONY/4076, OFF NKURUMAH ROAD, KOGONY SUB-LOCATION, EAST KISUMU LOCATION, KISUMU WEST SUB COUNTY, KISUMU COUNTY** has been approved.

You shall submit ten (10) copies, a soft copy summarised version of the ESMP in **WORD** form and one electronic copy of your report prepared by a registered expert to the Authority.

JOSEPH MAKAU
FOR: HEAD OF EIA SECTION

Annex 3: Copy of the Land Title Deed and Official Search

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/KOGONY/4076

Approximate Area (0.58)Ha.

Registry Map Sheet No. 12

This is to certify that GAD WORKS PROJECTS LIMITED

REG NO. PVT-NKUX2LJ

P O BOX 16491-00100, NAIROBI

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 10TH day of MARCH, 2022

D.C. Letting 262

Registrar

FORM LRA-85

SHEET 12

REPUBLIC OF KENYA

THE LAND REGISTRATION ACT

THE LAND REGISTRATON (GENERAL) REGULATIONS 2017,

CERTIFICATE OF OFFICIAL SEARCH

TITLE NO. KISUMU/ KOSONY/ 4076

SEARCH NO.

On the 18TH day of MARCH 2022 the following were the subsisting entries on the register of the above mentioned title.

SUB. DIV. OF PLOT NO 2670

Part A- Property Section [easements, etc]

Nature of title ABSOLUTE

Approximate area (0.58) HA – ZERO DECIMAL FIVE EIGHT HA

Part B- Proprietorship Section

Name and Address of proprietor 9. 10.3.2022 – GAD WORKS PROJECTS LIMITED

Inhibition, cautions and restrictions 10. 10.3.2022 – TITLE DEED ISSUED.

Part C- Encumbrance Section [Leases, charges etc.]

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.....

.....

.....

.....

The following applications are pending:

a) .....

b) .....

c) .....

d) .....

The following certified copies are attached as requested:

a) .....

b) .....

c) .....

d) .....

Date 18TH day MARCH 2022 Seal

SIGNED by the Registrar

Name

Signature J. O. Maura 748

Annex 4: Change of Use Approval

REPUBLIC OF KENYA

COUNTY GOVERNMENT OF KISUMU

Department of Lands, Housing, Physical Planning & Urban Development

PHYSICAL AND LAND USE PLANNING ACT, 2019 Date: 4TH APRIL, 2022

THIRD SCHEDULE (S.55)

FORM: PLUPA 2 APPLICATION NO: 314

NOTIFICATION OF APPROVAL - CHANGE OF USE

To; PLAN FLACENTT KOMOLO REG NO. ON BEHALF OF GAD WORKS PROJECT LTD

Your application Number as above submitted on 18TH MARCH, 2022

For permission to CHANGE OF USE FROM AGRICULTURAL TO MIX USE DEVELOPMENT

On L.R/Parcel No. KISUMU /KOGONY/4076

Situated KISUMU WEST SUB-COUNTY

Has been APPROVED on date 1ST APRIL 2022

By the COUNTY GOVERNMENT OF KISUMU

Subject to the following appended conditions:

Conditions of Approval

a. Subject to the plot not constituting part of any disputed public/private utility/land Allocations
b. Submission of comprehensive building development plans for the plot within one year, and completion within 3 years or else the approval elapse.
c. Payment of revised ground rents will be determined by the Director of Valuation, Ministry of Lands and Physical Planning.
d. Subject to compliance with section 36, 41 and 52 of the PLUPA act

Prosperity House (Former Nyanza Provincial Headquarters Building) 2nd Floor
P.O. Box 2738-40100 Kisumu City
E-mail: kisumucounty@kenya.go.ke

e. Subject to compliance with the approved zoning policy. Subject to the development maintaining the character and densities of the area.

f. Occupation Permit being obtained before occupation

g. Submission of electrical and ICT drawings to City Engineer and ICT Board specifications respectively.

h. Subject to provision of adequate and functional on-site parking to the satisfaction of Director of Roads, Public Works & Transport

i. Indemnify and keep the County Government of Kisumu indemnified against any loss / claims, errors of commission or omission in structural works or general works or any suits arising out of, or in connection with the development.

j. An environment impact assessment to be approved by NEMA & County Government before commencement of works

COUNTY GOVERNMENT OF KISUMU
DEPARTMENT OF LANDS, HOUSING, PHYSICAL PLANNING & URBAN DEVELOPMENT
14 - 03 - 2022
CHIEF OFFICER - LANDS, SURVEY & PHYSICAL PLANNING
APPROVED

Signed:.....
Moses Orege
CHIEF OFFICER - Land, Survey Physical Planning

Cc:
Chief Officer -Lands, Survey & Physical Planning
The Regional Physical Planning Officer Kisumu
The Chairman National Land Commission
The Director of Surveys
The Land Registrar

Annex 5: Notification Letter for Building Plan Approval

REPUBLIC OF KENYA

COUNTY GOVERNMENT OF KISUMU

Department of Lands, Housing, Physical Planning & Urban Development

PHYSICAL AND LAND USE PLANNING ACT, 2019 Date: 4TH APRIL, 2022

THIRD SCHEDULE (S.55)
FORM: PLUPA 2

APPLICATION NO: BLD/ST/1218APRIL /2022
YOUR INSPECTION SHEET NUMBER IS.....1218.....

NOTIFICATION OF APPROVAL- BUILDING PLAN

To; ARCH BAD OMONDI OPIYO REG NO (A) ON BEHALF OF CMDS WORKS LTD

Your application Number as above submitted on 15TH MARCH, 2022

For permission of: PROPOSED RESIDENTIAL DEVELOPMENT

On L. R/Parcel No. KSM/KOGONY /4076

Situated KISUMU WEST

Has been APPROVED on date 1ST APRIL, 2022

By the COUNTY GOVERNMENT OF KISUMU

Subject to the following appended conditions:

Conditions for approval.

I. Subject to the plot not constituting part of the disputed land/public utility
II. Enclose the plot and protect the public to the satisfaction of the County Government of Kisumu
III. Provide a construction board indicating all professionals who are involved in the construction, and which shall not be used for advertisement except with, the consent of the County Government of Kisumu
IV. All debris and excavated material to be dumped on a site approved by the County Government of Kisumu environment.
V. The completion of the development must be within 3 years otherwise this approval lapses
VI. Payment of revised ground rents will be determined by the Director of Valuation, Ministry of Lands and Physical Planning.
VII. Subject to compliance with the approved zoning policy.
VIII. Beacons must be verified by the County/private registered Surveyor
IX. No permanent development should encroach on the road reserve and/or neighbours, or cause obstruction;

Prosperity House (Former Nyanza Provincial Headquarters Building) 2ND Floor
P.O. Box 2738-40100 Kisumu City
E-mail: kisumucounty@kenya.go.ke

REPUBLIC OF KENYA

COUNTY GOVERNMENT OF KISUMU

Department of Lands, Housing, Physical Planning & Urban Development

X. The plot must not constitute part of any disputed private/public utility land, otherwise the approval becomes null and void;

XI. The proposed development shown on the plan must be built in accordance with the requirements of the County Government of Kisumu as contained in the plan submission sheet and notice must be given in writing on the date for which the construction should commence;

XII. The development must be certified and inspected by a Building Inspector for the County Government of Kisumu and material to be used must be certified by the County Government of Kisumu or his assignee at all stages of the construction;

XIII. Satisfactory plumbing and drainage details.

XIV. Subject to provision of adequate and functional on-site parking to the satisfaction of Director of Roads, Public Works & Transport

XV. Indemnify and keep the County Government of Kisumu indemnified against any loss / claims, errors of commission or omission in structural works or general works or any suits arising out of, or in connection with the development.

XVI. Approval granted subject to conducting an Environmental Impact Assessment on the proposed development.

COUNTY GOVERNMENT OF KISUMU
DEPARTMENT OF LANDS, HOUSING, PHYSICAL PLANNING & URBAN DEVELOPMENT
CHIEF OFFICER- LANDS, SURVEY & PHYSICAL PLANNING
APPROVED

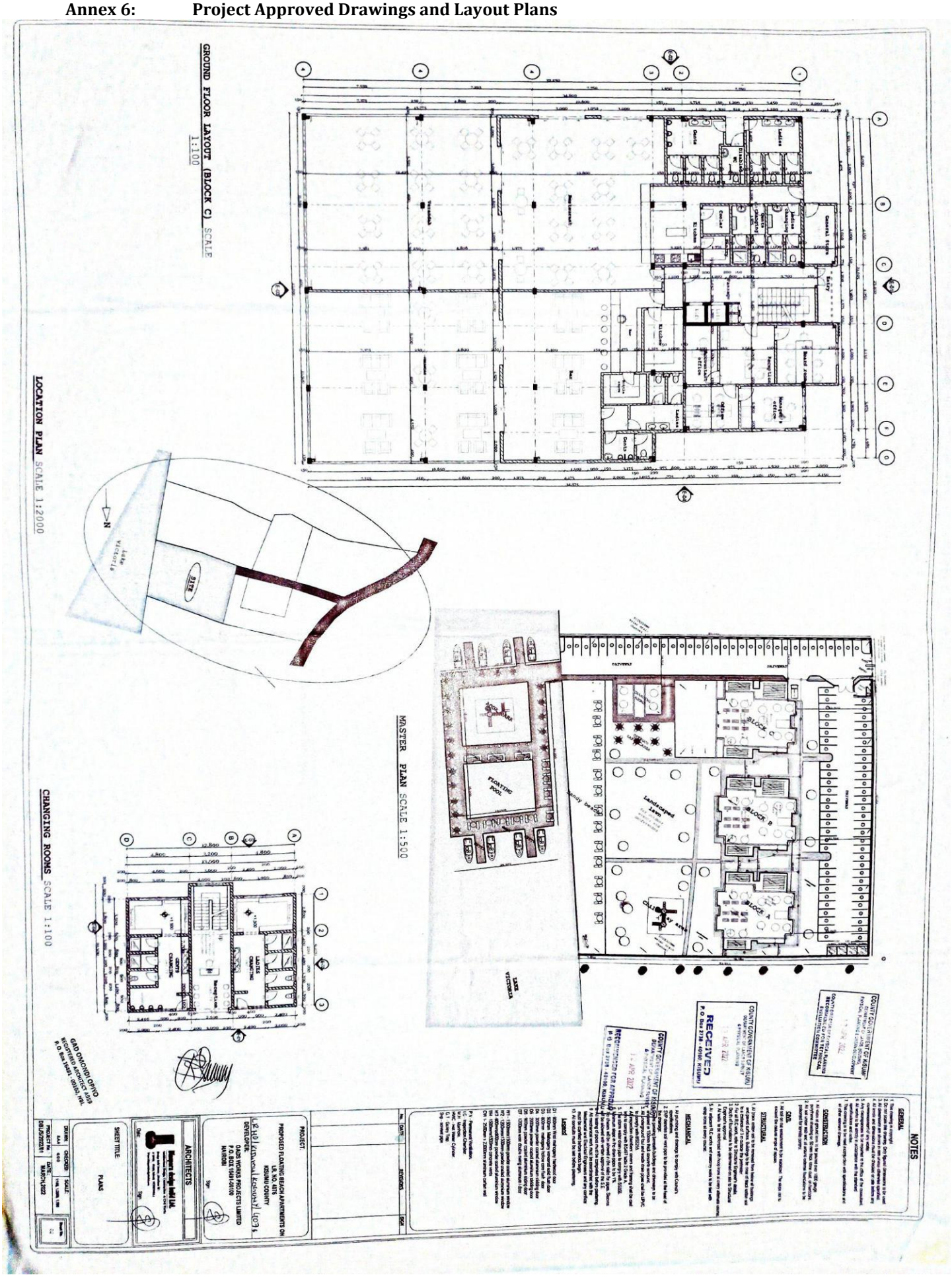
Signed:.....

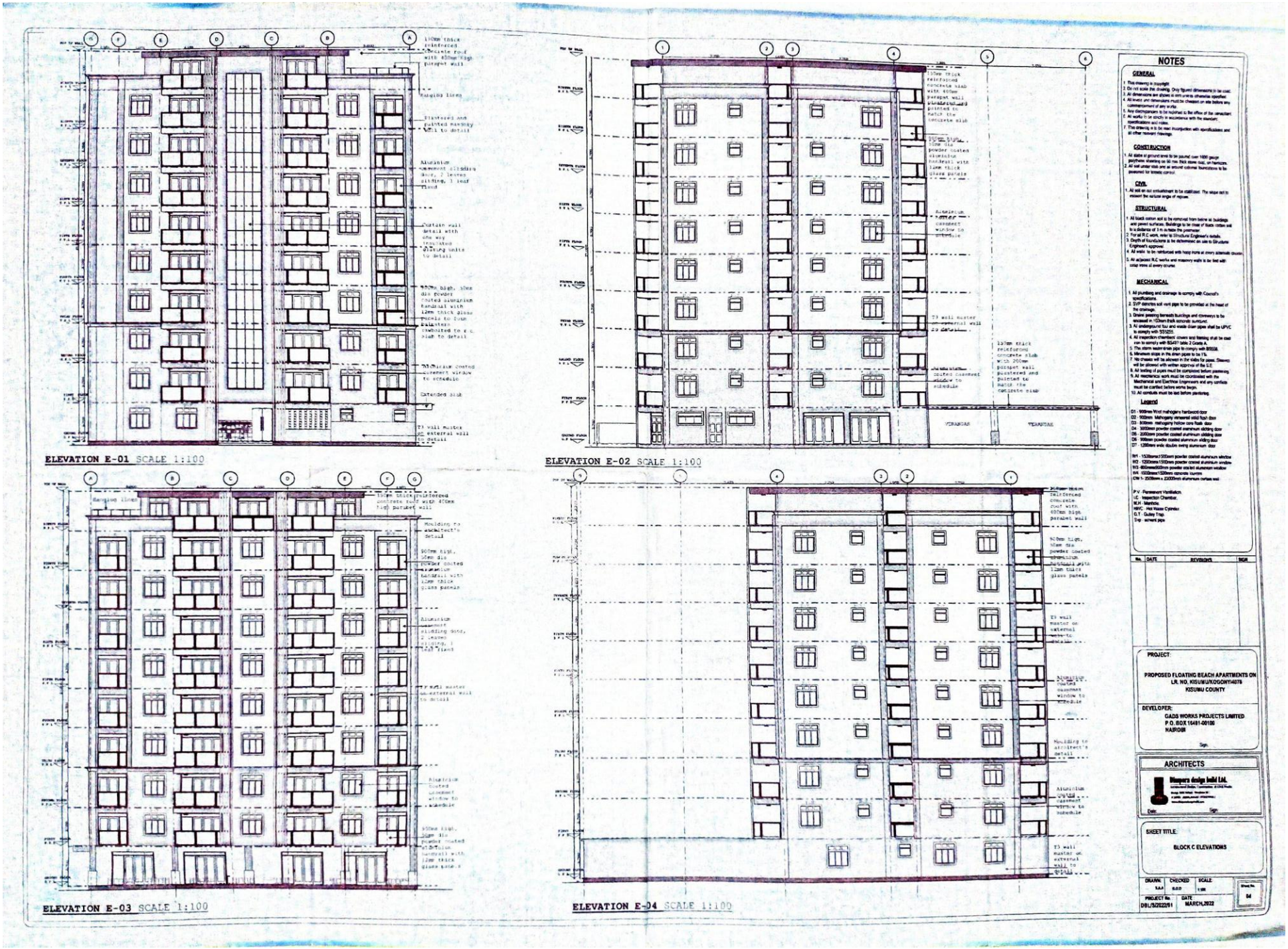
M.O.OREGE

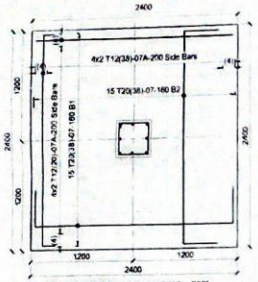
CHIEF OFFICER- Lands, Survey &Physical Planning.

Cc:
CECM –Lands, Housing, Physical, Planning &Urban Development
Director – physical Planning

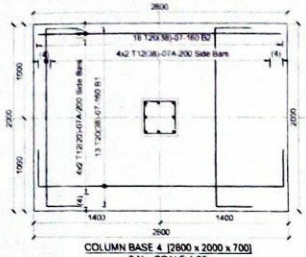
Annex 6: Project Approved Drawings and Layout Plans



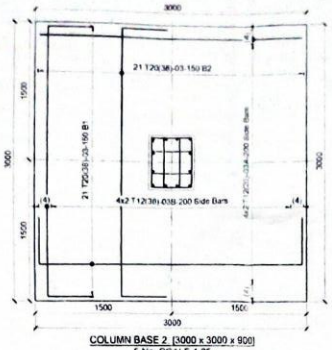

ELEVATION E-01 SCALE 1:100
ELEVATION E-02 SCALE 1:100
ELEVATION E-03 SCALE 1:100
ELEVATION E-04 SCALE 1:100
NOTES
GENERAL
CONSTRUCTION
CIVIL
STRUCTURAL
MECHANICAL
Legend
PROJECT:
PROPOSED FLOATING BEACH APARTMENTS ON LR. NO. KISUMU/DOONT/4076 KISUMU COUNTY
DEVELOPER:
GADS WORKS PROJECTS LIMITED
P.O. BOX 16481-00100
NAIROBI
ARCHITECTS
SHEET TITLE:
BLOCK C ELEVATIONS
DRAWN
CHECKED
SCALE
PROJECT No.
DBL/3/2022/01
DATE
MARCH,2022
04



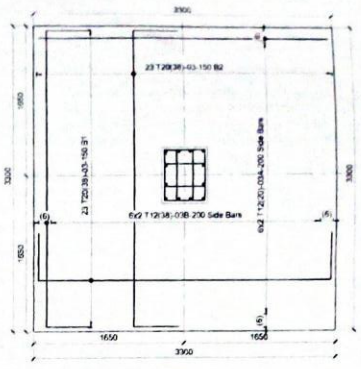
COLUMN BASE 1 [2400 x 2400 x 700]
8 No. SCALE 1:25



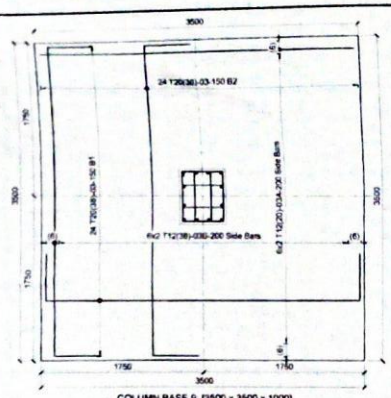
COLUMN BASE 4 [2800 x 2000 x 700]
2 No. SCALE 1:25



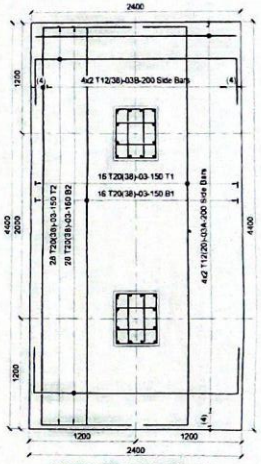
COLUMN BASE 2 [3000 x 3000 x 900]
5 No. SCALE 1:25



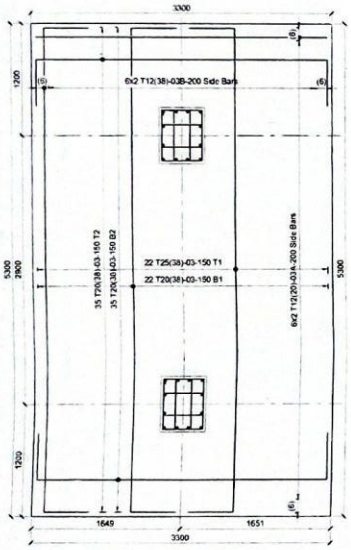
COLUMN BASE 8 [3300 x 3300 x 1000]
3 No. SCALE 1:25



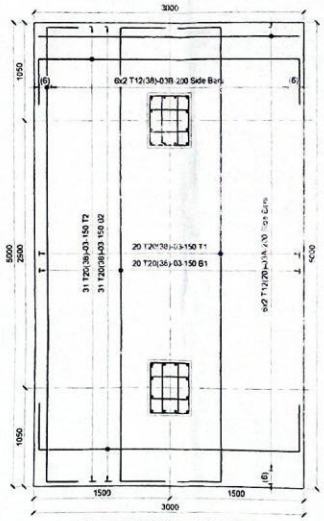
COLUMN BASE 9 [3500 x 3500 x 1000]
8 No. SCALE 1:25



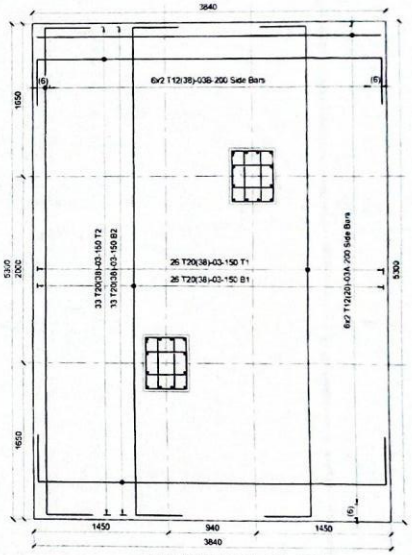
COLUMN BASE 3 [4400 x 2400 x 700]
1 No. SCALE 1:25



COLUMN BASE 7 [5300 x 3300 x 1000]
1 No. SCALE 1:25



COLUMN BASE 6 [5000 x 3000 x 1000]
1 No. SCALE 1:25



COLUMN BASE 11 [5300 x 3840 x 1000]
1 No. SCALE 1:25

COUNTY GOVERNMENT OF KISUMU
DEPARTMENT OF LANDS, HOUSING, PHYSICAL PLANNING & URBAN DEVELOPMENT
COUNTY DIRECTOR OF PHYSICAL PLANNING
RECOMMENDED FOR TECHNICAL EVALUATION COMMITTEE

COUNTY GOVERNMENT OF KISUMU
DEPARTMENT OF LANDS, HOUSING & PHYSICAL PLANNING
RECEIVED
P.O. Box 2739 - 40100, KISUMU

COUNTY GOVERNMENT OF KISUMU
DEPARTMENT OF LANDS, HOUSING & PHYSICAL PLANNING
RECOMMENDED FOR APPROVAL
P.O. Box 2739 - 40100, KISUMU

DESNY CONSULTING ENGINEERS LTD
Civil and Structural Engineers
P.O. Box 481-40202
KISUMU

NOTATION

2x10 T 12 (38)-15-200 B1

- Number of reinforcement Bars
- Reinforcement Type
- Bar Diameter
- Bar Bending Shape Code
- Bar placing position
- C/C Spacing in mm
- Bar Mark

NOTES:

1. SEE DRAWING NO. DRG NO. GW / 07 - 22 - 01-Rv0

LEGEND AND REMARKS

1. Only figured dimensions to be taken from this drawing.
2. This drawing is to be read in conjunction with other structural/architectural drawings. Any discrepancy must be reported
3. All dimensions unless otherwise specified are in millimeters.
4. Concrete cover for reinforcement to be as follows.
   - Slabs & Staircase - 20mm
   - Beams - 25mm
   - Columns & Lift Core - 30mm
   - Foundations - 50mm
5. All black cotton soil to be removed before construction.
6. Concrete strength to be class 25/20 except for Columns Concrete strength to be class 30/20
7. Concrete strength for blinding to be class 15/40
8. High Tensile Ribbed steel reinforcement bars to BS4449 are denoted by 'T'
9. Mild steel reinforcement bars to BS4449 are denoted by 'R'
10. All steel reinforcement to be approved by the Structural Engineer.
11. Surface bed hardcore to be laid in separately compacted 150mm layers on firm approved ground.

REVISIONS

DESNY
CONSULTING ENGINEERS LTD
P.O Box 481-40202
NAIROBI
E mail. dengote eng@gmail.com

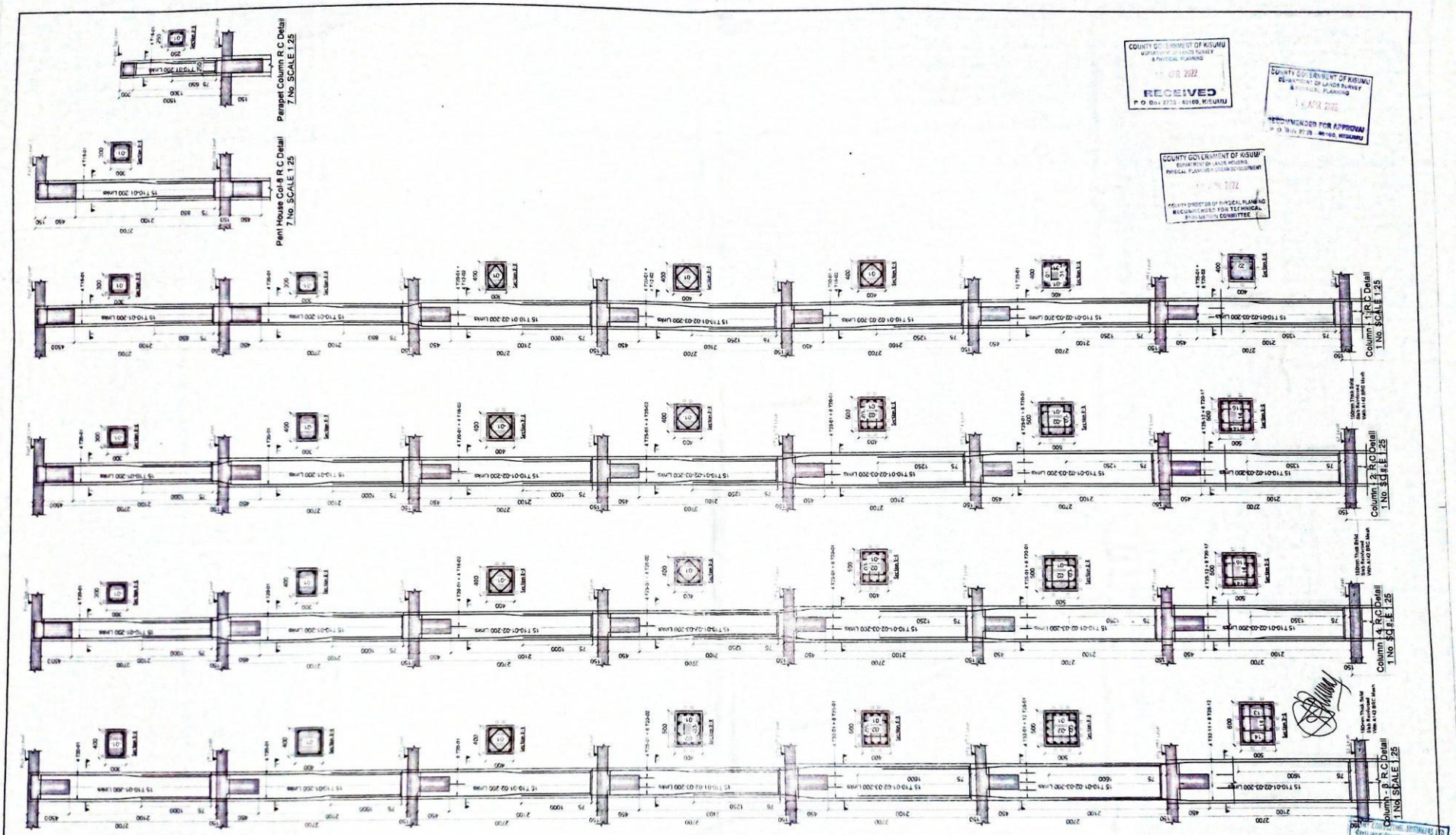
PROJECT: PROPOSED FLOATING BEACH APARTMENTS ON PLOT L.R. NO. 4096 KISUMU COUNTY.

CLIENT: GADS WORKS PROJECTS LIMITED
P.O. BOX 16491-00100
NAIROBI

TITLE: FOUNDATION REINFORCEMENT DETAILS

SCALE: As Shown | BY: D.O.N | MAR: D.O.N

DATE: MAR 2022 | DRG NO. GW / 07 - 22 - 07-Rv0



COUNTY GOVERNMENT OF KISUMU
DEPARTMENT OF LANDS SURVEY & PHYSICAL PLANNING
RECEIVED
P.O. Box 2733 - 40100, KISUMU

COUNTY GOVERNMENT OF KISUMU
DEPARTMENT OF LANDS SURVEY & PHYSICAL PLANNING
RECOMMENDED FOR APPROVAL

COUNTY GOVERNMENT OF KISUMU
DEPARTMENT OF LANDS, HOUSING, PHYSICAL PLANNING & URBAN DEVELOPMENT
COUNTY DIRECTOR OF PHYSICAL PLANNING
RECOMMENDED FOR TECHNICAL EVALUATION COMMITTEE

NOTATION

2x10 T 12 (38)-15-200 B1

- Number of reinforcement Bars
- Reinforcement Type
- Bar Diameter
- Bar Bending Shape Code
- Bar placing position
- C/C Spacing in mm
- Bar Mark

NOTES:

1. SEE DRAWING NO. DRG NO. GW / 07 - 22 - 01-Rv0

LEGEND AND REMARKS

1. Only figured dimensions to be taken from this drawing
2. This drawing is to be read in conjunction with other structural/architectural drawings. Any discrepancy must be reported
3. All dimensions unless otherwise specified are in millimeters
4. Concrete cover for reinforcement to be as follows -
   - Slabs & Staircase - 20mm
   - Beams - 25mm
   - Columns & Lift Core - 30mm
   - Foundations 50mm
5. All blank cotton soil to be removed before construction.
6. Concrete strength to be class 25/30 except for Columns Concrete strength to be class 30/20
7. Concrete strength for binding to be class 15/40
8. High Tensile Ribbed steel reinforcement bars to BS4449 are denoted by 'T'
9. Mild steel reinforcement bars in BS4449 are denoted by 'R'
10. All steel reinforcement to be approved by the Structural Engineer
11. Surface bed hardcore to be laid in separately compacted 150mm layers on firm approved ground

REVISIONS			

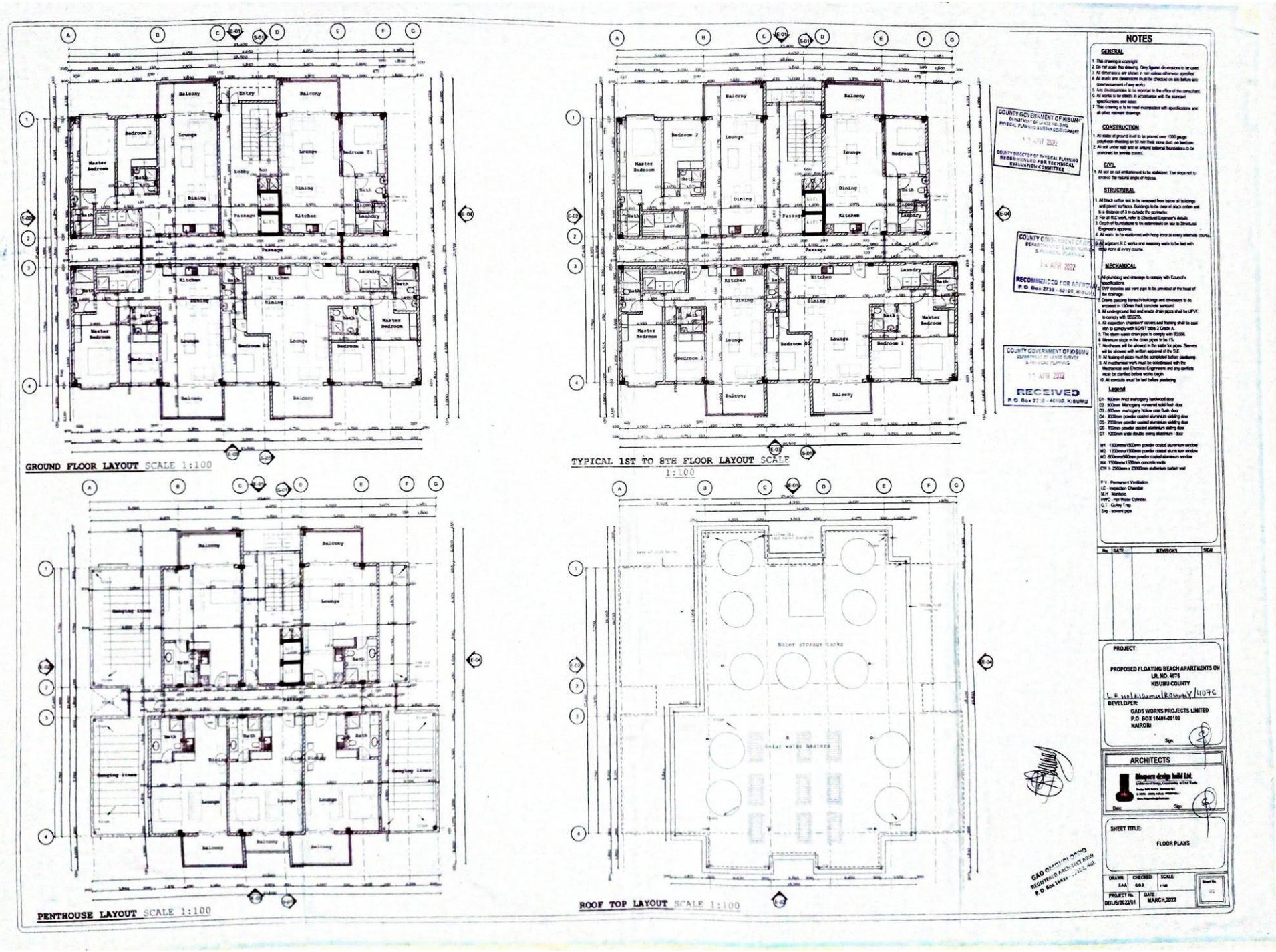
DESNY
CONSULTING ENGINEERS LTD
P O Box 481-40202
NAIROBI
E mail dengote.eng@gmail.com

PROJECT: PROPOSED FLOATING BEACH APARTMENTS ON PLOT L.R. NO. 4096 KISUMU COUNTY.

CLIENT: GADS WORKS PROJECTS LIMITED
P.O. BOX 16491-00100
NAIROBI

TITLE: FOUNDATION, BOUNDARY WALL & GATE STRUCTURE, REINFORCEMENT DETAILS

SCALE As Shown	BY: D.O.N	MAR D.O.N
DATE: MAR 2022	DRG NO. GW / 07 - 22 - 10 -Rv0	


GROUND FLOOR LAYOUT SCALE 1:100
TYPICAL 1ST TO 8TH FLOOR LAYOUT SCALE 1:100
PENTHOUSE LAYOUT SCALE 1:100
ROOF TOP LAYOUT SCALE 1:100
NOTES
GENERAL
CONSTRUCTION
CIVIL
STRUCTURAL
MECHANICAL
Legend
COUNTY GOVERNMENT OF KISUMU
RECEIVED
PROJECT
PROPOSED FLOATING BEACH APARTMENTS ON LR.NO. 4076 KISUMU COUNTY
DEVELOPER:
GADS WORKS PROJECTS LIMITED
P.O. BOX 16481-00100
NAIROBI
ARCHITECTS
SHEET TITLE:
FLOOR PLANS
DRAWN
CHECKED
SCALE
PROJECT No.
DATE
MARCH,2022

Annex 7: WRA Riparian Demarcation Report

THE COORDINATOR,
LAKE VICTORIA SOUTH BASIN
WATER RESOURCES AUTHORITY
P O BOX 666 40100
KISUMU.

30/03/2022

Dear Sir/Madam,

RE: REQUEST FOR PLACEMENT OF BEACONS AND RIPARIAN DEMARCATION REPORT

Gad Works Project Limited, wished to implement a multi-storey apartment buildings on Plot Number: Kisumu/Kogony/4076 which borders Lake Victoria.

We are in the process of preparing Environmental and Social impact Assessment (ESIA) report for NEMA approval for the Project. We therefore request for placement of beacons to demarcate the riparian area and a demarcation report on the same.

Sincerely,

Gad Opiyo,
For
Gad Works Projects Limited

WATER RESOURCES AUTHORITY

Regional Manager,
Water Resources Authority
Lake Victoria South Basin Area
Mamboleo Area
P.O. BOX 666,
KISUMU

Tel: 057-20254
Email: lvba@wra.go.ke
Email: kisumuro@gmail.com

REF: WRMA/LVSC-RO/SC/3/22/3/VOL.11(17)
Date; 05/04/2022

The Director
GAD WORKS PROJECTS Ltd
P.O. Box 16491-00100
Nairobi

Attn. Gad Opiyo

REF; REQUEST FOR PLACEMENT OF RIPARIAN BEACONS ON PLOT NO. KISUMU/KOGONY/4076

This is in response to your request on the above subject matter.

This office appreciates your efforts to express interest in abiding to the law with conservation of the riparian reserve on the lake shows within your property.

Legislative framework

According to the water resources management rules 2007, "*Unless otherwise determined by a Water Resources Inspector, the riparian land adjacent to a lake, reservoir or stagnant body of water is defined as a minimum of **two meters'** vertical height or **thirty meters'** horizontal distance, whichever is less, from the highest recorded.*"

This office would also like to bring to your attention the proscribed activities highlighted in the seventh schedule of the water resources management rules 2007 within the riparian area.

a) *Tillage or cultivation;*
b) *Clearing of indigenous trees or vegetation;*
c) *Building of permanent structures;*
d) *Disposal of any form of waste within the riparian land;*

e) *Excavation of soil or development of quarries;*
f) *Planting of exotic species that may have adverse effect to the water resource*
g) *or any other activity that in the opinion of the Authority and other relevant Stakeholders may degrade the water resource;*

To enable the process to be undertaken, you are hereby required to note the following;

Required staff/ Representatives

SN	Section	Output
1.	Surface water	Determination of highest recorded water level
2	Water quality and pollution control	Screening the proposed project with regards to pollution control
3	Community Development	Link with WRUA for riparian conservation agreement
4	Water Resources Conservation.	Measurements, and quality control for both beacons(WRA inscribed) and concrete works and report compilation.
5	WRUA representatives	Representation of community interests.

Budget for the proposed riparian demarcation exercise on

ACT		ITEM	QTY	UNIT	RATE	TOTAL
	1	Fabrication and supply of WRA Beacons complete with inscription and paint works Inclusive of transport from hardware.	7	No.		
	2	Concrete works for installation of beacons	2.4	M^3		
		SUB TOTAL				
	3	Fuel /Transport (WRA staff)	L/S	Litres	5,000	5,000
	4	Allowances for WRA staff/Lunches	4*2	Days	1500	12,000
	5	Lunches for 3No. WRUA members	3*2	Days	1000	6000
		Skilled /Unskilled Labour	L/S	1		
	7	Reporting	L/S	1		5000
		SUB TOTAL				**28,000**
TOTAL					KSH	

Note;

1. The exercise will be done in accordance with the provisions of the Water resources rules 2007
2. The beacons will be supplied according to the WRA specifications
3. The beacons to be constructed in time to be ready on the pegging day.

4. The exercise will be proceeded by community sensitization, marking and followed by Marking and demarcation the following day.
5. There will be Community Engagement through the Water resources user association(WRUA)
6. Reports will be ready 2 days after the Pegging exercise.

Deliverables

1. Physical Beacons with GPS coordinates defining the riparian reserve on the said Plots
2. Riparian Demarcation pegging report with the site layout indicating the Beacons.

Sincerely ;

Dr. Rose Ogara (PhD)
Basin Area Coordinator

WATER RESOURCES AUTHORITY

Regional Manager,
Water Resources Authority,
Lake Victoria South Basin Area
kisumuro@gmail.com Mamboleo Area
P.O. BOX 666,
KISUMU

Tel: 057-202549
Email: lvba@wra.go.ke
Email:

REF: WRMA/LVSC-RO/SC/3/22/3/VOL.11(18) Date 12/05/2022

The Director
GAD WORKS PROJECTS LTD
P.O. Box 16491-00100
Nairobi

Attn: Gad Opiyo

RE: REPARIAN LAND DEMARCATION ON PLOT NO. KISUMU/KOGONY/4076

Following your official request to our office for the purpose of conducting the above exercise on the above mentioned parcel on a stretch approximately 100m, we conducted the exercise on 12th of May 2022 on site.

During the exercise the following were in attendance.

a) George Adhoch – Client representative
b) Vincent Omondi – Client representative
c) Willis Memo - WRA
d) Collins Odhiambo – WRA
e) Kassim Were Abdalla – Neigbour/Community
f) Rehema Ajwang – Neighbour/Community
g) Musa Kassim – Neighbour/Community
h) Mr. Osanya - Kisat WRUA Chairman
i) 3 Members of Kisat -WRUA

WATER RESOURCES AUTHORITY

Regional Manager,
Water Resources Authority,
Lake Victoria South Basin Area
kisumuro@gmail.com Mamboleo Area
P.O. BOX 666,
KISUMU

Tel: 057-202549
Email: lvba@wra.go.ke
Email:

Background

Legislative framework

According to the water resources management rules 2007, "*Unless otherwise determined by a Water Resources Inspector, the riparian land adjacent to a lake, reservoir or stagnant body of water is defined as a minimum of **two meters'** vertical height or **thirty meters'** horizontal distance, whichever is less, from the highest recorded.*"

Following the above determination, the riparian area for the above mentioned plot was ***established from the highest flood level*** and demarcated using newly installed Beacons. The proponent is hereby advice to comply with the requirement that he should not exercise the following proscribed activities highlighted in the seventh schedule of the water resources management rules 2007 within the riparian area.

a) Tillage or cultivation;
b) Clearing of indigenous trees or vegetation;
c) Building of permanent structures;
d) Disposal of any form of waste within the riparian land;
e) Excavation of soil or development of quarries;
f) Planting of exotic species that may have adverse effect to the water resource
g) or any other activity that in the opinion of the Authority and other relevant Stakeholders may degrade the water resource;

During the pegging exercise, the Riparian area was demarcated to be 30m from the high flood levels. The pegs were then placed and marked with the standard WRA begins painted white and inscribed with blue.

Marking and Pegging/Demarcation

The location for the pegs from the left wing facing the lake.

Beacon 1; long 34.737227E lat;0.090758S

Beacon 2; long 34.737109E lat;0.090835S

WATER RESOURCES AUTHORITY

Regional Manager,
Water Resources Authority,
Lake Victoria South Basin Area
kisumuro@gmail.com Mamboleo Area
P.O. BOX 666,
KISUMU

Tel: 057-202549
Email: lvba@wra.go.ke
Email:

Beacon 3; long 34.737060E lat;0.0909235

Beacon 4; long 34.736959E lat;0.0909985

Beacon 5; long 34.736844E lat;0.0911245

Beacon 6; long 34.736995E lat;0.0911205

Output sketch

The profile sketch indicated the reserve distance from the reference beacons.

Challenges/Constraints

Several areas were swampy and hence difficulties in accessibility.

Recommendations

1) Proscribed activities within the riparian should be observed with reference to the placed beacons
2) Development to take into account riparian restoration measures, including soil and water conservation and water friendly trees that are suitable for the proposed development area.
3) Since the project is going to involve a lot of earthworks, measures should be put in place to control the silt load on the lake.

Conclusion

The proponent to carry on activities strict adherence to the above stated provisions of WRA rules and those of other regulators and to seek further clarifications from the our whenever necessary

Report Compiled by; Collins Odhiambo/ Willis Memo

WATER RESOURCES AUTHORITY

Regional Manager,
Water Resources Authority,
Lake Victoria South Basin Area
kisumuro@gmail.com Mamboleo Area
P.O. BOX 666,
KISUMU

Tel: 057-202549
Email: lvba@wra.go.ke
Email:

Cc

County Director of Environment
NEMA
KISUMU COUNTY

Cc

County Physical Planner
KISUMU COUNTY

WATER RESOURCES AUTHORITY

Regional Manager,
Water Resources Authority,
Lake Victoria South Basin Area
kisumuro@gmail.com Mamboleo Area
P.O. BOX 666,
KISUMU

Tel: 057-202549
Email: lvba@wra.go.ke
Email:

APPENDIX 1 Project Photos and Field Sketch

Photo 1; Sensitization with WRUA and other stakeholders with client representatives.

WATER RESOURCES AUTHORITY

Regional Manager,
Water Resources Authority,
Lake Victoria South Basin Area
kisumuro@gmail.com Mamboleo Area
P.O. BOX 666,
KISUMU

Tel: 057-202549
Email: lvba@wra.go.ke
Email:

Photo 2; Site assessment and measurements

WATER RESOURCES AUTHORITY

Regional Manager,
Water Resources Authority,
Lake Victoria South Basin Area
kisumuro@gmail.com Mamboleo Area
P.O. BOX 666,
KISUMU

Tel: 057-202549
Email: lvba@wra.go.ke
Email:

WATER RESOURCES AUTHORITY

Regional Manager,
Water Resources Authority,
Lake Victoria South Basin Area
kisumuro@gmail.com Mamboleo Area
P.O. BOX 666,
KISUMU

Tel: 057-202549
Email: lvba@wra.go.ke
Email:

WATER RESOURCES AUTHORITY

Regional Manager,
Water Resources Authority,
Lake Victoria South Basin Area
kisumuro@gmail.com Mamboleo Area
P.O. BOX 666,
KISUMU

Tel: 057-202549
Email: lvba@wra.go.ke
Email:

Photo 5: Placed beacons

WATER RESOURCES AUTHORITY

Regional Manager,
Water Resources Authority,
Lake Victoria South Basin Area
kisumuro@gmail.com Mamboleo Area
P.O. BOX 666,
KISUMU

Tel: 057-202549
Email: lvba@wra.go.ke
Email:

Appendix 2 – site sketch

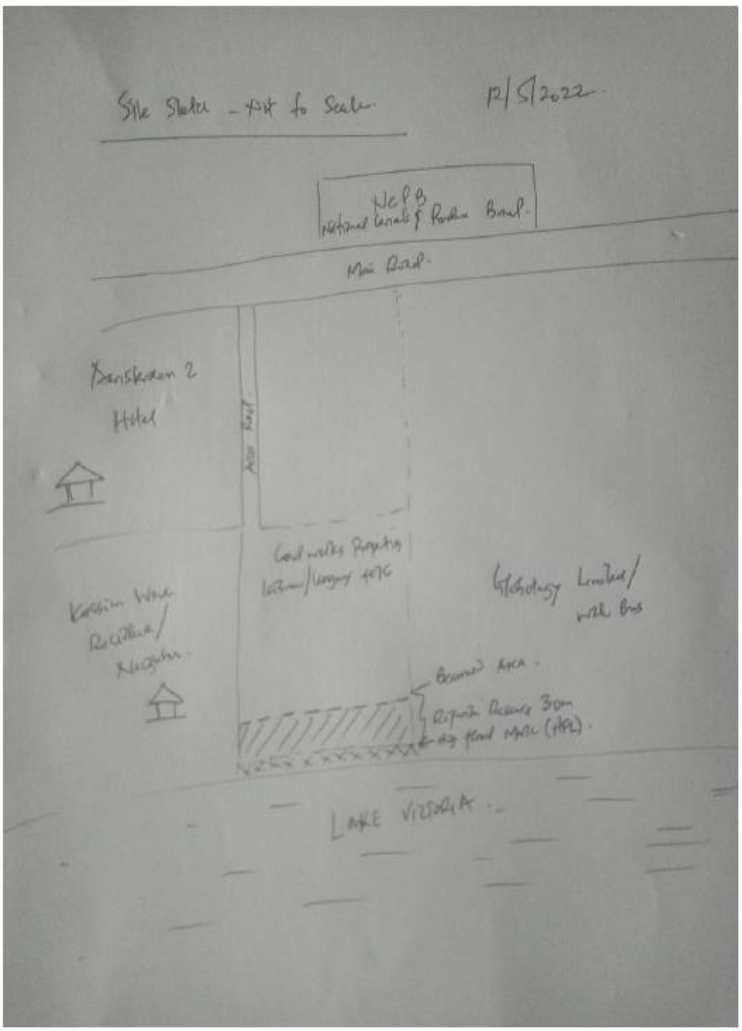


Photo 6: Site sketch

WATER RESOURCES AUTHORITY

Regional Manager,
Water Resources Authority,
Lake Victoria South Basin Area
kisumuro@gmail.com Mamboleo Area
P.O. BOX 666,
KISUMU

Tel: 057-202549
Email: lvba@wra.go.ke
Email:

Appendix 3 – Attachments

- Request letter
- Request approval
- List of attendants
- WRUA/Proponent agreement form.

AGREEMENT ON MANAGEMENT OF RIPARIAN LAND

PARTICULARS OF OWNER/OCCUPIER		DETAILS	
1. Full name		GAD WORKS PROJECTS LTD	
2. Owner or occupier		-	
3. ID Number		-	
Physical Address		**Contact Address**	
4. L.R Number(s)	KSM/KOGONY/4078	10. Box Number	16491
5. Village(s)/Ward(s)		11. Town	NAIROBI
6. Sub-location(s)	KOGONY	12. Post Code	00100
7. Location(s)	EAST KISUMU	13. Telephone Contact (Landline)	
8. Division(s)		14. Telephone Contact (Mobile)	0720855354
9. District(s)	KISUMU WEST	15. Email Contact	gadworksltd@gmail.com

Grid Reference (UTM , based on ARC1960 Datum, Zone 36/37	
Zone	
Easting	
Northing	
Altitude (m above sea level)	
Map Sheet	

RIPARIAN LAND	
Width of river	
Width of riparian reserve	30m
Boundary of riparian reserve to be defined by:	WRA

CURRENT STATUS OF RIPARIAN LAND	
Nature of soil forming River bank	
Extent/Density of Tree Cover	
Condition of land (natural vegetation, perennial crops, annual crops, mixed crops)	Existing Macrophytes
Any existing infrastructure within riparian reserve	None

PROPOSED MANAGEMENT ACTIONS BY OWNER/OCCUPIER	
	- DWELLING - FARMING - VEGES - TOMATOES ETC
	- TREE PLANTING
	- RICE GROWING
	- TO BE COMPLIANT TO ENVIRONMENTAL RULES & REGULATIONS

PROPOSED SUPPORT BY WRUA	
MONITORING & EVALUATION	- SENSITIZATION OF RIPARIAN FARMERS
PLANTING OF INDIGENOUS TREES	AND RESIDENTS
CONTROL OF EFFLUENTS	- CONTROL OF DOMESTIC ANIMALS

AGREEMENT BY OWNER / OCCUPIER		AGREEMENT BY WRUA	
Signature	[signature]	[signature]	[signature]
Name	GAD WORKS LTD/CASSIM OLAGO	ELIAZARO OSANYA	FATUMA MOHAMMED
Date	12-05-2022	12 MAY 2022	12-5-2022

WRUA
Date..........
TEL:0721692918
P.O. Box 412, KISUMU

	WATER RESOURCES AUTHORITY	
WRA	TITLE: Meeting Attendance Form	REF. NO.: F/18/1
		ISSUE NO.: 06
	DEPARTMENT: Planning, Monitoring and Quality Assurance	REV. NO.: 05
	RECOMMENDED BY: Assistant Manager, Quality Assurance and Risk Management	DATE OF ISSUE: 26th May 2021
	AUTHORIZED BY: CEO	Page 1 of 2

SUBJECT: Marking & Pegging

VENUE: Project site

DATE: 12/5/2022 TIME: 8:00am

S/No	Name	Designation/ Institution	Station	Phone	Email Address	Signature
1.	Willis Memo	PLED/WRA	Kisumu	0727716024	willismemo9@gmail.com	
2.	Collins Odhiambo	SWRSO/WRA	Kisumu	0723877148	collinsodhiambo@gmail.com	
3.	Eliezer O. Osanya	Chairman	KISAT-WRUA KISUMU	0721692518	osanyae@gmail.com	
4.	FATUMA MOHAMMED	Treasurer	KISAT WRUA KISUMU	0702041706		
5.	SAKINA SULEIMAN	ASST SEC.	KISAT WRUA	0702393802	sakinakinyi@yahoo.com	
6.	CASSIM OLAGO ako	OWNER	KSM	0743 032 118		
7.	CASSIM WERE ABDALLAH	11	11	0743 032 118		
8.	REHMA AUMA CASSIM	WIFE TO OWNER	KSM	-		
9.	Vincent Omondi	DIASPORA DESIGN BUILT/ GRD WORKS LTD	KSM	0702 046 379	omondivincent256@gmail.com	

Annex 8: Kenya Civil Aviation Approval Letter

KENYA CIVIL AVIATION AUTHORITY

efficiently managing air safety

KCAA/OPS/2406/7 VOL. 13 (19) 06 May 2022

Gad Opiyo
Diaspora Design Build Limited
P.O. BOX 16491 - 00100
NAIROBI.

Dear Sir,

RE: HEIGHT APPROVAL FOR PROPOSED DEVELOPMENT ON PLOT L.R NO. KISUMU/KOGONY/4076, KISUMU COUNTY.

Your application for approval of development on the above plot refers.

Kenya Civil Aviation Authority has analyzed the proposed site for the development of the building in order to ensure safety of aircraft operations within the Kenyan Airspace.

Height approval is hereby granted for **ONE (1)** site subject to the conditions indicated below:

No.	SITE NAME	COORDINATES IN WGS-84	REQUESTED HEIGHT	APPROVED HEIGHT	REMARKS
1	L.R No. Kisumu/Kogony /4076	S00°05'26.52" E034°44'12.67"	28	28	Nil.

Please note that the following conditions shall apply: -

1. Material used for all external surfaces of the buildings shall not be reflective so as to cause harmful dazzle to pilots including the roof.
2. There should be proper waste disposal management to avoid bird attractants.
3. There roofs shall be pitched and not flat.
4. A red obstruction light of medium intensity shall be positioned at the top of the four corners of the development.
5. The height of the building shall not be increased without prior approval by the Director General of Kenya Civil Aviation Authority.

This approval does not override any other Government requirements.
Yours faithfully,

David Ondieki
FOR: DIRECTOR GENERAL

Aviation House, JKIA
P.O. Box 30163 - 00100 GPO Nairobi
Tel: +254 020 6827470 - 5, +254 734 000 491/492, +254 728 606 586/70, +254 709 725 000
Fax: +254 020 6827 808, 6822 300
Website: www.kcaa.or.ke
E-mail: info@kcaa.or.ke

Annex 9: Kenya Airports Authority No-Objection Letter

Kenya Airports Authority

Head Office, Airport North Road
P.O. Box 19001 - 00501 Nairobi, Kenya
Tel: +254 - 020 - 822111 / 6611000 / 6612000
Fax: +254 - 020 - 822078, 827304
Email: info@kaa.go.ke
www.kaa.go.ke

KAA/5/02/6 VOL. 6 (69)

13th April 2022

Diaspora Design Build Ltd
P.O Box 16491-00100
NAIROBI

Attn: Gad Opiyo

RE: REQUEST FOR HEIGHT CLEARANCE FOR HIGH-RISE STRUCTURE ON KISUMU/KOGONY/4076

We refer to your letter Ref: DDBL/KCAA/2022-01 dated 7th March, 2022 on the above development.

We note that the development will be 28m high and falls approximately 875m from runway centreline at Kisumu International Airport, thus falling within the Inner Horizontal Surface.

We hereby advise that the proposal satisfies our minimum requirements and therefore we have No-Objection to the development subject to the following conditions:

1. Pay **Kshs. 55,160.90** being approval fees. This amount in the form of a banker's cheque should be paid to the KAA cashier situated on 1st floor, KAA Complex;
2. Use of reflective construction materials externally is not permitted;
3. Environmental Impact Assessment study to be done and report submitted to the Authority showing among others mitigation measures to address waste management within the development;
4. You shall indemnify the Government of Kenya by instituting appropriate environmental impacts abatement measures in the design of the facilities, and will further ensure that no operations that would negatively impact on airport operations will be allowed within the development;
5. Periodic site visits will be carried out by KAA to ensure that the construction conforms to the drawings submitted and approved;
6. You shall maintain the highest construction standards; and
7. Approval by the Director General, Kenya Civil Aviation Authority in respect to height suitability must be obtained before commencement of construction.

1400325325

We return herewith two sets of approved drawings; the rest will be retained for our records and future reference.

ALEX GITARI
MANAGING DIRECTOR/CEO

(Encls)

Cc: The Director-General
Kenya Civil Aviation Authority
P. O. Box 30163 – 00100
NAIROBI

Annex 10: Copy of Certificate of incorporation

No. **PVT-MKUX2LJ**

CERTIFICATE OF INCORPORATION

I hereby **CERTIFY** that,

GAD WORKS PROJECTS LIMITED

is on this date 20 Sep 2020 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**

Annex 11: Copy of KRA PIN certificate

KENYA REVENUE AUTHORITY

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

www.kra.go.ke

Certificate Date : 20/09/2020

Personal Identification Number

P051946831R

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

Taxpayer Information

Taxpayer Name	GAD WORKS PROJECTS LIMITED
Email Address	gadworksltd@gmail.com

Registered Address

L.R. Number : NA	**Building** DESIGN BUILD FACTORY BUILDING EMBAKASI
Street/Road IMARA DAIMA ROAD	**City/Town :** NA
County : Nairobi	**District** Embakasi District
Tax Area Embakasi	**Station** East of Nairobi
P. O. Box 16491	**Postal Code** 00100

Tax Obligation(s) Registration

Sr.	Tax Obligation(s)	Effective Date
1	Income Tax - Company	20/09/2020

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.

Disclaimer : This is a system generated certificate and does not require signature.

Annex 12: Baseline lake water quality analysis Laboratory results

	LAKE VICTORIA SOUTH WATER WORKS DEVELOPMENT AGENCY	
	TITLE: Water Sample Analytical Certificate-bacteriological Results	**REF NO:056**
		ISSUE NO:1
	DEPARTMENT: Technical	**REV.NO:0**
	ISSUED BY: CHEMIST	**DATE OF ISSUE: 06/04/2022**
	AUTHORISED BY: CHEMIST	**Page:** 1

Serial No: 056-2022
Name of Customer: GAD WORKS PROJECTS LIMITED
Purpose of Sampling: Quality Assessment
Date Sampled: 01/04/2022
Source: IMPALA PARK (LAKE WATER)

Sample No: 056/2022
Submitted by: GEORGE
County: KISUMU
Date Received: 01/04/2022
Date Compiled: 06/04/2022

PARAMETERS	UNITS	RESULTS	WHO STANDARDS	KEBS STANDARDS
pH	pH Scale	**7.47**	6.5-8.5	6.5-8.5
Turbidity	N.T.U	**11.2**	Max 5	Max 5
Color	Hazens	**35**	Max 15	Max 15
Conductivity(25° C)	µS/cm	**156**	Max 2000	Max 2000
Total Dissolve Solids	Mg/l	**78**	Max 1500	Max 1200
Total Hardness	$MgCaCO_3$/l	**54**	Max 500	Max 500
Calcium	Mg/l	**16.23**	Max 250	Max 250
Magnesium	Mg/l	**3.28**	Max 100	Max 100
Total Alkalinity	$MgCaCO_3$/l	**26**	Max 500	Max 500
Chloride	Mg/l	**23**	Max 250	Max 250
Iron	Mg/l	**0.07**	Max 0.3	Max 0.3
Manganese	Mg/l	**0.003**	Max 0.1	Max 0.1
Fluoride	Mg/l	**0.001**	Max 1.5	Max 1.5

Analyzed by: .....VINCENT ACHIENG.....**Signature**.....

COMMENTS BY HEAD OF LABORATORY: Turbidity and color of the water sample did NOT meet KEBS standards for portable water therefore further treatment is recommended.

GEORGE AGENG'O
CHEMIST
LVSWWDA

Signature..... **06/04/2022**

Lake Victoria South Water
Works Development Agency
P. O. Box 3325 - 40100, Kisumu.
TEL: 057 - 2025128

	LAKE VICTORIA SOUTH WATER WORKS DEVELOPMENT AGENCY	
	TITLE: Water Sample Analytical Certificate-bacteriological Results	**REF NO:075**
		ISSUE NO:1
	DEPARTMENT: Technical	**REV.NO:0**
	ISSUED BY: CHEMIST	**DATE OF ISSUE:06/04/2022**
	AUTHORISED BY: CHEMIST	**Page:** 2

Serial No: 056-2022
Name of Customer: GAD WORKS PROJECTS LIMITED
Purpose of Sampling: Quality Assessment
Date Sampled: 01/04/2022
Source: IMPALA PARK (LAKE WATER)

Sample No: 056/2022
Submitted by: GEORGE
County: KISUMU
Date Received: 01/04/2022
Date Compiled: 06/04/2022

Total Coli forms: **Colonies per 100ml water…65…**
E. coli: **Colonies per 100ml water…NIL…**

Analyzed by: .....VINCENT ACHIENG……..**Signature**.....

COMMENTS BY HEAD OF LABORATORY: The water sample is bacteriologically contaminated, further treatment is advised.

GEORGE AGENG'O
CHEMIST
LVSWWDA

Signature..... **06/04/2022**

Lake Victoria South Water
Works Development Agency
P. O. Box 3325 - 40100, Kisumu.
TEL: 057 - 2025128

	LAKE VICTORIA SOUTH WATER WORKS DEVELOPMENT AGENCY	
	TITLE: Water Sample Analytical Certificate-bacteriological Results	**REF NO:055**
		ISSUE NO:1
	DEPARTMENT: Technical	**REV.NO:0**
	ISSUED BY: CHEMIST	**DATE OF ISSUE: 06/04/2022**
	AUTHORISED BY: CHEMIST	**Page:** 1

Serial No: 055-2022
Name of Customer: GAD WORKS PROJECTS LIMITED
Purpose of Sampling: Quality Assessment
Date Sampled: 01/04/2022
Source: AT KEMFRI (LAKE WATER)

Sample No: 055/2022
Submitted by: GEORGE
County: KISUMU
Date Received: 01/04/2022
Date Compiled: 06/04/2022

PARAMETERS	UNITS	RESULTS	WHO STANDARDS	KEBS STANDARDS
pH	pH Scale	**7.81**	6.5-8.5	6.5-8.5
Turbidity	N.T.U	**31.5**	Max 5	Max 5
Color	Hazens	**60**	Max 15	Max 15
Conductivity(25° C)	µS/cm	**182**	Max 2000	Max 2000
Total Dissolve Solids	Mg/l	**91**	Max 1500	Max 1200
Total Hardness	$MgCaCO_3$/l	**62**	Max 500	Max 500
Calcium	Mg/l	**18.64**	Max 250	Max 250
Magnesium	Mg/l	**3.77**	Max 100	Max 100
Total Alkalinity	$MgCaCO_3$/l	**24**	Max 500	Max 500
Chloride	Mg/l	**25**	Max 250	Max 250
Iron	Mg/l	**0.08**	Max 0.3	Max 0.3
Manganese	Mg/l	**0.005**	Max 0.1	Max 0.1
Fluoride	Mg/l	**0.001**	Max 1.5	Max 1.5

Analyzed by: .....VINCENT ACHIENG.....**Signature**.....

COMMENTS BY HEAD OF LABORATORY: Turbidity and color of the water sample did NOT meet KEBS standards for portable water therefore further treatment is recommended.

GEORGE AGENG'O
CHEMIST
LVSWWDA

Signature..... **06/04/2022**

Lake Victoria South Water
Works Development Agency
P. O. Box 3325 - 40100, Kisumu.
TEL: 057 - 2025128

	LAKE VICTORIA SOUTH WATER WORKS DEVELOPMENT AGENCY	
	TITLE: Water Sample Analytical Certificate-bacteriological Results	REF NO:055
		ISSUE NO:1
	DEPARTMENT: Technical	REV.NO:0
	ISSUED BY: CHEMIST	DATE OF ISSUE:06/04/2022
	AUTHORISED BY: CHEMIST	Page: 2

Serial No: 055-2022
Name of Customer: GAD WORKS PROJECTS LIMITED
Purpose of Sampling: Quality Assessment
Date Sampled: 01/04/2022
Source: AT KEMFRI (LAKE WATER)

Sample No: 055/2022
Submitted by: GEORGE
County: KISUMU
Date Received: 01/04/2022
Date Compiled: 06/04/2022

BACTERIOLOGICAL RESULTS

Total Coli forms: **Colonies per 100ml water…78…**
E. coli: **Colonies per 100ml water…NIL…**

Analyzed by: .....VINCENT ACHIENG……..**Signature**.....

COMMENTS BY HEAD OF LABORATORY: The water sample is bacteriologically contaminated, therefore further treatment is recommended.

GEORGE AGENG'O
CHEMIST
LVSWWDA

Signature..... **06/04/2022**

Lake Victoria South Water
Works Development Agency
P. O. Box 3325 - 40100, Kisumu.
TEL: 057 - 2025128

Annex 13: Summary of Bills of Quantity

GRAND SUMMARY PAGE

PROPOSED APARTMENTS

GRAND SUMMARY

SECTION	SECTION DETAILS	PAGE	AMOUNT (Kshs.)
(i)	PRELIMINARIES		15,000,000.00
1	3 APARTMENT BLOCKS	33	442,168,845.00
2	CIVIL WORKS (Roadworks)	CV/13	13,609,100.00
3	PC & PROVISIONAL SUMS	PC/2	68,343,218.36
	GRAND TOTAL	KSHS.	539,121,163.36

AMOUNT IN WORDS:
KENYA SHILLINGS,

TENDERER'S SIGNATURE & OFFICIAL RUBBER STAMP

DATE:

MINUTES OF FISRT PUBLIC MEETINGS HELD ON 31ST MARCH, 2022 TO DISCUSS THE PROPOSED FLOATING BEACH APARTMENTS ON PLOT NO. KISUMU/KOGONY/4076, OFF NKURUMAH ROAD, KOGONY SUB-LOCATION, EAST KISUMU LOCATION, KISUMU WEST SUB COUNTY, KISUMU COUNTY.

Present:

- The Project Environmental consultants team
- Kisat Water Users Association officials
- Proponents representatives
- Village Elders
- The public from the surrounding villages

Agenda

- Arrival
- Opening prayers.
- Introduction and address by George Adhoch – EIA Lead Expert
- Address by project proponent representative
- Address by WRUA Chairman.
- Plenary: Comments/contributions, Questions, Views, and concerns from the general public.
- Vote of thanks/Closing Remarks
- Final prayers

Min. 1. Introduction

The meeting was called to order at 10.30am by Kisat WRUA Chairman, Mr Eliazar Osanya. The meeting was officially opened with a word of prayer from a volunteer. The Chairman thanked all attendees for taking their time. He told the meeting that the proponent had invited them for a meeting to brief the community, get their comments and plan for a bigger all-inclusive meeting.

Min 2. Address by George Adhoch – EIA Lead Expert

The Environmental Consultant briefed the attendees on the proposed project. He told the meeting that the project will be comprised of three blocks apartment building, a restaurant, an aqua park and a floating swimming pool. He said the meeting was meant to give details for the project and plant for another meeting. He told the meeting that a series of public consultation meetings will be held to ensure

all stakeholders are informed and their comments incorporated in the project implementation.

The meeting also heard that the anticipated negative of the project are destruction of habitat for flora and fauna especially in the riparian area, increase soil erosion, occupational injuries, social disturbance, noise and vibrations, gaseous emissions, and waste generation. Mr. Adhoch took time to explain to the meeting how the adverse negative impacts would be mitigated. He said the purpose of the Environmental and Social Impact Assessment was to suggest ways of maximizing on the positive impacts of the projects and device means of mitigating the adverse negative impacts. He told the attendees to feel free in giving comments which will help in successful project.

Min. 3: Address by David Wesonga, Proponent's representative

Mr. Wesonga thanked everyone in attendance and asked them to openly contribute where necessary for successful implementation of the project. He told the meeting that, on behalf of the proponent, they are ready to cooperate with the community and all stakeholders for successful implementation of the project.

He also briefed the meeting on the project design details and assured the community that they will be considered when jobs will be offered. Mr. Wesonga told the meeting the they will be available at all times for clarifications and consultations regarding the project.

He added that even skilled persons from the community will be absorbed if available. He told the community that other opportunities will come as result of the project including sale of food to the construction staff. He said the client will liaise with the area leadership like the village elders and Assistant Chief in identifying those seeking employment and those with skills during recruitment periods.

He told the meeting that another meeting was being arranged to further discuss the project.

Min 4. Plenary: Comments, Questions, Views, and concerns from the general public

The attendees were given time to ask questions and give comments over the proposed project. The comments and concerns raised at the meeting were as follows:

Kevin Ochieng: Requested for employment when the project kicks off.

Janes Ngasi: welcomed the project. Was concerned about how the job opportunities from the project will be distributed.

Fatuma Mohamed: Welcomed the project but was also concerned about the chances of employment to be realized from the project.

Ezekiel Owino told the meeting that she fully supported the project and was concerned about whether the project will pollute the environment. He asked for an all incisive meeting.

Kennedy Omondi welcomed the meeting but told the proponent to organize a bigger meeting to include area administration.

Min. 5: Vote of thanks/Closing Remarks by Mr. Mr. Osanya

The WRUA Chairman thanked all the participants for taking their time to attend the meeting and participate by giving out their comments. He told the meeting that all would be invited to further contribute in an upcoming meeting that was to be scheduled. There being no other business, the meeting ended at 11.40am with a word of prayer from a volunteer

Minutes prepared by: Sign.....

George Adhoch

EIA/EA Lead Expert Date. 2/5/2022.....

Confirmed by: Sign .....

Mr. Eliazar Osanya

Chairman
KISAT WRUA. Date ..... 2ND MAY 2022

PURPOSE: PUBLIC CONSULTATION ON THE PROPOSED FLOATING BEACH APARTMENTS ON PLOT NO. KISUMU/KOGONY/4076 OFF NKURUMAH ROAD, KOGONY SUB-LOCATION, EAST KISUMU LOCATION, KISUMU WEST SUB COUNTY, KISUMU COUNTY.

VENUE: KISAT KARUA GROUNDS

DATE: 31/3/2022

ATTENDANCE SHEET

NR	NAME	DESIGNATION/OCCUPATION	TEL. NO.	SIGNATURE
1.	George Alloch	EIA LEAD EXPERT	0725237189	
2.	SAMWEL KOTINGI	EIA ASSOCIATE EXPERT	0701374542	
3.	Moses Okode	EIA LEAD EXPERT	0724219274	
4.	ELIAZAR OCANTA	KARUA CHAIRMAN	0721692918	
5.	DOROTHY ODUOR	PROPONENTS REPRESENTATIVE	0727119568	
6.	David Kiesonga	Asst Project Manager Gadwings	0792778232	
7.	Fatuma Mohamed	Karua Treasurer	0702041706	
8.	Sakina Suleiman	ASST SEC - KISAT KARUA	0702393802	
9.	CASSIM OLAGO	LAND PARCEL SELLER	0743032118	
10.	REHEMA AUMA CASSIM	WIFE TO LAND OWNER	0743032118	
11.	Vincent Omondi	Proponent Representative	0702046379	
12	EDWARD KANTOR	Consultant Civil Eng	0718038032	
13	Alphonse Adongo	Consultant Sociologist	0713510487	
14				

	NAME	DESIGNATION/OCCUPATION	TEL	SIGNATURE
15.	Shem Otieno	Village Elder	0723901071	[signature]
16.	Samwel Ayoo	V. Elder	0713 660787	[signature]
17.	Jamse Oyamo	VILLAGE ELDER	0741472238	[signature]
18.	Martin Olwehe	Village Elder	0729557271	[signature]
19.	Ezekiel Owino	Kombedu village	0717694353	[signature]
20.	JAMES NGASI	Usoma	0710568167	[signature]
21.	JOSHWA Oiro	Village Elder	0713 410372	[signature]
22.	Pamela Wanyanga	Bandani	0723242722	[signature]
23.	Husna Were Kassim	Usoma	0704834900	[signature]
24.	ADERO JUMA	Bandani	0700582592	[signature]
25.	Linna Obare	0720110562	0720110562	[signature]
26.	ZAKIA Abubakar	Village Elder	0720885200	[signature]
27.	Saddam Hussein	Usoma	0729649550	[signature]
28.	Caroline Ar Said	Bandani	0707375257	[signature]
29.	Kevin Ochieng	Usoma	0794869698	[signature]
30.	KENNEDY OMONDI	Bandani	0725339558	[signature]
31.	HASSAN JUMA	Kombedu	0797903409	[signature]
32.	Josua Ochieng	Bandani	0718 123358	[signature]
33.	Godwin Ouyago	Bandani	0715161622	[signature]
34.				
35				
36				
37				