# ENVIRONMENT & SOCIAL IMPACT ASSESSMENT STUDY REPORT

# FOR

# PROPOSED AQUA VISTA RESIDENTIAL APARTMENTS ON PLOT 1542/I/MN, MOMBASA COUNTY


**GPS coordinates: 4°02'59"S 39°42'20.2"E**

**PROPONENT**

**BLUE REGENCY INVESTMENTS LIMITED**

**P.O BOX 81911-80100**

**MOMBASA**

**LEAD ESIA EXPERTS**

**MUNYUA A. MWENGA**

**FRED ARONYA**

**AUGUST 2021**

**PROJECT FACT SHEET**

| | |
|---|---|
| **Project Name** | Aqua Vista Residential Apartments |
| **Proponent** | Blue Regency Investments Limited<br>KRA PIN P051899652F<br>Email: blueregency.investment@gmail.com |
| **Report** | Environmental and Social Impact Assessment Study Report |
| **Project components** | 1. 144 apartments<br>2. Parking<br>3. Waste Water Pretreatment system<br>4. Swimming pool& clubhouse |
| **Project Cost** | Ksh. 950,000,000/= |
| **Project site & Footprint** | Plot no.1542/I/MN Nyali, Mombasa County<br>2.16 Acres<br>35,460 $m^2$ |

**ESIA TEAM**

| | |
|---|---|
| Munyua A. Mwenga | Team Leader |
| Fred Aronya | Environmentalist |
| Martin Mamboleo | Environmental Economist |
| Cerella Sarry | Environmental Planner |

# DOCUMENT AUTHENTICATION

This ESIA Project Report has been prepared in accordance with the Environmental Management and Coordination Act (EMCA) 1999 (Rev. 2015), and the Environmental (Impact Assessment and Audit) Regulations for submission to the National Environment Management Authority (NEMA). We the proponent and the ESIA Lead Expert certify that the particulars given in this report are correct to the best of our knowledge.

Prepared by:

Signed: _____

Date:_____

**Munyua A. Mwenga**
LEAD EXPERT NEMA REG.NO 0340

Signed: _____

Date:_____

**Fred Aronya**
LEAD EXPERT NEMA REG.NO 0668

**PROPONENT**

**BLUE REGENCY INVESTMENTS LIMITED**
**P.O BOX 81911-80100**
**MOMBASA**

Signed:…… Date: ……

# NON – TECHNICAL SUMMARY

Blue Regency Investments Limited proposes to develop 144 high end residential apartments on a 2.16 acres plot located of Moyen Drive in Nyali, Mombasa County. The project proposal entails, demolition of existing single dwelling unit and construction of six apartment blocks each for a total of 144 apartment units with supporting building services for subsequent sale. The project is to be developed on Plot No. 1542/I/MN.

The general steps followed during the assessment were as follows:

i. Environment screening, in which the project was identified as among those requiring environmental impact assessment under schedule 2 of EMCA, cap387
ii. Environmental scoping that provided the key environmental issues
iii. Desk Stop studies and interviews
iv. Baseline studies
v. Physical inspection of the site and surrounding areas
vi. Stakeholder consultations and questionnaire surveys.

The project is envisaged to have the following merits:

- Creation of modern housing stock
- Improved infrastructure and social amenities
- Increase home ownership

The project proposal has some likely adverse environmental concerns for which sufficient mitigation measures have been proposed to ensure low residual impacts as summarised below:

| **Environmental Concerns** | **Mitigation measures** |
|---|---|
| Traffic Impact | 1. The timing of the truck arrivals and departures should be largely outside of the vehicular peak periods<br>2. During the demolition and construction stages, all trucks to enter the construction site;<br>3. A traffic marshalling to be developed in unison with contractor during construction;<br>4. Warning signs to be placed to advise pedestrians and manage their safety when walking across the construction driveways.<br>5. During activity periods of high traffic volume (such as demolition, excavation and concrete pours), pedestrians to be guided walking across the construction driveways exit by traffic controllers.<br>6. The use of public transport and carpooling to be actively encouraged.<br>7. Vehicle access to neighbouring properties & public beach to be unimpaired .<br>8. No machinery or material to be stored on the footpath or verges or on public areas.<br>9. All materials handling to be done on site. |
| Construction waste | 10. Avoid overloading trucks and cover trucks to minimize dust and spillages from trucks during transportation;<br>11. For aggregate and sand, use water sprays or covered chutes to reduce dust emission during loading and unloading of materials; |

| **Environmental Concerns** | **Mitigation measures** |
|---|---|
| | 12. Maintain mixing plants in good working condition so as to reduce emission from the plant;<br>13. As far as possible, plan truck trips to material source and to the sites during low traffic volume; and<br>14. Implement safety procedures to reduce the potential for road accidents. |
| Noise & vibration pollution | 15. Schedule noisy activities during the normal working hours of between 8am to 5pm. No work should be undertaken at night or very early in the morning;<br>16. Switch off idle machines and equipment;<br>17. Ensure machinery is well serviced to reduce noise emitted;<br>18. The contractor should adhere to the provision in the Environmental Management and Co-ordination (Noise and Excessive Vibration pollution) (control) regulations,2009<br>19. Provide workers with appropriate PPEs when working under noisy environment e.g. ear plugs<br>20. Construction waste is not to enter the biophysical or socio-economic environment; and<br>21. Contractors to have waste management plans to mitigate potential impacts |
| Air pollution | 22. Practice dust management techniques, including watering spraying to suppress dust;<br>23. Move earth and sand in covered vehicles/transport to avoid it being blown by wind increasing suspended particulate matter in the atmosphere;<br>24. All power plants to be of good condition with acceptable smoke emissions;<br>25. Set up dust barriers/screens at strategic locations; and<br>26. Provide and enforce use of Personal Protective Equipment (PPE) for staff. |
| Water shortages | 27. Replace or repair leaking pipes supplying water to the construction sites to minimize wastage;<br>28. The Contractor should ensure provision of adequate water storage facilities on the construction site to meet project needs during periods of high demand externally and refill of storage tanks during periods of low demand;<br>29. Incorporate water harvesting techniques and matched storage;<br>30. Waste water treatment and reuse in landscaping<br>31. Regularize the existing borehole |
| Pollution / contamination of ground and surface water | 32. Appropriate containment structures to be provided to store contaminated water from the construction site. The contractor should ensure this water are properly disposed and not allowed to be drained on site;<br>33. Concrete batching area should be bounded to prevent contamination of soils and surface water features;<br>34. All fuel storage to be appropriately bunded and provided with a canopy; and<br>35. Provision of adequate sanitary facilities for construction workers to enable proper disposal of fecal matter and avoid contamination of surface water features which could be a cause of water borne diseases. |
| Occupational Health & Safety | 36. Contractor should ensure registration of all construction works by the Director, Directorate of Occupational Health and Safety Services (DOHSS)in compliance with the Buildings and Works of Construction Engineering Rules,1984;<br>37. Contractor should contract a qualified Health and Safety advisor to conduct training and monitoring of construction works;<br>38. Contractor should provide a standard First Aid Kit onsite; |

| Environmental Concerns | Mitigation measures |
|---|---|
| | 39. The Contractor should train several workers in First Aid depending on the number of workers on site as stipulated in the First Aid Rules 1977 through DOSHS certified First Training institution e.g. Red Cross, St. John Ambulance |

This ESIA study recommends that during project implementation, the mitigation measures identified and recommended be closely monitored to ensure that they are being undertaken. All contracts for construction of any of the proposed project components must stipulate the responsibilities of the contractor for implementing the proposed mitigation measures. In this regard, the Environmental and Social Management Plans (EMPs) developed in this main ESIA report considers the impacts of construction and of the operation phases of the all apartments components. The core responsibilities during the implementation of the ESMP have been allocated.

Table of Contents

**TABLES**



**FIGURES**



**PLATES**

# ABBREVIATIONS & ACRONYMS

| | |
|---|---|
| **CBD** | Convention on Biological Diversity |
| **COP** | Contracting Parties |
| **EIA** | Environmental Impact Assessment |
| **EMCA** | Environmental Management Coordination Act |
| **EMP** | Environmental Management Plan |
| **ERC** | Energy Regulation Commission |
| **ESIA** | Environmental and Social Impact Assessment |
| **ESMP** | Environmental and Social Management Plan |
| **GIS** | Geographical Information System |
| **HIV/AIDs** | Human Immunodeficiency Virus/Acquired Immune Deficiency |
| **IDF** | Import Declaration Fee |
| **INLUG** | Integrated National Land-use Guidelines |
| **ISWMS** | Integrated Solid Waste Management System |
| **KES** | Kenya Shilling |
| **KFS** | Kenya Forest Service |
| **KPLC** | Kenya Power and Lighting Company |
| **MOWASCO** | Mombasa Water and Sanitation Company |
| **NCA** | National Construction Authority |
| **NEAP** | National Environmental Action Plan |
| **NEC** | National Environment Council |
| **NECC** | National Environment Complaints Committee |
| **NEMA** | National Environment Management Authority |
| **NET** | National Environmental Tribunal |
| **NHC** | National Housing Cooperation |
| **NHDF** | National Housing Development Fund |
| **NLUP** | National Land Use Policy |
| **OSH** | Occupational Safety and Health |
| **PID** | Project Information Document |
| **PIN** | Personal Identification Number |
| **PPE** | Personal Protective Equipment |
| **SBR** | Sequential Batch Reactor |
| **SERC** | Standards and Enforcement Review Committee |
| **TOR** | Terms of Reference |
| **UNFCCC** | United Nations Framework Convention on Climate Change |
| **WRA** | Water Resources Authority |

# 1 INTRODUCTION

This Environmental and Social Impact Assessment Study Report is prepared on behalf of Blue Regency Investments Limited Under section 58 Environment Management and coordination Act (EMCA), 1999 and the second schedule (1(c) Major changes in land use) of EMCA, 1999, the proposed project requires an EIA before it can start. Under EMCA, any activity out of character with its surrounding and likely to cause substantial impact to the environment requires an Environmental Impact Assessment (EIA) Report.

## 1.1 Project Background

The proposed project is located on Plot No. 1542/I/MN, situated in Nyali is owned by Blue Regency Investments Limited. (Appendix 1 shows copy of title for the project area). The project site is accessible via Moyen Drive, Jomo Kenyatta Road in the Nyali Greenwood area. The figure 1 below shows the existing layout of for the proposed building housing project footprint for the apartment buildings once complete.


Figure 1 Project footprint & site

This ESIA study report has been prepared based on the findings of screening and scoping study, field visits, public participation meetings and information collected from both primary and secondary sources including the information provided by the project proponent.

## 1.2 Project Proponent

The project proponent is Blue Regency Investments Limited, a locally registered company. Annex 2 (certificate of incorporation and KRA PIN certificate).

## 1.3 Project Description

Aqua Vista Residential apartments project involves the demolition of an existing single dwelling maisonette and construction of 6 blocks each 12 floors. These units once developed will be put in the market for sale. A total of 144 apartment units. The breakdown of typology of apartment units propose are shown in table 1 below. The development will also include a wastewater treatment plant, swimming pool, solar installation, vehicle parking and underground water tanks and other building services to support the apartments development.

Table 1 Proposed project elements of the Aqua Vista Residential Apartments

| **No. of bedrooms** | **Floor area** $m^2$ | **No. of units** |
|---|---|---|
| 3 | 195 | 60 |
| 4 | 230 | 24 |
| 4 | 310 | 48 |
| 5 | 280 | 12 |
| **Total** | **35,460** | **144** |

The final mix of apartment typologies will ultimately be determined by prevailing market demand at the time of project completion.

## 1.4 Project's Objectives

The objectives of the Aqua Vista Residential Apartments are:

1. To develop high quality apartment units for sale;
2. To sell apartment units in the housing market;
3. Improve the utilization of land; and
4. Increase the taxable value of property in the project area.

## 1.1 Objectives of ESIA the study

### 1.1.1 *General Objective*

The general objective of the ESIA study is to carry out a systematic examination of the present environmental situation within the project area to determine likely impacts of the proposed Aqua Vista Residential Apartments with a view of improving the sustainability of the project.

### 1.1.2 *Specific Objectives of the ESIA Study*

(i) To highlight environmental issues of the proposed project with a view to guiding policy makers, planners, stakeholders and government agencies to help them in understanding the implications of the proposed project on environmental elements within the Nyali project area;

(ii) To review existing legal institutional, and policy framework relevant to the proposed project;
(iii) To find out impacts associated with implementation of the proposed apartment units at Nyali with a view to suggesting mitigation measures for the negative impacts;
(iv) To asses and give recommendations on the various mitigation measures to be taken to reduce possible negative impacts on the proposed piece of land for development;
(v) Analyse occupational health and safety issues associated with the proposed project;
(vi) To determine the compatibility of the proposed development with the neighboring land uses evaluate local environmental conditions;
(vii) Facilitating meetings for the stakeholders to air their views;
(viii) Identifying and contacting the project stakeholders to seek their views on the proposed project;
(ix) To assess the relative importance of the impacts of alternative plans, design and sites;
(x) To generate baseline data for monitoring and evaluation of how well the proposed mitigation measures are being implemented during the project operation period;
(xi) To develop an Environmental and Social Management Plan (ESMP) to guide in decision making and for future auditing;
(xii) To raise stakeholder awareness on potential impacts of the project on the environment with a view to making them understand the implication of the project in their environment;
(xiii) To develop an ESIA report in conformity with the EMCA 1999, Environmental (Impact Assessment and Audit) Regulations 2003 and EMCA (amendment) 2015 and legislation under it; and
(xiv) Submission of the final EIA report to NEMA and subsequent follow up to obtain relevant authorization/permit in order for the project to commence.

This ESIA Study Report, therefore, details the positive and negative effects of the development on the project environment and recommends appropriate environmental and social measures to minimize any undesirable effects resulting from the project.

## 1.2 Terms of Reference (ToR)

The following Terms of Reference apply to the project:
(i) Screening and scoping.
(ii) Establishing the suitability of the proposed location for the proposed housing development
(iii) Carry out literature review.
(iv) Carry out preliminary fieldwork.
(v) Prepare the TOR for submission to NEMA for consideration and approval.
(vi) Undertake detailed fieldwork.
(vii) Carry out baseline investigations and analyses.
(viii) Hold meetings with the project proponent, other project consultants, relevant regulatory government bodies, and stakeholders.
(ix) Carry out a systematic environmental assessment at the proposed project site and the surrounding area in line with established standards and laws.
(x) Provide a description of the proposed activities throughout the entire implementation process of the project with a special focus on potential impacts to the surrounding environment and facilities.
(xi) Develop an Environmental Management Plan and cost estimates for the proposed housing development.
(xii) Produce an Environmental and Social Impact Assessment report that contain among other issues potential negative and positive impacts and recommendation of appropriate mitigation measures to minimize or prevent adverse impacts.

A copy of the terms of reference approval letter is attached in appendix 4

## 1.3 Methodology

The methodology used in the ESIA Study included the following.

i. A site reconnaissance and visual survey to determine the baseline information of the project area;
ii. Comparative study of the project with existing land uses in the neighbourhood;
iii. Reviewing and analysis of the project documents;
iv. Discussion with the proponent and the other consultants;
v. Assessment of the site to detail the various existing and likely impacts;
vi. Assessment of health and safety issues;
vii. Seeking public views through interviews and questionnaire administration;
viii. Proposal of mitigation measures to minimize any negative impacts; and
ix. Preparation and submission of ESIA study report to NEMA.

### 1.3.1 *Screening*

Environmental screening was applied at the preliminary stage to determine whether the proposed development required an Environmental Impact Assessment. With reference to the second schedule of EMCA (1999), the proposed project was identified as among those that requires Environmental Impact Assessment so as to ensure that negative impacts from the project are mitigated as the positive ones are amplified.

### 1.3.2 *Approaches to undertaking the ESIA*

This ESIA Project Report has been prepared in accordance with the Environmental (Impact Assessment and Audit) Regulations of 2003. It is also guided by the general principles of green buildings. The study methodology also comprised the following activities:

1. Desktop study;
2. Field investigations of air, noise and groundwater
3. Neighbourhood consultations

#### 1.3.2.1 Desktop Study

The desktop study involved:

(i) Initial meetings with project architects and engineers to discuss the proposed project, including activity options under consideration;
(ii) Preparation of a checklist that consisted of a simple catalogue of environmental factors, which were compared with the activities to be performed;
(iii) Collection and review of baseline data, maps, reports and other relevant information on the existing environmental and social conditions of the project area;
(iv) Review of existing legislation, regulation and policies relevant to the proposed project; and
(v) Review of proposed project engineering designs and construction inputs, including anticipated technical processes.

#### 1.3.2.2 Field investigations

Field investigations involved:

(i) Site walks within the project area and the neighbouring areas that are within the zone influenced by the project;
(ii) Taking photographs of significant aspects to assist in describing the baseline environmental and social conditions of the project area and its influence zone;
(iii) Taking of the site coordinates and the area elevation;
(iv) Interviews with representatives of relevant key regulatory authorities within the project area and interested and affected parties mainly within the project influence zone; and
(v) Filling in of the questionnaires to facilitate environmental impact data collection.

The aim of the field investigations was to verify information and data collected during the desktop study and to collect any new information that may have been important in the assessment of impacts and design of mitigation measures.

### 1.3.3 *Report Preparation & Outline*

The ESIA study report was prepared and compiled and a draft report discussed with the proponent. Thereafter, findings of the assessment were discussed amongst the proponent, the project lead consultant and the ESIA experts. This was necessary to appreciate the various responsibilities and modalities of implementing the proposed project. The final report was then prepared and submitted to the proponent for endorsement.

## 1.4 Potential Positive Impacts

The positive impacts associated with the proposed project include the following among others:

1. Enhanced land use; the proposed project will put the land into a more productive use than it is now
2. Generation of revenue for both the government and developers
3. Improved security in the area
4. Development of social amenities
5. Employment opportunities
6. Development of local infrastructure
7. Enhancement of other businesses

## 1.5 Potential Negative Impacts

1. Air Pollution, Particles and Dust Emission
2. Noise and Excessive Vibrations
3. Traffic impact
4. Solid Waste Generation
5. Water Demand and Usage
6. Energy Demand and Usage
7. Increase Generation of Effluent/Liquid Waste
8. Occupational Health and Safety

## 1.6 Public Consultations

Public consultations are critical in conducting an effective ESIA. Public consultations consisted of use of self-administered questionnaires, telephone interviews and email communication. Compilation for public consultation feedback are found in chapter 6 of this report.

## 1.7 Constraints & Limitations

The information presented in this report is by and large consistent with the data and information gathered through the various sources and approaches outlined above. However, just as in any studies, the exercise experienced a number of constraints and as a result, there could be some gaps of information in the report as the consultants could not exhaust the collection of all primary data. The findings and issues advanced in this report reflect the general views and perceptions of some selected people and stakeholders; they may not cover the specific issues from some unique situations, or some individuals affected by the project.

## 1.8 Estimated Project Cost

The estimated project cost is Kenya shillings **Nine Hundred & fifty million (Kshs. 950,000 ,000)**

## 1.9 ESIA Study Output

This ESIA study report is prepared for purposes of presenting pertinent information to NEMA for approval and licencing of the project.

# 2 BASELINE INFORMATION

## 2.1 Introduction

The following baseline information details on environmental, socio-economic and bio-physical characteristics of the site. This information will provide a benchmark for continued monitoring and assessment of the impact of implementing the proposal on the environment.

## 2.2 Project Location

The proposed project is located on plot number 1542/I/MN situated at Nyali, Mombasa County. The project site is accessed through Moyen Drive. The map below shows the geographical location of the proposed project. The project site is located in an already developed environment devoid of any endangered fauna or flora.


*Figure 2 Project location & site layout plan of the proposed residential apartments*

### 2.2.1 *Neighbouring land use*

Surrounding the project area are Nyali International Beach Hotel, Nyali Sun Africa Resort, Nyali Golf Club, A.C.K. St. Peter's Church, Freedom Church Mombasa, Residential Houses, Hotels and other business. All these stakeholders were consulted during this ESIA project.

*Plate 1 Section of Moyen Drive leading to the project site. Public beach access road next to project site*

*Plate 2 Changing Nyali area skyline driven by changing density of use*

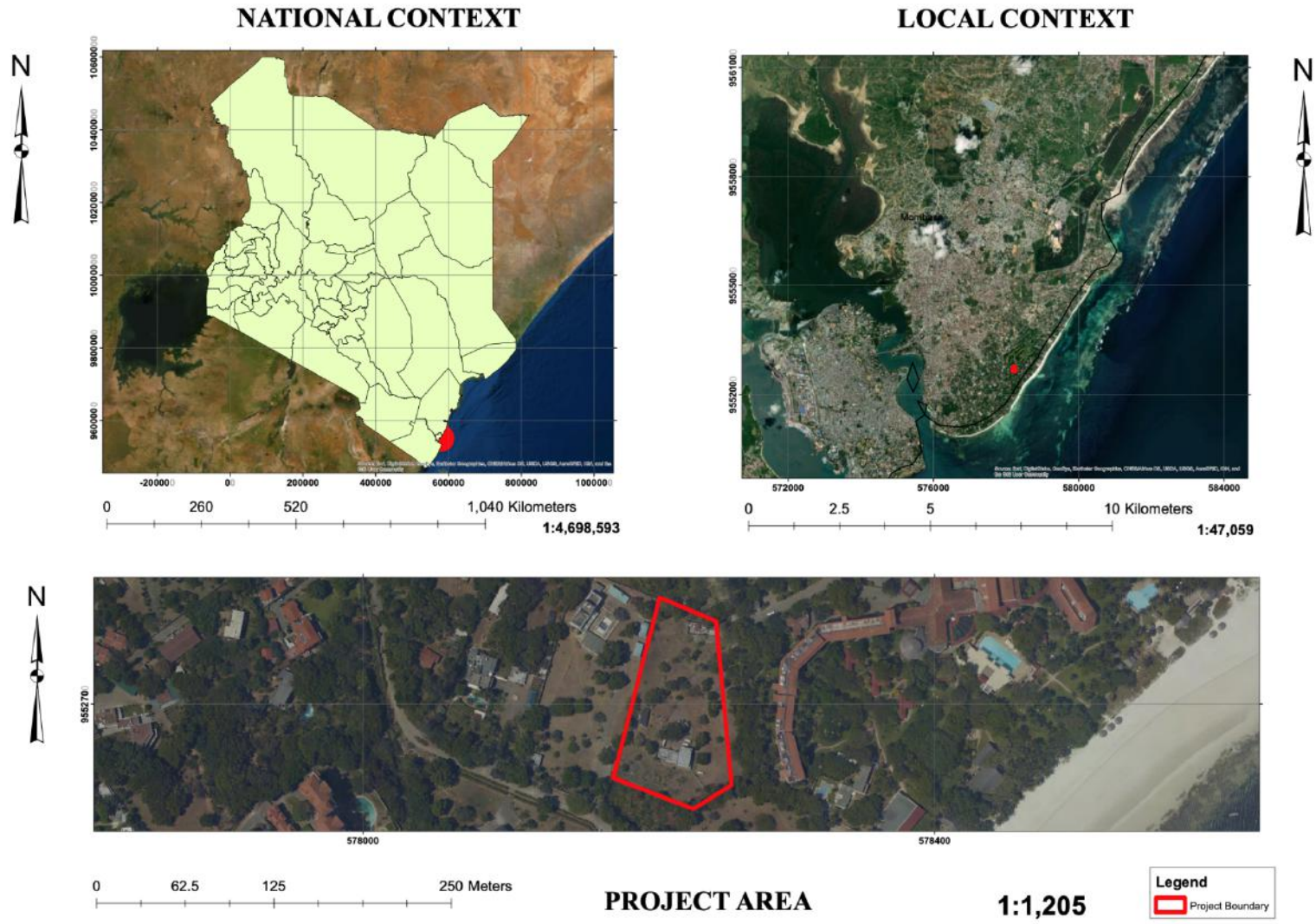


*Figure 3 Project area*

### 2.2.2 *Existing condition of the project site*

The proposed project site is currently used for residential purposes. The site has masonry wall on 3 sides of its boundary and a chain link fence on 2 sides of the property. The project site has an existing borehole.

*Plate 3 Existing buildings on the project site.*

*Plate 4 Chain-link fencing to one side of the proposed project site & vegetation within project area*

*Plate 5 Public beach access road running terminating at Nyali Beach*

## 2.3 Physical Environment

### 2.3.1 *Climatic Characteristics*

The proposed project area is located within Mombasa City and, therefore, enjoys the similar climatic conditions as the entire Mombasa City. The Mombasa lies on 23m above sea level Mombasa has a tropical climate. Climate is influenced by monsoon winds with the rainfall pattern being characterized into long rains (April - June with an average of 1,040 mm) and short rains (end of October - December with an average of 240mm). It is warm most of the year, and the winter months give a warmer temperature than summer. April and May are usually the rainy months, while January to February experience minimal rainfall. The temperature here averages 26.7 °C. About 1196 mm of precipitation falls annually. The difference in precipitation between the driest month and the wettest month is 287 mm. The average temperatures vary during the year by 4.1 °C | 39.4 °F. (https://en.climate-data.org/africa/kenya/mombasa/mombasa-915/ accessed 24/05/2020).

### 2.3.2 *Topography*

The County lies within the coastal lowland which rises gradually from the sea level in the East to about 132m above sea level in the mainland. The terrain is characterized by three distinct physiographic features, which includes the coastal plain, which is are found along the shoreline, covering parts of the South Coast, the Island, parts of Changamwe and the North Coast. The plain consists of an expansive flat land with raised beach terraces covered mainly by coral limestone and back reef sand deposits that not only provide firm foundation for construction but also provide building materials. Mombasa County in particular is situated in coastal lowland with extensive flat areas rising gently from 8 meters to 100 meters above sea level in the west mainland region. The proposed development site is generally a flat land.

### 2.3.3 *Humidity*

The proposed Aqua Vista Residential Apartments project area is 400 meters from the Indian Ocean coastline and thus has high humidity (85%) throughout the year.

### 2.3.4 *Hydrology*

The hydrogeology of an area is determined by the nature of the parent rock, structural features, weathering processes and precipitation patterns. Within sedimentary beds, lithological contacts and Old Land Surfaces (OLS) which characterize periods of erosion are potential aquifers. In most sedimentary beds, groundwater occurs within the **pores**. In the proposed project area, water is found in the coral rocks which are characterized by well define primary porosity. With a mean rainfall figure close to 900 mm, and a geology marked by sediments, the general potential for groundwater development can be termed as good. Though water is almost all over, the porosity of the formation determines how successful a well will be. This area being close to the sea has fresh water mostly on saline water. The volume of fresh water normally is big closer to the sea and becomes thinner far from the sea. Based on the geophysical and hydrogeological survey done on this site, there are good chances of getting water in this site. The borehole should not exceed 18 meters at VES 1, as there is a risk of sea water intrusion. A conductivity meter should be at the site to check for increase in salinity with progressive drilling once water has been struck. Once an increase in the degree of salinity is observed drilling/digging should be halted. Appendix 6 reports on the project area hydrogeology condition.

## 2.4 Ecological Conditions

The Mombasa County ecosystem has both marine and terrestrial components. Both ecosystems are characterized by diverse species of flora and fauna, the most common being coconut trees and different species of fish, which have different cultural, social and financial values. There are no dominant or threatened fauna at the project site. The most common fauna in the area are black crow birds which are also found within the Mombasa urban area. Natural ecosystems within and around the site have been interfered with by the developments and other economic activities. There are only few patches of vegetation within open spaces on project site.

### 2.4.1 *Water Quality*

The water quality within the larger Mombasa area has been dropping in quality due to the pollution of ground water resources by improper disposal of liquid waste. The development will source water from reticulated supply by MOWASCO supplemented by borehole supply. It is a recommendation that the proponent undertakes tests on yields and analysis of the water quality to determine capacity to meet the demand and conformity to Schedule 1 of the Water Quality Regulations, 2006.

### 2.4.2 *Air Quality*

The results from the Baseline ambient air quality monitoring showed compliance of all the gaseous and particulate parameters monitored, with EMC (Air quality) regulations 2014 at all monitoring locations during the weekday and weekend days of monitoring. Significant number of parameters had their concentrations higher during the weekdays than during the weekend as result of high vehicular traffic during peak hours, observed around the proposed construction site. (See Appendix 7)

### 2.4.3 *Solid waste management*

Solid waste generation in Mombasa District is estimated at 700metric tons per day. The waste is both organic and inorganic with the inorganic forms being non-biodegradable. The main waste generation sources are domestic, commercial ventures, hotels, markets, industries and institutions including health facilities. The types of waste that are generated include: Plastic waste including papers and hard plastics, Organic materials including food remnants and wooden debris, rubber, paper, metals, chemicals, glass, biomedical waste. Waste materials are collected from point sources or municipal dustbins in mixed form and transported to the Mwakirunge dumpsite which is the only one serving Mombasa as well as the newly created Kilindini Districts. All types of waste are transported to the site including hazardous types containing pesticides, heavy metals, oils, batteries, acids, domestic and hospital wastes. The distance to site (16km) and the lack of adequate facilities for waste transport at the Mombasa Municipal Council has created a waste management problem for the city. The council has only about 10, seven-ton tippers, 2 bulldozers, 2 compactors which are grounded and six tractors/trailers which are inadequate to efficiently dispose of all the waste generated by the city. As a result, much of the waste remains largely uncollected.

### 2.4.4 *Noise level monitoring*

The noise level monitoring machine, Noise level analyzer, was raised about 1.5 m from the ground from which the equivalent noise level (LAeq), the maximum sound pressure level (LAmax), the minimum sound pressure level (LA min), the sound pressure level at 5%, 50% & 95% (L5), (L50), (L95) respectively,

during the monitoring period were recorded. The results were then correlated with the EMC (Excessive noise and Vibration) regulation 2009 limits and further subjected to significance test (See Appendix 7).

## 2.5 Socio-Economic Environment

### 2.5.1 *Population and Demographics*

The population growth of Mombasa town has been on the rise according to the 2009 population and housing census report. Mombasa County has a total of approximately 1 Million people as per the 2009 census compared to approximately 650,000 people in 1999.The high population growth rate averaging 3.14 % has been reported within the coastal towns of Mombasa, Kilifi and Malindi for the years between 1999 and 2009 which rose to an average of 3.6 % between 1999 and 2009. The main factors that have attributed to the population growth include increase in fertility rate and improved health services. Rural-urban migration and the continued influx of tourists and foreign investors have also contributed significantly to the growth. Migration from other districts has basically been triggered by employment opportunities in the tourism and the transport sector. In the Kenyan Coast as a whole, population distribution in the inter-lands is mainly affected by rainfall distribution, altitude, agro-ecological zones and administrative policy through which a number of settlement schemes have been created.

### 2.5.2 *Water Supply*

The site is serviced by piped water supply connected to the Mombasa Water and Sewerage Company (MOWASCO) service line. The water supply from this line is erratic and unreliable. It is expected that the project proponent will supplement water supply through use of borehole water and rainwater harvesting to ensure sufficiency of clean water during the operation stage of this project. The water quality within the larger Mombasa area has been dropping in quality due to the pollution of ground water resources by improper disposal of liquid waste. The development will source water from reticulated supply by MOWASCO supplemented by borehole supply. It is a recommendation that the proponents undertake tests on yields and analysis of the water quality to determine capacity to meet the demand and conformity to Schedule 1 of the Water Quality Regulations, 2006. The proponent has undertaken hydrogeological survey to establish the viability of ground water for the project. Refer to appendix 6.

### 2.5.3 *Sewer System*

The system in Mombasa City is connected to two treatment plants these are: Kipevu treatment plant located on the West Mainland area and Kizingo Treatment Plant located in Kizingo area within Mombasa Town. Whereas the Kizingo plant is currently inoperable, the Kipevu one operates at 30% it capacity leading to the disposal of partially treated sewage into the sea at Makupa, Ziwani and Port Tudor. The rest of the County depends on privately constructed soak pits and pit latrines which have a potential to pollute water sources. There is little evidence of adherence to the Water Act 2002 that stipulates the requirements for boreholes and pit latrines to be located at far distances to protect ground water sources from contamination. The developer proposed to setup a suitably sized wastewater treatment plant as shown in the drawings attached in appendix 5.

### 2.5.4 *Infrastructure*

Roads

There is a total of 257.17Km of bitumen surface roads, 127Km of gravel surface roads and 91.29 Km of earth surface roads in the county. Main classified roads include Mombasa - Nairobi highway, Mombasa - Malindi road and Likoni Lungalunga Road connecting Kenya and Tanzania. The main access to the proposed project area is by Moyen Drive via Jomo Kenyatta Road.

*Plate 6 Project site all-weather access road*

# 3 ENVIRONMENTAL POLICY, LEGAL & INSTITUTIONAL FRAMEWORK

## 3.1 National Environmental Policies

| | **National Environmental Policies** | **Relevance to the project/license or permit required/ or activity requiring regulation** |
|---|---|---|
| 1. | National Environmental Action Plan (NEAP):<br>The purpose of the National Environmental Action Plan (NEAP) is to promote and facilitate the coordination of strategies and measures to protect and manage the environment into plans and programmes for the social and economic development of Kenya.<br>The Environmental Management and Coordination Act, 1999, established the NEAP to address the protection and management of the environment at district, provincial and national levels. | The proponent should comply with the NEAP policies and legislative with regards to preventing, controlling or mitigating specific as well as general adverse impacts on the environment.<br>The project activities will interact with the various elements and components of the physical, social and economic environments in ways that could lead to negative impacts. Stakeholders in the project will therefore ensure that projects covered under consideration should be implemented in ways that ensure environmental integrity. Issues of environmental integrity will be addressed through project level Environmental Impact Assessments (EIAs). |
| 2. | Kenya's Vision 2030:<br>The Kenya Vision 2030 is the national long-term development policy that aims to transform Kenya into a newly residential, middle-income country providing a high quality of life to all its citizens by 2030 in a clean and secure environment. | Amongst others, Vison 2030 is to facilitate production of housing units and to improve the lives of slum dwellers. The Aqua Vista Residential Apartment is a timely project in line with this vision.<br>Each activity or project carried out in the republic must comply with the state vision of the national environment, as well as respect the right of everyone to a clean and healthy environment. The project provides for various types of development activities that use sensitive components of the physical and natural environment, and stakeholders involved in the implementation of the program must ensure that the principle of sustainable development is respected at all stages of projects related to the programs. |
| 3. | National Environment Policy, 2012 Revised Draft #4:<br>The major objective of the policy is to provide a framework for an integrated approach to planning and sustainable management of Kenya's environment and its natural resources. The policy further ensures that the environment is integrated in all government policies in order to facilitate and | ESIA study has developed an environment and social management and monitoring plan to mitigate the impacts that may result during the construction and operation phases of the project. This tool is aimed at promoting coordination of environmental management of the project such that sensitive ecosystems are not destabilized by project activities |

| | **National Environmental Policies** | **Relevance to the project/license or permit required/ or activity requiring regulation** |
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| | realize sustainable development at all levels. This would help promote green economy, enhance social inclusion, improve human welfare and create opportunities for employment and maintenance of a healthy ecosystem. | The developer should ensure that the provisions of this policy are followed to ensure the protection of the environment. |
| 4. | Environmental and Development Policy (Session Paper No. 6 1999):<br>The goal of this Policy is a better quality of life for present and future generations through sustainable management and use of the environment and natural resources | The main objective of this Policy is a better quality of life for present and future generations through sustainable management and use of the environment and natural resources. The Apartments project once complete will offer the high quality living spaces. |

## 3.2 Environmental Institutional Framework

| | **Environmental Institutional Framework** | **Relevance to the project/license or permit required/ or activity requiring regulation** |
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| 1. | National Environment Council (NEC):<br>Part III section 4 of the principal Act outlines the establishment of the National Environment Council (NEC). NEC is responsible for policy formulation and directions for purposes of EMCA; sets national goals and objectives, determines policies and priorities for the protection of the environment, promotes co-operation among public departments, county governments, private sector, non-governmental organizations and such other organizations engaged in environmental protection programmes.<br>Key Functions of NEC:<br>• Policy formulation and direction for the purposes of this act<br>• Set national goals and objectives and determine policies and priorities for the protection of the environment;<br>• Promote cooperation among public departments, local authorities, private sector, non-governmental organizations and such other organizations engaged in environmental protection programmes;<br>Perform such other functions as are assigned under the Act | The council sets national goals and objectives and determine policies and priorities for the protection of the environment that are to be followed by the developer of the proposed Aqua Vista Residential Apartments Project. |

| | **Environmental Institutional Framework** | **Relevance to the project/license or permit required/ or activity requiring regulation** |
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| 2. | National Environment Management Authority (NEMA):<br>The objective and purpose for which NEMA is established is to exercise general supervision and co-ordinate over all matters relating to the environment and to be the principal instrument of the government in the implementation of all policies relating to the environment.<br>NEMA is responsible for general supervision and, co-ordination of all matters relating to the environment and is the principal instrument of government in the implementation of all policies relating to the environment. The authority is also responsible for monitoring compliance with all the NEMA regulations | The Project proponent is required to contract services of a licence EIA expert, submit an ESIA report to NEMA and acquire an EIA licence before commencing any construction activities. |
| 3. | County Environment Committee:<br>The County Environment Committee shall-<br>(a) Be responsible for the proper management of the environment within the county for which it is appointed;<br>(b) Develop a county strategic environmental action plan every five years for consideration and adoption by the County Assembly.<br>These committees contribute to decentralization of activities undertaken by NEMA and thus enable local communities to have access to environmental management information. The committees also conduct quick site visits and review environment related reports of the projects and on occasions could attend site meetings. | The project is in Mombasa County and will be subject to site visits by the County Environmental Committees. The committees will review environment related reports of the project and on occasions could attend site meetings. |
| 4. | National Environment Complaints Committee, NECC (Public Complaints Committee):<br>The committee is an environmental ombudsman that was established under section 31 to 36 of Environmental Management and Coordination Act no. 8 of 1999 with mandate to investigate allegations or complaints regarding the condition of environment in Kenya.<br>It is an important institution in the assessment of the condition of the environment in Kenya | If any disputes will arise in regards to this project, the NECC will also play an important role in the facilitation of alternative dispute resolution mechanisms relating to environmental matters. |
| 5. | National Environment Action Plan Committee:<br>The environmental action plan Committee discusses the challenges of climate change for Kenya and underscores the sustainability of Kenya's economic and social development which depend ultimately on proper and responsible management of the natural resource base and the environment in general. The plan also describes the physical environment and basically follows the thematic areas of nine task forces. | The Plan is a requirement by the Climate Change Act, 2016, which seeks to further Kenya's development goals by providing mechanisms and measures to achieve low carbon. |

| | **Environmental Institutional Framework** | **Relevance to the project/license or permit required/ or activity requiring regulation** |
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| 6. | Standards and Enforcement Review Committee:<br>NEMA through EMCA has established standards for the various environmental parameters that require management, and these include the water quality standards, noise and vibration control standards, and the waste management standards, amongst other. SERC, through the Compliance and Enforcement Department of NEMA monitors the compliance level of the project to ensure environmental control standards are implemented. The committee also follows on complaints reported by the public. This is a technical Committee responsible for environmental standards formulation, methods of analysis, inspection, monitoring and technical advice on necessary mitigation measures. The members of the Standards and Enforcement Review Committee are set out in the third schedule of the principal Environmental Management and Co-ordination Act. | The committee gives advice on how to establish criteria and procedures for the measurement of water quality and recommends the minimum water quality standards, analyzes conditions for discharge of effluents into the environment, and also carry out investigations of actual or suspected water pollution |
| 7. | National Environmental Tribunal:<br>The tribunal is formed under section 125 of the EMCA, Cap 387 and handles all cases related to environmental offences in the Republic of Kenya. The tribunal's principal function is to receive, hear and determine appeals arising from decisions of the National Environment Management Authority (NEMA) on issuance, denial or revocation of environmental impact assessment (EIA) licenses, among other decisions. | If disputes with respect to the proposed housing project arise, the NET will function very much like a court of law. |

### 3.3 National Environment Legislative Framework

| | **National Environment Legislative Framework** | **Relevance to the project/license or permit required/ or activity requiring regulation** |
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| 1. | The Constitution of Kenya 2010:<br>Article 42 of the Constitution states that every person has the right to a clean and healthy environment, which includes the right: to have the environment protected for the benefit of present and future generations through legislative and other measures, particularly those contemplated in Article 69; and<br>To have obligations relating to the environment fulfilled under Article 70. | The proponent has a right to carry out the project within legal limits.<br>The proponent must ensure that the project is carried out in an ecologically, economically and socially sustainable manner.<br>The proponent is entitled to a fair administrative decision-making process from NEMA and other State organs. |

| | **National Environment Legislative Framework** | **Relevance to the project/license or permit required/ or activity requiring regulation** |
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| | 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. | The project proponent will be required to comply fully with the above stated articles of the Constitution. |
| 2. | County Government Act 2012:<br>This Act vests responsibility upon the County Governments in planning of development projects within their areas of jurisdiction on projects of importance to the local County Government or those of national importance.<br>Section 102 of the Act provides the principles of planning and development facilitation which include integration of national values in county planning, protect the right to self-fulfillment within the county communities and with responsibility to future generations, protection of rights of minorities and marginalized groups and communities, promotion of equity resource allocation, among others. | The project proponent should initiate the process of County Government engagement in the initial project planning through application of essential development approvals from Mombasa County Government. The proponent will comply fully with the Act. |
| 3. | Environment Management and Coordination Act (EMCA) of 1999 Revised in 2015:<br>The Environmental Management and Co-ordination (Amendment) Act, 2015 is an Act of Parliament to amend the Environmental Management and Co-ordination Act, 1999, the Act received Presidential assent on 27th May 2015 and commenced on 17th June 2015.<br>The Act provides for the establishment of appropriate legal and institutional framework for the management and protection of the environment. | EMCA provide a legal and institutional framework for the management of the environment-related matters. Environmental quality conservation aspects of the project in consideration will be realized through the implementation of the Environmental Management & Social Monitoring Plan aimed at mitigating the potentially negative impacts and enhancing the potentially positive impacts predicted through project level EIAs. |

### 3.4 International Environmental Management Agreements/ Conventions and Protocols

| | **International Environmental Management Agreements/ Conventions and Protocols** | **Relevance to the project/license or permit required/ or activity requiring regulation** |
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| 1. | The United Nations Declaration on the Rights of Indigenous Communities:<br>The Declaration is the most comprehensive international instrument on the rights of Indigenous peoples. | The provisions of The United Nations Declaration on the Rights of Indigenous Communities should be put into consideration by the developer, in that the developer |

| | **International Environmental Management Agreements/ Conventions and Protocols** | **Relevance to the project/license or permit required/ or activity requiring regulation** |
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| | It establishes a universal framework of minimum standards for the survival, dignity and well-being of the Indigenous peoples of the world and it elaborates on existing human rights standards and fundamental freedoms as they apply to Indigenous peoples. | should engage the indigenous communities throughout the project cycle. |
| 2. | The Rio Declaration- Agenda 21:<br>Principle 4 of the Rio Declaration provides that in order to achieve sustainable development environmental protection shall constitute an integral part of the development process and cannot be considered in isolation from it. Principle 25 accentuates this by stating that peace, development and environmental protection are interdependent and indivisible. | The provisions of Rio Declaration should be put into consideration by the developer, in that protect the environment while still sustainably developing. |
| 3. | World Commission on Environment and Development of 1987:<br>The mission of the Brundtland Commission is to unite countries to pursue sustainable development together. The Brundtland Commission insists upon the environment being something beyond physicality, going beyond that traditional school of thought to include social and political atmospheres and circumstances. It also insists that development is not just about how poor countries can ameliorate their situation, but what the entire world, including developed countries, can do to ameliorate our common situation. | The provisions of this convention should be taken into consideration by the developer. |
| 4. | The Ramsar Convention on Convention on Wetlands of International Importance especially as Waterfowl Habitat:<br>The Ramsar Convention on Wetlands of International Importance especially as Waterfowl Habitat is an international treaty for the conservation and sustainable use of wetlands. It is also known as the Convention on Wetlands. It is named after the city of Ramsar in Iran, where the Convention was signed in 1971.<br>Every three years, representatives of the Contracting Parties meet as the Conference of the Contracting Parties (COP), the policy-making organ of the Convention which adopts decisions (Resolutions and Recommendations) to administer the work of the Convention and improve the way in which the Parties are able to implement its objectives. | The developer should ensure the proposed project doesn't have any impacts on wetlands. Wastes should properly be disposed and not directed into water bodies. |
| 5. | Convention on the Control of Trans-boundary Movements of Hazardous Wastes and their Disposal (Basel Convention):<br>Is an international treaty that was designed to reduce the movements of hazardous waste between nations, and specifically to prevent transfer of hazardous waste from developed to less developed countries (LDCs). The Convention is also intended to minimize the amount and | The developer should minimize the amount and toxicity of wastes generated, to ensure their environmentally sound management as close as possible to the source of generation |

| | **International Environmental Management Agreements/ Conventions and Protocols** | **Relevance to the project/license or permit required/ or activity requiring regulation** |
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| | toxicity of wastes generated, to ensure their environmentally sound management as closely as possible to the source of generation, and to assist LDCs in environmentally sound management of the hazardous and other wastes they generate. | |
| 6. | Convention on Biological Diversity (CBD) of 1992:<br>The CBD establishes a global legally binding framework for the conservation of biodiversity, the sustainable use of its components and the fair and equitable sharing of benefits arising out of utilization of genetic resources. | The provisions of this convention should be taken into account in the conservation of various species of plants, animals and the variety of ecosystems in the project area.<br>The Aqua Vista Residential Apartments Project is in line with the CBD and NBSAP, including the Aichi target with regards to promoting local communities appreciating and valuing biodiversity so as to conserve and use it sustainably. |
| 7. | United Nations Framework Convention on Climate Change UNFCCC (1993):<br>The UNFCCC objective is to "stabilize greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system". The framework sets non-binding limits on greenhouse gas emissions for individual countries and contains no enforcement mechanisms. Instead, the framework outlines how specific international treaties (called "protocols" or "Agreements") may be negotiated to specify further action towards the objective of the UNFCCC. | The Aqua Vista Residential Apartments project will endeavour to be in line with this convention and ensure that atmospheric pollution through greenhouse gases are minimised as is practically possible. |
| 8. | Rotterdam (PIC) Convention on Prior Informed Consent:<br>The Rotterdam Convention (formally, the Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade) is a multilateral treaty to promote shared responsibilities in relation to importation of hazardous chemicals. The convention promotes open exchange of information and calls on exporters of hazardous chemicals to use proper labeling, include directions on safe handling, and inform purchasers of any known restrictions or bans. | The Convention creates legally binding obligations for the implementation of the Prior Informed Consent (PIC) procedure. It built on the voluntary PIC procedure, initiated by UNEP and FAO in 1989 and ceased on 24 February 2006.<br>The Convention covers pesticides and industrial chemicals that have been banned or severely restricted for health or environmental reasons by Parties and which have been notified by Parties for inclusion in the PIC procedure. |
| 9. | Stockholm Convention on Persistent Organic Pollutants (POPs) (2002):<br>The Stockholm Convention on Persistent Organic Pollutants is a multilateral treaty to protect human health and the environment from chemicals, known as POPs. POPs have harmful | The developer should ensure that all POPs are properly disposed in order to protect the environment. |

| | **International Environmental Management Agreements/ Conventions and Protocols** | **Relevance to the project/license or permit required/ or activity requiring regulation** |
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| | impacts on human health or on the environment. They remain intact in the environment for long periods, become widely distributed geographically and accumulate in the fatty tissue of humans and wildlife. | |
| 10. | UNCCD: Convention on Desertification, of January 1995:<br>The United Nations Convention to Combat Desertification in Those Countries Experiencing Serious Drought and/or Desertification, particularly in Africa (UNCCD) is a Convention to combat desertification and mitigate the effects of drought through national action programs that incorporate long-term strategies supported by international cooperation and partnership arrangements. | Soil conservation measures should be put in place throughout project implementation period. |
| 11. | World Heritage Convention: Convention concerning the protection of the world cultural and natural heritage:<br>For the purpose of this Convention, international protection of the world cultural and natural heritage shall be understood to mean the establishment of a system of international co-operation and assistance designed to support States Parties to the Convention in their efforts to conserve and identify that heritage. | The Convention Concerning the Protection of the World Cultural and Natural Heritage (the World Heritage Convention) is a successful global instrument for the protection of cultural and natural heritage. |
| 12. | Montreal Protocol: Protocol for the Protection of the Ozone Layer January 1990:<br>The Montreal Protocol is an international treaty designed to protect the ozone layer by phasing out the production of numerous substances that are responsible for ozone depletion. | The developer is required to use only materials and substances that are safe and won't lead to the depletion of the Ozone layer. |
| 13. | Sofia Protocol to LRTAP concerning the Control of Emissions of Nitrogen Oxides or their Trans-boundary Fluxes (NOx Protocol):<br>Protocol to the 1979 Convention on Long-Range Transboundary Air Pollution Concerning the Control of Emissions of Nitrogen Oxides or Their Transboundary Fluxes, opened for signature on 31 October 1988 and entered into force on 14 February 1991, was to provide for the control or reduction of nitrogen oxides and their transboundary fluxes. | The proponent is requested to introduce pollution control measures based on best available technologies that are economically feasible. |

## 3.5 Institutional Structure of the Housing Sector in Kenya

| | **Institutional Structure of the Housing Sector in Kenya** | **Relevance to the project/license or permit required/ or activity requiring regulation** |
|---|---|---|
| 1. | National Housing Corporation:<br>The National Housing Corporation is established and constituted by the Housing Act Chapter 117 (3)<br>The Corporation consists of—<br>(a) a chairperson appointed by the President;<br>(b) the Principal Secretary responsible for housing in the Ministry;<br>(c) a person appointed by the Cabinet Secretary for the time being responsible for finance; and<br>(d) six persons appointed by the Cabinet Secretary for the time being responsible for housing, being persons who in his or her opinion possess knowledge of housing development or housing finance.<br>The corporation is charged with:<br>(a) undertake and encourage research and experiment in housing related matters, and undertake and encourage the collection and dissemination of information concerning housing and related matters;<br>(b) take part in housing exhibitions and other forms of publicity;<br>(c) undertake and encourage the provisions of training in furtherance of the purposes of this Act and provide training for members of its staff;<br>(d) perform such other duties connected with housing as the Minister may direct;<br>(e) to operate a housing finance institution with powers to borrow funds from the Government, overseas agencies, pension and trust funds and any other institution or persons, as well as to collect deposits and savings from the public to be applied to the financing of residential housing development and related matters; and<br>to establish, promote or aid in establishing or promoting, constitute, form or organise companies syndicates or partnerships alone or in conjunction with any other person or institutions for the carrying on of any such functions as the Corporation is empowered to carry on under this Act. | NHC endeavours to make Kenya a "decently housed nation". To achieve this vision, the corporation plays a leading role in providing and related services to Kenyans. The Residential Apartments project is in alignment with this vision. |

| | **Institutional Structure of the Housing Sector in Kenya** | **Relevance to the project/license or permit required/ or activity requiring regulation** |
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| 2. | National Housing Development Fund, 2020:<br>Housing Act Chapter 117 (7) Establishes the Housing Fund which is under the control of the National Housing Corporation, consisting of such securities and money and applicable to such purposes as are provided for by this Act.<br>The Finance Act 2018 was enacted by adding the following on Section 86, thus technically amending employment act, 2007 by inserting this text after section 31.<br>31A. (1) An employer shall pay to the National Housing Development Fund in respect of each employee—<br>(a) the employer's contribution at one point five per centum (1.5%) of the employee's monthly basic salary; and<br>(b) the employee's contribution at one point five per centum (1.5%) of the monthly basic employee's salary:<br>Provided that the sum of the employer and employee contributions shall not exceed five thousand shillings (Kshs.5,000) a month. | remains one of the key growth pillars for promoting long-term economic development.<br>To achieve the goals outlined in this pillar, the Government of Kenya established the National Housing Development Fund (NHDF). Public-private partnership framework will enable fast-tracking of the approval processes of housing projects and to accommodate new approaches. Aqua Vista Residential Apartments Project will help the Kenyan Government to achieve this goal. |

### 3.6 Ministerial and County Institutional Integration

| | **Ministerial and County Institutional Integration** | **Relevance to the project/license or permit required/ or activity requiring regulation** |
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| 1. | Environmental Management & Co-ordination (Waste Management) Regulations 2006:<br>Provides standards for handling, transportation & disposal of various types of waste including hazardous waste.<br>Requirements to ensure waste minimisation or cleaner production, waste segregation, recycling or composting<br>Provides for licensing of vehicle transporting waste<br>Provides for licensing of waste disposal facilities | Disposal of generated waste from operations under the project.<br>Generation of hazardous wastes such as used oi & oily parts from servicing of equipment & vehicles.<br>Ensure there exists proper contractual agreement with NEMA licensed solid waste handlers and that solid wastes are collected in a timely manner and disposed responsibly. |
| 2. | Air Quality Regulations, (Legal Notice No. 34 of 2014): | The proponent will ensure that operations at the site do not generate dust, particulates and other emissions beyond |

| | **Ministerial and County Institutional Integration** | **Relevance to the project/license or permit required/ or activity requiring regulation** |
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| | These regulations are aimed at controlling, preventing and abating air pollution to ensure clean and healthy ambient air. | allowable limits especially during construction by deploying efficient dust screens, PPE and other dust suppression measures. |
| 3. | Legal Notice No. 120, Environmental Management & Co-ordination (Water Quality) Regulations 2006:<br>Provides for the protection of ground & surface water resources<br>Provides for the parameters in the quality of wastewater discharged from any facility/activity into the environment or sewer. | Any discharges to the surface water courses during operation phases to be monitored for conformance with the standards.<br>The project proponent will fully comply with the Regulations.<br>The contractor/proponent will handle hazardous substances in a manner that is not likely to cause water pollution.<br>The proponent should ensure that effluent meets the standards set out under Schedule III of Legal Notice No. 120 of 2006. |
| 4. | The Environmental Management and Co-ordination (Controlled Substances) Regulations, 2007:<br>The regulations regulate the importation and use of Ozone Depleting Substances.<br>Regulations No. 3 gives a classification of Controlled Substances. | The proponent will comply fully with the Regulations by not using Ozone Depleting Substances |
| 5. | The Environmental Management and Co-ordination (Wetlands, Riverbanks, Lake Shore and Sea Shore management) Regulations, 2009:<br>Section 14 of the Regulations states: Duty of landowners, users and occupiers. (1) Every owner, occupier or user of land which is adjacent or contiguous to a wetland shall, with advice from the Authority, have a duty to prevent the degradation or destruction of the wetland, and shall maintain the ecological and other functions of the wetland. | The project proponent will be required to comply fully with the Regulations.<br>It will be the duty of the developer to ensure no wastes from this development ends into the Indian Ocean. |
| 6. | The Environmental Management and Coordination (Conservation of Biological Diversity and Resources, Access to Genetic Resources and Benefit Sharing) Regulations, 2006 Legal Notice No. 160:<br>The regulations provide for<br>a) detailed processes and rules for the conservation of biological diversity in Kenya; | The developer should adhere to these regulations in order to conserve the biological diversity in of the area |

| | **Ministerial and County Institutional Integration** | **Relevance to the project/license or permit required/ or activity requiring regulation** |
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| | b) mechanisms to protect and prevent exploitation of endangered and threatened plant and animal species;<br>c) access to and the fair and equitable sharing of benefits arising from the utilization of genetic resources;<br>d) the consultation of local communities in the process of accessing genetic resources for research, commercial and other purposes;<br>e) Ensure recognition of specific knowledge held by and role of local communities in conservation of biological resources;<br>f) Regulate the process and terms by which genetic resources can be taken out of the republic of Kenya and,<br>sustainable use of biodiversity and genetic resources. | |
| 7. | Environmental Management & Co-ordination (Noise & Excessive Vibration Pollution control) Regulations 2009:<br>Prohibits the generation of unreasonable, unnecessary or unusual noise which annoys, disturbs, injures or endangers the comfort, repose, health or safety of others & the environment.<br>Provides for the maximum noise levels permissible in various environmental set ups such as residential areas, places of worship, commercial areas & mixed residential<br>Provides that a sound source creates or is likely to emit noise or excessive vibrations or otherwise fail to comply with the provision of these regulations, a license is required. | Sound level limits of 60dB(day) and 35dB (night) to be observed during operations<br>License to emit noise/vibrations in excess of permissible levels to be acquired if necessary.<br>The proponent will be required to comply fully with the Regulations. |
| 8. | Legal Notice No. 31, Environmental Management and Coordination, (Noise and Excessive Vibration Pollution) Regulations 2010:<br>These Regulations require that no person or activity shall make or cause to be made any loud, unreasonable, unnecessary or unusual noise that annoys, disturbs, injures or endangers the comfort, repose, health or safety of others and the environment. | The contractor shall be required to implement these measures, ensure that all machineries are in good working condition to reduce noise. Also, construction activities shall be restricted between 0800Hrs-1700Hrs to ensure that the neighbours are not disturbed. |
| 9. | Environmental (Impact Assessment & Audit) Regulations, 2003 Amended 2019:<br>Provides for the procedure for carrying out the ESIA Provides for the contents of an ESIA study report | The ESIA to be carried out in accordance to the regulations |
| 10. | EMCA (Fossil Fuel Emission Control) Regulation, 2006: | Only approved substances are to be used as a fuel catalyst if the substance improves fuel economy, enhances |

| | **Ministerial and County Institutional Integration** | **Relevance to the project/license or permit required/ or activity requiring regulation** |
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| | NEMA is mandated under this regulation to approve any substance to be used as a fuel catalyst if the substance improves fuel economy, enhances combustion and reduces harmful emissions that adversely affect human, animal and plant health and degrade the environment. Furthermore, NEMA has to issue a catalyst license of an approved fuel catalyst and may impose such conditions as it may deem appropriate. | combustion and reduces harmful emissions that adversely affect human, animal and plant health and degrade the environment |
| 11. | Use of Poisonous Substances Act Cap 247:<br>An Act of Parliament to provide for the protection of persons against risks of poisoning by certain substances, and for matters incidental thereto and connected therewith | Section 3 of the Act casts a duty of all employers of protecting their employees against the risk of poisoning by poisonous substances. |
| 12. | The Water Act (Act No.8 of 2002) revised in 2016:<br>Provides that a permit shall be required for any use of water from a resource, especially where there is abstraction and use of water with the employment of works.<br>The legislation provides for the management of water resources at national and county level.<br>Article 40(4) provides an application for a permit to which shall be subject to public consultation and, where applicable EIA in accordance with the requirements of the EMCA.<br>108(1) sewage & effluent management to avoid environmental pollution. | Use of water abstracted from the natural spring requires an abstraction permit.<br>A permit will be required from WRMA for any water borehole construction works and an abstraction licence<br>The proponent will comply fully with the Act. |
| 13. | Water Resources Management Rules 2007:<br>Provides for application by all those intending to abstract ground water<br>Provides that where any borehole or well is intended to be equipped with a motorized pump the application shall be accompanied by a hydrogeological assessment report. | Depending on the proposed source of water for construction activities, permits may be required |
| 14. | The Forests Act (Chapter 375):<br>The Forest Act, Cap 385 of 1962 (revised 1982, 1992 and 2005) addresses the reservation, protection, management, enforcement and utilization of forests and forest resources on Government land. The Forest Act is applicable to gazetted forest areas (Forest Reserves) and specifically covers:<br>Gazettement, alteration of boundaries and de-gazettement of Forest Reserves (Section 4);<br>Declaration of Nature Reserves within Forest Reserves and regulation of activities within Nature Reserves (Section 5);<br>Issuance of licenses for activities within Forest Reserves (Section 7); | The project area is not located in a forest zone. However, the developer will need KFS permit in order to cut down existing trees. It is advisable that the developer should plant more trees on the site after completion of the project. |

| | **Ministerial and County Institutional Integration** | **Relevance to the project/license or permit required/ or activity requiring regulation** |
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| | Prohibition of activities in Forest Reserves (removal of forest produce, grazing, cultivation, hunting, etc.) and on unalienated Government land (removal of trees, collection of honey, lighting of fires) except under license from the Director of Forest Services (Section 8);<br>Power of the Minister to make rules with respect to sale and disposal of forest products, use and occupation of land, licensing and entry into forests (Section 15). This prerogative has been taken with the Forests (General) Rules, which sets forth rules for sale of forest produce and specifies royalty rates for these products. | |
| 15. | Physical and Land use Planning Act No.13 of 2019:<br>An Act of Parliament to provide for the preparation and implementation of physical development plans and for connected purposes. Provides for zoning areas | The proposed project requires approval by the county physical planning department.<br>Provisions of the Act regarding development control shall be strictly adhered to. All developers within the project area must strictly adhered to requirement of the Act regarding plot coverage and reservation of land for public utilities |
| 16. | Public Health Act (Cap. 242):<br>The act makes it the duty of every local authority (in the capacity of "health" authority) to take all lawful, necessary and reasonably practicable measures to safeguard and promote public health (s.13). Part IX of the act deals with sanitation and housing and is of most significance for the control of polluting discharges. S.116 imposes a duty on every local authority to maintain its district in a clean and sanitary condition, to prevent nuisances and prosecute those responsible for nuisances. Nuisances include drains and sewers for the discharge of pollutants into watercourses and lakes. The Public Health (Drainage and Latrine) Rules made under s.126 of the Act, makes more specific provision for drainage. The Rules require the drainage of new buildings;<br>• Prohibit the drainage of surface water into foul water sewers;<br>• Prohibit the discharge into sewers of matter which may interface with the free flow of the sewage or injure the sewer;<br>• Empower the local authority to prohibit the discharge of injurious matter into sewers;<br>Impose a requirement for permits to be obtained from the local authority before the making of sewer connections or the construction of sewage treatment works. | Health issues will be integrated into the project to ensure environmental health is appropriately addressed. All stakeholders must undertake to comply with provisions of the regulations by ensuring that the necessary plans to achieve requirements of the regulations are put in place. Measures to mitigate all forms of nuisance in compliance with Part IX Sections 115 and 118 of the Act will be put in place throughout the phases of projects under the programmes Contractors will also manage solid waste arising from programme related activities in compliance with provisions of this Act. |

| | **Ministerial and County Institutional Integration** | **Relevance to the project/license or permit required/ or activity requiring regulation** |
|---|---|---|
| 17. | Penal Code Act (Cap. 63):<br>Chapter XVII on "Nuisances and offences against health and convenience" contained in the penal code strictly prohibits the release of foul air into the environment which affects the health of the persons.<br>It states "Any person who voluntarily vitiates the atmosphere in any place so as to make it noxious to the health of persons in general dwelling or carrying on business in the neighbourhood or passing along a public way is guilty of a misdemeanour" | Waste disposal and other project related activities shall be carried out in such a manner as to conform to the provisions of the code. It is the responsibility of the contracted licensed waste handler to ensure that all kinds of wastes are disposed appropriately as per the legal provisions.<br>The proponent will comply fully with the Act. |
| 18. | The Workmen's Injury and Benefits Act, 2007:<br>This Act provides for compensation to employees for work-related injuries and diseases contracted in the course of their employment and for connected purposes. Key sections of the Act include the obligations of employers; right to compensation; reporting of accidents; compensation; occupational diseases; medical aid; appeals; and miscellaneous provisions. Schedules provided in the Act outline the degree of disablement; occupational diseases; and dependant's compensation. In case of any accidents or incidents during the project cycle, this Act will guide the course of action to be taken. | The proponent will comply fully with the Act. |
| 19. | The Employment Act, 2007:<br>This Act declares and defines the fundamental rights of employees; minimum terms and conditions of employment; to provide basic conditions of employment of employees; and to regulate the employment of children, among other rights. Key sections of the Act elaborate on the employment relationship; protection of wages; rights and duties in employment; termination and dismissal and protection of children, among others. | Contractor to be strictly advised not to engage any underage persons (under 18 years of age) to perform any form of work at the site during construction.<br>The proponent shall also ensure that the contractor is conversant and adheres to all the provisions of the Employment Act |
| 20. | The Traffic Act, Cap 203:<br>This Act consolidates the law relating to traffic on roads. Key sections include registration and licensing of vehicles; driving licenses; driving and other offences relating to the use of vehicles on roads; regulation of traffic; accidents; offences by drivers of vehicles other than motor vehicles and other road users; and miscellaneous provisions as to roads, among others. | Vehicles will be used to transport humans and equipment during the entire project life, and their registration and licensing will be required to follow the above Act. |
| 21. | The Standards Act Cap 496:<br>This Act promotes the standardization of the specification of commodities, and provides for the standardization of commodities and codes of practice to ensure public health and safety. | This means the Proponent has to ensure all materials and equipment in use during construction as well as operation of the facility adheres to the highest standards and do not pose any human health and safety risk. |

| | **Ministerial and County Institutional Integration** | **Relevance to the project/license or permit required/ or activity requiring regulation** |
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| | | The proponent will comply fully with the Act. |
| 22. | Occupiers Liability Act Cap 34:<br>An act of parliament to amend the law as to liability of occupiers and others for injury or damage resulting to persons or goods lawfully on land or property from dangers due to the state of the property or to things done or omitted to be done there. | Ensure safety of workers during construction and possible decommissioning phases and occupants upon occupation of the office block. |
| 23. | Occupational Safety and Health Act 2007 (CAP 15):<br>This Act promotes and guarantees the protection and wellbeing of workers in the workplace.<br>• Provides that every occupier shall ensure the safety, health & welfare at work of all persons working in this workplace.<br>• Provides for registration of premises prior to use as a workplace<br>• Provides that workplace shall be of sufficiently size for work to be carried out with ease & an adequate amount of air for each employee, the minimum permissible being 10m3 per person.<br>• Provides that an occupier shall ensure that effective & suitable provision is made for securing & maintaining by circulation of fresh air in each workroom, the adequate ventilation of the room.<br>• Provides that an occupier ensure effective provision is made for securing & maintaining sufficient & suitable lighting, whether natural or artificial, in every part of this workplace in which persons are working or passing.<br>• Provides that sufficient & suitable sanitary conveniences for the persons employed in the workplace shall be provided, maintained & kept clean, and effective provision shall be made for lighting the convenience; and where persons of both sexes are or are intended to be employed (except in the case of workplaces where the only persons employed are member of the same family dwelling there) such conveniences shall afford proper separate accommodation for persons of each sex. | Work at the proposed site may involve hazards such as accidental falls, working at heights, exposure to energized circuits and heavy equipment etc. Other potential sources of occupational injuries include entry into confined spaces, including manholes and dust generation associated with construction activities among others. The contractor will continuously improve the safety and health standards at the construction site making safety concern everyone's responsibility. Emergency response plan, warning signs, machinery safety and construction safety provisions of the Act which are aimed at managing occupational accidents, incidents and injuries at the workplace will be put in place. All requisite trainings, approval and permits including Workplace Registration Certificate shall be procured by the proponent / contractor |

| | **Ministerial and County Institutional Integration** | **Relevance to the project/license or permit required/ or activity requiring regulation** |
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| | Provides that all plant, machinery & equipment whether fixed or mobile for use either at workplace or as a workplace, shall only be used for work which they are designed for & be operated by a competent person. | |
| 24. | Factories & Other Places of Work (Noise Prevention & control rules,2005:<br>Rules provide for the maximum noise exposure levels for workers in places of work & for the provision of protective equipment for those exposed to high noise levels.<br>Provides that and occupier shall institute noise reduction measures at the source of the noise in the workplace | Noise emitted during the operation of the Housing units.<br>requires provision of PPE to workers & minimization of noise exposure to the public |
| 25. | Electricity Power Act No. 11 of 1997:<br>The Act establishes the Energy Regulatory Commission (ERC) with a mandate for the management of energy issues in Kenya.<br>Part III of this Act is dedicated to Electricity energy. Section 30 of this part stipulates that any electrical installation work should be conducted by such a person as one licensed by the ERC as an electrician or an electrical contractor. | Electricity power installation and usage should be done in a manner that seeks to protect the health and safety of the project employees; the local and other potentially affected communities as well as the environment.<br>Electrical installation to service the Aqua Vista Residential Apartments Housing Units should be done by a licensed electrician under ERC.<br>Liaison with relevant agencies such as KPLC should be sought where necessary.<br>Proponent should adhere to provisions of this Act in all phases of the project. |
| 26. | The Energy Act 2019:<br>The Act consolidates the laws the relating to energy & provides for National & county government functions in relation to energy.<br>Provides for promotion of renewable energy; exploration, recovery & commercial utilisation of geothermal energy; regulation of midstream & downstream petroleum & coal activities; regulation, production, supply & use of electricity & other energy forms;<br>Enforcement & review of environmental, health, safety & quality standards.<br>Provision for construction permit request to be accompanied by ESIA study. | The project proponent will comply with Legal Notices 43 & 102 to ensure conformity with the Energy Act provisions.<br>The proponent will be required to address provisions raised in the Energy (solar water heating) regulations<br>2012. |
| 27. | The Surveys Act Cap 299 Laws of Kenya:<br>This is an Act of parliament that make provisions in relation to surveys and geographical names and the licensing of land surveyors. | Surveyors shall carry out surveying in a manner as to ensure that surveys accord in all respect with the provisions of this Act and regulations made there under and shall be |

| | **Ministerial and County Institutional Integration** | **Relevance to the project/license or permit required/ or activity requiring regulation** |
|---|---|---|
| | | responsible for correctness and completeness of every survey carried out by them or under their supervision. Boundaries and benchmarks for any land or holding should be shown on the map. |
| 28. | Legal Notice No. 60: Hazardous Substances Rules, 2007:<br>The Rules state that the Proponent shall ensure that where chemicals come into contact with employees, the exposure limits set out in the First Schedule of the Regulations are not exceeded.<br>Where employees may be exposed to two or more chemicals in the workplace the Proponent shall work out the combined exposure using the narrative given in the Second Schedule of the Regulations. | The proponent will comply fully with the Regulations. |
| 29. | Land Act, 2012 (Act no.6 of 2012):<br>Provides for the sustainable administration & management of land & land-based resources & connected purposes. The Act also provides for the repeal of the Way leaves Act (Cap 292) and the Land Acquisition Act(Cap 295) | The proposed project site is registered & has a title deed |
| 30. | The Land Act, 2012:<br>The Land Planning Act (Cap 303)<br>Section 9 of the subsidiary legislation (the development and use of land Regulations 1961) under which it require that before the local Authority to submit any plans to then minister for approval, steps should be taken as may be necessary to acquire the owners of any land affected by such<br>plans. Particulars of comments and objections made by the landowners should be submitted, which intends to reduce conflict of interest with other socio-economic activities.<br>Land Titles Act, Cap 282<br>This Act makes provision for the removal of doubts that have arisen in regard to titles to land and to establish a Land Registration Court. Specific provisions include guidelines on adjudication of claims, and registration of documents after certificate of ownership is granted.<br>Registration of Titles Act, Cap 281<br>This Act provides for the transfer of land by registration of titles. Parts within the Act elaborate on mechanisms of bringing lands under the Act, grants, transfers and transmissions of land, | The proponent will be required to comply fully with these Acts |

| | **Ministerial and County Institutional Integration** | **Relevance to the project/license or permit required/ or activity requiring regulation** |
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| | registration of titles, and mode and effect of registration, transfers, leases, charges, powers of Attorney, and rectification of titles, among others.<br>Registered Land Act, Cap 300<br>The Act provides for the registration of title to land and provides for the regulation of dealings in land so registered, and for purposes connected therewith.<br>The Act elaborates on the organization and administration of the Act, the effect of registration, title deeds, certificates of lease and searches, instruments and agents, transmissions and trusts, restraints on disposition, rectification and indemnity, and decisions of registrars and appeals. | |
| 31. | Land Registration Act 2012 (Act no.3 of 2012:<br>Provides for the registration of titles to land, to give effect to the principles and objects of devolved government in land registration and for connected purposes. | The proposed site is registered and has a title deed. |
| 32. | The National Land Commission Act, 2012:<br>Pursuant to Article 67 (2) of the constitution, the functions of the commission are outlined in section 5 of the act as follows;<br>i). To manage public land on behalf of the national and county governments;<br>ii). To recommend a national land policy to the national government;<br>iii). To advise the national government on a comprehensive programme for the registration of title in land throughout Kenya;<br>iv). To conduct research related to land and the use of natural resources, and make recommendations to appropriate authorities;<br>v). To initiate investigations, on its own initiative or on a complaint, into present or historical land injustices, and recommend appropriate redress<br>vi). To encourage the application of traditional dispute resolution mechanisms in land conflicts;<br>vii). To assess tax on land and premiums on immovable property in any area designated by law;<br>viii). To monitor and have oversight responsibilities over land use planning throughout the country. | The proponent will be required to comply fully with this Act. The planning principles outlined in this Act should guide the process of implementation of the projects within the Programmes under study and public participation, a major component environmental assessment and audits should always be carried out to ensure that all stakeholders are aware of planned activities. |

| | **Ministerial and County Institutional Integration** | **Relevance to the project/license or permit required/ or activity requiring regulation** |
|---|---|---|
| 33. | The Environment and Land Court Act, 2011:<br>The Act establishes 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.<br>The act states that it's an offence for any person who refuses, fails or neglects to obey an order or direction of the Court given under this Act, commits an offence, and shall, on conviction, be liable to a fine not exceeding twenty million shillings or to imprisonment for a term not exceeding two years, or to both | The project proponent should abide to all the provisions of this Act |
| 34. | Land Acquisition Act (Chapter 295):<br>It is an Act of Parliament to make provision for the compulsory acquisition of land for the public benefit.<br>The Act also provides a procedure of acquiring these lands for public use. | The proponent to ensure that only the legal procedure is used to acquire any additional piece of land if needed. |
| 35. | National Construction Authority Act No. 41 of 2011:<br>An Act of Parliament to provide for the registration of contractors operating or willing to undertake construction operations in Kenya as by law through the National Construction Authority (NCA), which is constituted under Act No. 41 of 2011 Laws of Kenya.<br>Section 15 of this Act demands registration of contractors with NCA while section 17 and 18 outlines the procedure of registration of contractors. | The proponent will comply with the Act by ensuring that the site and project contractors are registered and certified by NCA. |
| 36. | The Environment and Land Court Act, 2011:<br>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<br>The act states that it's an offence for any person who refuses, fails or neglects to obey an order or direction of the Court given under this Act, commits an offence, and shall, on conviction, be liable to a fine not exceeding twenty million shillings or to imprisonment for a term not exceeding two years, or to both.<br>The Act repeals The Land Disputes Tribunal Act (No.18 of 1990). | The project proponent should abide to all the provisions of this Act |
| 37. | The Valuers Act Chapter 532:<br>An Act of Parliament to provide for the registration of valuers and for connected purposes. | The project proponent will be required by law to engage the services of only registered valuer. |

| | **Ministerial and County Institutional Integration** | **Relevance to the project/license or permit required/ or activity requiring regulation** |
|---|---|---|
| | 3 (1) of the Act establishes the Valuers Registration Board, whose responsibility is to regulate the activities and conduct of registered valuers in accordance with the provisions of this Act. | |
| 38. | Sessional Paper, No. 1 of 2017 on National Land Use Policy:<br>The principle objective of the NLUP is to provide legal, administrative, institutional and technological framework for optimal utilization and productivity of land and land related resources in a sustainable and desirable manner at National, County and Sub-county and other local levels.<br>The Policy offers a framework of recommendations and principles designed to ensure the maintenance of a land use system that will provide for:<br>i. Land use planning, resource allocation and resource management for sustainable development to promote public good and general welfare;<br>ii. Environmental management and sustainable production in the utilization of land resources;<br>iii. Coordination and integration of institutional linkages in planning at sectoral and cross-sectoral levels to foster collaboration and decision making among different land users;<br>iv. Equitable utilization of land resources to meet governance, social economic and cultural obligations of the people of Kenya;<br>v. Anchoring land development initiatives that will respond positively to the market demands;<br>vi. A comprehensive and efficient GIS-based national land use information management system;<br>vii. An appropriate, independent, accountable and democratic institution for land use conflict resolution; and<br>Mitigating problems associated with poor land use. | This Policy incorporates measures and principles to guide all activities, whether proposed or on-going, that may have direct or indirect impact on the use of land and its resources.<br>The Policy takes cognizance of the benefits of planned use of land and its resources; and builds in measures for integrated, equitable and sustainable utilization for optimal production.<br>This Policy upholds the values of economic productivity, environmental sustainability and the conservation of culture; and seeks to facilitate their protection and optimal use. |
| 39. | Urban Areas and Cities Act,<br>No. 13 Of 2011:<br>This is an ACT of Parliament to give effect to Article 184 of the Constitution; to provide for the, classification, governance and management of urban areas and cities; to provide for the criteria of establishing urban areas, to provide for the principle of governance and participation of residents and for connected purposes. | The proposed project is located in Mombasa City which is classified as a City under law. |

| | **Ministerial and County Institutional Integration** | **Relevance to the project/license or permit required/ or activity requiring regulation** |
|---|---|---|
| | The objects and purposes of this Act are to establish a legislative framework for—<br>(a) classification of areas as urban areas or cities;<br>(b) governance and management of urban areas and cities;<br>(c) participation by the residents in the governance of urban areas and cities; and<br>(d) other matters for the attainment of the objects provided for in paragraphs (a) to (c). | |
| 40. | Integrated National Land-use Guidelines, NEMA 2011:<br>The INLUG supports and promotes the implementation of the general goals laid down in the EMCA,1999; as well as support the implementation of the New Constitution as envisioned in Chapter Five (Sections 60 – 72) on Land and Environment. | The guidelines promote the implementation of sustainable development and a good living environment which is the goal of the proposed Aqua Vista Residential Apartments project. |
| 41. | Housing Act Chapter 117:<br>An Act of Parliament to provide for loans and grants of public moneys for the construction of dwellings; to establish the National Housing Development Fund and a housing board for these purposes; and for connected purposes. The Act also lists out the various duties of the National Housing Corporation. | Through this Act, loans and grant are available to the developer of the proposed Aqua Vista Residential Apartments project. |
| 42. | County Government by-laws:<br>Prescribes the necessary easements required for the establishment of any project within the County. | Ensure adherence to the by-laws provisions and acquire the necessary approvals and permits |

# 4 PROJECT DESCRIPTION

## 4.1 Introduction

Aqua Vista Residential Apartments project involves the demolition of an existing house and construction of apartment blocks. A total of 6 blocks each comprising of 12 floors will be erected to create a total of 144 apartments. The development will also include a wastewater treatment plant, swimming pool, solar installation, vehicle parking and underground water tanks and other building services to support the apartments development.


Figure 4 Layout of the proposed housing project

Details of the residential development are given in annexed drawings (refer to Appendix 5).

## 4.2 Sustainability

The housing design for the Aqua Vista Residential Apartments project proposes to incorporate the following component to promote sustainability in the housing project:

- Design to provide natural lighting
- Design of reuse of rainwater
- Design to provide natural ventilation
- Installation of energy efficient fixtures

The proposed housing development will also be fitted, connected and served with the existing infrastructural facilities such as water provision services system, sewer waste disposal channel system, power and electricity connectivity service from the power grid, solid waste management and disposal collection point, etc. The proposed project is in line with the zoning of the area that permits developments as such housing units' facilities.

The following services, infrastructures and facilities were considered and integrated during the plans, designs and implementation process of the project development as discussed below;

### 4.2.1 *Solid Waste Management*

Solid waste management will consist of color-coded bins for each type of waste in the blocks and along the corridors at designated points. A NEMA registered garbage Collection Company will be contracted for collection and disposal of waste at a designated dumpsite.

### 4.2.2 *Water Use and Wastewater Management*

The proposed site will be connected to the Mombasa Water and Sanitation Company water supply that serves the area. Underground & overhead and borehole water storage tanks will be installed to supplement MOWSCO water. All wastewater from the development housing facility will be channeled to the WWTP to be put up within the housing development while storm water will be channeled by gravity to the drainage channels serving the area.

### 4.2.3 *Transport Network Infrastructure*

The proposed site has a single access road that also serves as a public beach access route.

### 4.2.4 *Electricity Power and Energy*

Kenya Power will serve the facility for provision of electricity services. Power distributions will be done in a sustainable manner by employing the use of energy saving gadgets such as bulbs within the facility. Solar panels and generators will be installed within the facility to supplement the national grid supply.

### 4.2.5 *Lighting Systems*

All functions within the facility will be fitted using the latest energy saving lighting equipment. Lighting will be dimmable and be under daylight and occupancy controls. To save on energy, provision is made for lighting controls with; daylight linked dimming, occupancy controls in spaces that are not continuously occupied. Solar panels will also be installed to provide renewable energy for lighting where necessary.

## 4.3 Construction Inputs

The project inputs will include the following:

i) The materials that shall be used will include stones, cement, sand, crushed rock (gravel/ballast), ceramic fixtures, reinforcement bars, wood/timber, glass, painting materials, plastic, electrical and mechanical fixtures. All these materials shall be obtained from licensed dealers who have complied with the environmental management guidelines and policies and approved by Kenya Bureau of Standards (KEBS).

ii) Several machines shall be used which will include earth moving equipment (excavators, loaders, wheel loading shovels and backhoe), material handling equipment (cranes and hoists), construction equipment (concrete mixers and vibrators) and engineering vehicles (trailers, tippers and dumpers).

iii) The project will also require labour forces of both skilled and non-skilled workers. The skilled personnel will include the project consultants (architects, engineers, quantity surveyors and environmental experts) and a contractor with a team of foreman, masons, plasterers, carpenters, plumbers, welders, electricians, glaziers, painters and casual labourers.

Other construction inputs will include wastewater and sewer disposal, water services, power and electricity connectivity and supply from the main power grid or provided by generators.

## 4.4 Construction Phase

### 4.4.1 *Mobilization of Building Materials*

The proponent plans to source several building materials locally and expressed the confidence that the materials can be procured 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. Building materials are transported to the project site from their extraction, manufacture, or storage sites using transport trucks. There is adequate road linkage for the purpose of smooth transport of building materials into the project site.

### 4.4.2 *Storage Materials*

Building materials will be stored on site according to their need. Bulky materials such as rough stones, ballast, sand and steel will 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

### 4.4.3 *Masonry, Concrete Work and Related Activities*

The construction of the proposed apartments will involve a lot of masonry work and related activities. General masonry and related activities will include stone shaping, concrete mixing, plastering, slab construction, construction of foundations, and erection of building walls and curing of fresh concrete surfaces. These activities are known to be labour intensive and will supplement by machinery such as concrete mixers.

### 4.4.4 *Structural Steel Works*

All the beams and floors shall be reinforced with steel metals to enhance the stability of the proposed building. Structural steel works will involve steel cutting, welding and erection.

### 4.4.5 *Roofing and Sheet Metal Works*

Roofing activities will include iron sheet cutting, raising the roofing materials such as structural timber to the roof and fastening the roofing materials to the roof. Proper planning and measuring must be done before procurement of the sheets to ensure not much solid waste is generated after roofing is completed.

### 4.4.6 *Electrical Work*

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

### 4.4.7 *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, pipes will be installed to connect sanitary facilities with the existing Nairobi County sewerage system serving the area, 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.

### 4.4.8 *Landscaping*

To improve the aesthetic value or visual quality of the site once construction is complete, the proponent will carry out extensive landscaping especially at the front and rear parts of the buildings that shall involve establishment of small and attractive flower gardens. It is noteworthy that the proponent will use plant species that are available locally and fast growing for the landscaping.

## 4.5 Description of the Project's Operational Activities

### 4.5.1 *Solid Waste and Wastewater Management*

The developer has proposed to contract a licensed company responsible for solid waste handling for the defect period of the operational phase of the apartment units. Solid waste generated within the premises during its operation phase, where it will be occupied by residents who generate household wastes in their day to day activities. These household wastes will be disposed off to a designated area within the development, from where licensed contracted company will be responsible for collecting and disposing off these wastes to a designated dumpsite approved by the relevant authority.

Four tests were done, which involved filling the pits in quick succession while monitoring the rate of seepage and the time until water level is 25% of the effective storage depth in accordance with BRE document 365 (Soakaway Design). Testing produced design infiltration rates of 1.67E-04 to 1.02E-04 m/s indicating good infiltration based on CIRIA SuDS Manual in table below.

Table 2 Typical infiltration coefficients based on soil texture (after Bettess, 1996)

| Soil type/texture | ISO 14688-1 description (after Blake, 2010) | Typical infiltration coefficients (m/s) |
|---|---|---|
| **Good infiltration media** | | |
| • gravel | Sandy GRAVEL | $3 \times 10^{-4} - 3 \times 10^{-2}$ |
| • sand | Slightly silty slightly clayey SAND | $1 \times 10^{-5} - 5 \times 10^{-5}$ |
| • loamy sand | Silty slightly clayey SAND | $1 \times 10^{-4} - 3 \times 10^{-3}$ |
| • sandy loam | Silty clayey SAND | $1 \times 10^{-7} - 1 \times 10^{-5}$ |
| **Poor infiltration media** | | |
| • loam | Very silty clayey SAND | $1 \times 10^{-7} - 5 \times 10^{-6}$ |
| • silt loam | Very sandy clayey SILT | $1 \times 10^{-7} - 1 \times 10^{-5}$ |
| • chalk (structureless) | N/A | $3 \times 10^{-6} - 3 \times 10^{-6}$ |
| • sandy clay loam | Very clayey silty SAND | $3 \times 10^{-10} - 3 \times 10^{-7}$ |
| **Very poor infiltration media** | – | |
| • silty clay loam | – | $1 \times 10^{-6} - 1 \times 10^{-6}$ |
| • clay | Can be any texture of soil | $< 3 \times 10^{-6}$ |
| • till | described above | $3 \times 10^{-9} - 3 \times 10^{-6}$ |
| **Other** | | |
| • rock* (note mass infiltration capacity will depend on the type of rock and the extent and nature of discontinuities and any infill) | N/A | $3 \times 10^{-9} - 3 \times 10^{-5}$ |

This project will use SBR (Sequential Batch Reactor) Wastewater Treatment Technology. The SBR Wastewater Treatment Technology (SBR = Sequential Batch Reactor) implies that within a certain time frame a certain amount of wastewater is treated within an enclosed chamber. Following the treatment cycle the treated water is pumped out of the reactor and another batch of wastewater is pumped into the reactor. It consists of:-

**Pre-treatment chamber-**The wastewater enters the pre-treatment chamber (also called sludge chamber), which is needed to allow sedimentation of coarse material. The pre-treated effluent flows over into the next chamber with the help of a natural gradient.
**Buffer tank-** The second chamber that serves as storage until the effluent is pumped into the reactor.
**The SBR Reactor-** Within this chamber water is treated in three eight-hour cycles per day. One cycle consists of:

a. Filling of the reactor
b. Aeration phase
c. Sedimentation phase
d. Removal of treated wastewater

**A wastewater treatment plant will consist of;**

- PLASTIC-CABINET FOR AIR COMPRESSORS WITH AUTOMATIC CONTROLS & WIRING
- PROGRAMMABLE LOGIC CONTROL (PLC) UNIT
- 2 QTY. AIR COMPRESSOR KVT POWER 4.0 Kw
- 36 QTY. DISC AERATOR WITH 0.07 MÇ ACTIVE SURFACE
- SET AIRLITF PUMP PIPELINES WITH ASSOCIATED HOLDERS TO CONNECT THE TANKS AND THE TECHNICAL EQUIPMENT (additional electric backup automation for three phases AC 400 v included overload relays and cables).
- 1 SET. INSTALLATION ACCESSORIES FOR MOUNTING THE CABINETS UP TO 15M DISTANCE TO THE TANKS.

### 4.5.2 *Cleaning*

Once the proposed development is complete a management company operated by the housing unit owners will be responsible for regular washing and cleaning of the common roads and way leaves, however, the residential tenants/owners will be responsible for cleaning their own houses. Cleaning operations will involve the use of substantial amounts of water, disinfectants and detergents.

### 4.5.3 *General Repairs and Maintenance*

Throughout the operational phase of the development project, general repairs will be carried out to ensure normal functioning of the buildings infrastructures, components and avoid any hazard, injury or accident to the occupants. Such activities will include repair of floors, repairs and maintenance of electrical gadgets and equipment, repairs of leaking water pipes, painting, maintenance of flower garden and replacement of worn out materials among others.

# 5 ANTICIPATED ENVIRONMENTAL IMPACTS

## 5.1 Positive impacts

Potential positive impacts from the proposed redevelopment will be both short term and long term. This will include but not limited to the following: -

### 5.1.1 *Employment opportunities*

During the construction phase, job opportunities to both skilled and casual workers will be available. Several workers including casual labourers, masons, carpenters, joiners, electricians and plumbers are expected to work on the project site from the project start period to its completion date. Apart from casual labour, semi-skilled and unskilled labour and formal employees are equally expected to obtain gainful employment opportunities during the project construction phase. Employment opportunities are one of the long-term major impacts of the proposed residential development that will be realized after the construction phase and during the operation and maintenance of the facility.

### 5.1.2 *Development of local infrastructure;*

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

### 5.1.3 *Revenue to government;*

There will be gains in the local and national economy. Through consumption of locally available building materials including concrete tiles, timber and cement. The consumption of these materials, fuel oil and others will attract taxes including VAT which will be payable to the government.

### 5.1.4 *Enhancement of other businesses:*

The proposed project will improve income/economic status of people within the project neighbourhood. There will be gains in the local and national economy. Through consumption of locally available building materials including concrete tiles, timber and cement. The cost of the materials will be payable directly to the producers.

### 5.1.5 *Improved security in the area:*

This is going to be realised through employment of security guards both during construction and operational stages of the proposed project. Lighting of the project area and its environs will also help boost the security of the area during night hours.

### 5.1.6 *Optimal use of land*

By building the units the design has incorporated an optimal use of the available land.
Land is a scarce resource in Kenya.

## 5.2 Negative Impacts and Potential Mitigation Measures

### 5.2.1 *Traffic Impact*

Increased road traffic in and out of the project area will be experienced during all the phases of the project. Traffic increase is anticipated both from vehicular & non-motorised sources. This traffic will be highly dependent on the traffic activity on the project site access road.

During construction of the facility there will be an increase of car trips (construction workers) and truck movements.

Most construction workers will arrive on site before 7am which is before the morning peak period. A large majority of the site work force will complete works by 4pm so their return trips will be outside of the evening peak traffic period. There will be few traffic related to construction throughout the day. Hence, the public will, like always, use the road and even access the beach.

Truck arrivals are distributed throughout the day with no defined peak. There will be few arrivals after 4pm since when a truck arrives on site; enough time has to be allowed for unloading the truck prior to the site closing also with sufficient time for the driver to return to the depot before close of business.

The following traffic control plans will help minimise traffic impact:

- Pedestrian management plan to ensure that pedestrians are aware of the construction driveways
- Signage indicating the presence of truck turning to and from construction site from and to the project access road

Most construction transport accidents result from the inadequate separation of pedestrians and vehicles. This can usually be avoided by careful planning, particularly at the design stage, and by controlling vehicle operations during construction work. The following actions will help keep pedestrians and vehicles in the construction site and on the access road apart:

- Entrances and exits - provide separate entry and exit gateways for pedestrians and vehicles;
- Walkways - provide firm, level, well-drained pedestrian walkways that take a direct route where possible;
- Crossings - where walkways cross roadways, provide a clearly signed and lit crossing point where drivers and pedestrians can see each other clearly;
- Visibility - make sure drivers driving out onto public roads can see both ways along the footway before they move on to it;
- Obstructions – do not block walkways so that pedestrians have to step onto the vehicle route; and
- Barriers - think about installing a barrier between the roadway and walkway.

***Potential Mitigation measures***

1. The timing of the truck arrivals and departures will largely be outside of the commuter peak periods
2. During the demolition and construction stages, all trucks will enter the construction site and not occupy the nearby roads with a traffic control plan
3. Warning signs will be placed to advise pedestrians and manage their safety when walking across the construction driveways.
4. During activity periods of high traffic volume (such as demolition, excavation and concrete pours), pedestrians will be guided walking across the construction driveways exit by traffic controllers.
5. The use of public transport and carpooling will be actively encouraged.
6. Vehicle access to neighboring properties will be retained.
7. No machinery or material will be stored on the footpath or verges or on public areas.
8. All materials handling will be done on site. There will be no need to establish construction zones on the Moyen drive or Jomo Kenyatta Road in the Nyali Greenwood area

### 5.2.2 *Solid Waste Generation*

Solid waste will consist of construction debris, cement bags, wood, broken glasses, containers, metal, sharp objects such as nails, organic waste, paper, and plastic among others during the development construction phase.

***Potential Mitigation Measures***

1. Efficient use of building material to reduce waste and recycling/reuse where feasible.
2. Engage the services of registered waste handlers to collect and transport waste to designated disposal sites.
3. Provision for waste management rooms at strategic places within the development facility.
4. Segregation of waste at the source during the project cycle.
5. To manage waste in line with the Waste Management Regulations, 2006.
6. Use of an Integrated Solid Waste Management System (ISWMS); through a hierarchy of options: source reduction, recycling, composting and reuse, will facilitate waste handling during operation/occupation phase.

### 5.2.3 *Air Pollution, Particles and Dust Emission*

Air pollution will be among the major negative impact during the site preparation and construction phase as a result of increase in amounts of dust emanating from the demolition, excavation, construction activities and stockpiled earth materials. Air pollution may also be as a result of emission of fumes and particles or combustion of fossil fuels from the construction machinery.

***Potential Mitigation Measures***

1. Ensure no burning of waste such as paper and plastic containers on sites/non-designated areas.
2. Minimize exposed areas through the schedule of construction activities to enable dust control.
3. Minimize the period for idling of machinery and construction vehicles.
4. Monitor the air pollution levels regularly as per the Air Quality regulations.
5. Onsite dirt piles or other stockpiled material should be covered, wind breaks installed, water and/or soil stabilizers employed to reduce wind-blown dust emissions.
6. All staff employed at the construction site and visitors must be provided with dust masks and other PPEs.
7. All waste must be transported off-site for processing, not burnt or stored for any longer than is absolutely necessary.
8. Machines must not be left idling for unnecessary periods of time.
9. Alternatively, fuelled construction equipment shall be used where feasible
10. Perform construction at times that persons are expected to be at work and school.
11. All raw materials where possible must be sourced as close as possible to the construction site thus reducing the emissions from vehicular traffic.
12. Regular and prompt maintenance of construction machinery and equipment to minimize generation of hazardous gases.
13. Regular sprinkling of water on work areas to prevent fugitive dust violations.
14. Restricting heights from which materials are to be dropped, as far as practicable to minimize the fugitive dust arising from unloading/loading.
15. Use environmentally friendly fuels such as low sulphur diesel.
16. Buffer area of trees and other vegetation will serve as natural windbreaks.
17. Use of dust nets/screens around the construction site to contain and arrest dust.

18. Where a vehicle leaving a construction site is carrying a load of dusty materials, the load shall be covered entirely by clean impervious sheeting to ensure that the dusty materials will not leak from the vehicle.

### 5.2.4 *Dust pollution*

The expected air pollutants from the proposed project will include dust, particulate matter and gaseous emissions from construction materials and equipment. Dust will be generated from the excavations and materials delivery. Particulate matter will be generated from dry materials including sand, cement, gravel, etc. Smoke, hydrocarbons and nitrogenous gases will be emitted from machinery exhausts. These will be expected to increase slightly and will be localized hence expected to be experienced within 30m radius of the project. Air pollution is expected to be experienced during construction period.

***Potential Mitigation Measures***

1. Spray stockpiles of earth with water
2. Avoid pouring dust materials from elevated areas to ground
3. Cover all trucks hauling soil, sand and other loose materials
4. Provide dust screen where necessary
5. Sensitize workforce including drivers of construction vehicles

### 5.2.5 *Increase Generation of Effluent/Liquid Waste*

There will be increase generation in liquid waste as a result of increase in population within the project site both during construction and operation phases of the development.

***Potential Mitigation Measures***

1. All drainpipes passing under buildings should be of heavy-duty PVC pipe tube encased in concrete surround.
2. All manholes should have heavy-duty covers set and double sealed airtight as approved by specialists.
3. Connecting and channelling all liquid/effluent wastes to the existing city county sewerage system.
4. Ensure regular maintenance of foul water drainage works at the premises to prevent clogging and fore-stall breakdowns.
5. Proper decommissioning of the sanitary facilities shall be carried out once construction is complete.
6. Provision of adequate and appropriate sanitary facilities for the workers during construction phase and tenants during the operation phase of the facility.
7. Sanitary facilities shall be kept clean always through regular cleaning.
8. The design of the internal sewerage system shall consider the estimate discharges from individual sources and the cumulative discharge of the entire project, that is, it will have the capacity to consistently handle the loads even during peak volumes.

### 5.2.6 *Socio-economic Impacts Potential Mitigation Measures*

1. Persons from the nearby communities should be employed to work on the construction site.
2. Designate the roles and responsibilities of workers, which will enable a clear chain of command in the event of an accident and allows persons to be aware of their responsibilities in the event of such occurrences.
3. Place several fully equipped first aid kits on the project sites-.
4. Ensure that some workers are trained in basic first aid practices.

5. Signs must also be placed around the construction site displaying the numbers of the person responsible for handling emergencies on the site
6. Develop and implement a Health and Safety Training Manual for employees;
7. Identify a specific area on the project site for vending type activities
8. Purchase goods and supplies from suppliers within the area

### 5.2.7 *Noise and Excessive Vibrations*

Noise pollution during construction will be as a result of use of heavy machinery and vehicles during transportation of materials to and from the site. Vibrations will be experienced during the concrete vibration during concreting of the structural elements and hacking of the walls and building elements during plastering of the structure.

***Potential Mitigation Measures***

1. All machines and equipment shall be maintained regularly to reduce frictional noise.
2. All noisy activities shall be scheduled concurrently during the construction period to reduce the exposure period to sensitive receptors
3. All workers shall be trained and provided with PPEs such as helmets, earmuffs, dust mask, etc. which will always be used when operating within the site area.
4. Billboard shall be erected at the construction site entrance to notify of the construction activities and timings.
5. Construction works shall be carried out only during the day from 0800hrs to 1800 hrs.
6. Drivers delivering materials shall avoid unnecessary horning of the trucks/vehicles.
7. Equipment installed with noise abatement devices shall be used as much as practicable.
8. Noise shields shall be used on noisy equipment, such as corrugated iron sheet structures, to minimize the exposure to the neighbours and other workers within the site
9. Regular monitoring of noise levels at the site as per the regulations.
10. The construction vehicles and machinery shall be switched off when not in use to reduce idling time.
11. Install portable barriers to shield compressors and other small stationary equipment where necessary
12. Silenced machinery and instruments should be employed to reduce the impact of noise on the existing neighbours and workers.
13. Equipment such as drills, graders and cement mixers should also be used when the least number of neighbours can be expected to be affected
14. Those working with machinery, vehicles and instruments that emit high levels of noise should be provided with ear plugs and earmuffs

### 5.2.8 *Water Demand and Usage*

The demand and usage for water will increase during the project cycle. During construction, water will be required for activities such as cement mixing, curing of concrete, sprinkling of water on dusty areas to suppress dust and drinking water for workers. During operation phase, water will be needed for bathing, washing, cleaning, drinking and cooking. This will place strain on the existing water supply by Mombasa Sanitation and Water Company (MOSWC).

Potential Mitigation Measures

1. Utilise existing borehole to supplement the county supply.

2. Prompt detect and repair of all the water fixtures and fittings to reduce water wastage
3. Provide notices and information signs to sensitize on means and needs to conserve water resource i.e. “Keep/Leave the Tap Closed”, etc. This will awaken the civic consciousness of the workers and residents with regard to water usage and management.
4. Provision of adequate underground and roof tanks for water storage that covers two days’ water demand.
5. The contractor shall use water bowers and tankers to bring in water for construction activities i.e. during periods of high-water demand (i.e. during slab formation). Water fetching shall however be subject to authorization by the relevant authority.
6. Use water efficient appliances and fixtures for conservation of water during the project cycle.

### 5.2.9 *Energy Demand and Usage*

The proposed project will lead to increased demand and use of energy during the construction stage (fuel for running machinery and other equipment) and during operation phase (electricity used by the occupants of the units).

Potential Mitigation Measures

1. Exterior lights shall be controlled by a programmable timer.
2. Generator should be provided as a full backup energy source throughout the development.
3. Install and routine maintenance of energy efficient appliances e.g. LED bulbs etc.
4. Monitor energy use during construction and set reasonable limit.
5. Put off all lights immediately when not in use or are not needed.
6. The water booster set will contain inverter pumps for energy saving and precise control of flow and pressure rate.
7. Turn off machinery and equipment when not in use.
8. Use of solar energy as an alternative source of energy.

### 5.2.10 *Surface Run-off and Storm Water Drainage*

The proposed project construction phase will lead to increased release of sediments into the drainage systems. The building roofs and pavements may lead to increased volume and velocity of storm water or run-off flowing across the area covered by the building. This can lead to increased amounts of storm water entering the drainage systems, resulting in overflow and damage to such systems.

***Potential Mitigation Measures***

1. After completion of construction, the proponent shall embark on comprehensive landscaping.
2. Construct gently sloping drains to convey water at non-erosive speed.
3. Drainage channels shall be covered; say with gratings, to avoid occurrence of accidents and entry of dirt.
4. Semi permeable materials will be used for construction of pavements.

### 5.2.11 *Emergence and Spread of Social Vices*

The proposed development will lead to potential for employment opportunities and access to new services which will draw people to the area more specifically the project site. This factor will further lead to a temporary increase in economic activities and employment of skills for the development. This will lead to population influx which might lead to changes in or unwanted behaviours in the area. This unwanted or change in behaviour may be in the form of loose morality, an increase in school drop-out

due to cheap labour, child labour, drug use and abuse, theft/robbery and increased incidences of HIV/AIDS and related infections/diseases and other communicable diseases.

***Potential Mitigation Measures***

To minimize project effects on local social set up, the proponent will;

1. Conduct periodic sensitization forums for employees on ethics, morals, general good behaviour and the need for the project to co-exist with the neighbours.
2. Ensure enforcement of relevant legal policy on sexual harassment and abuse of office.
3. It is recommended that the contractor employs workers from the immediate area where possible to avoid social conflict
4. Offer awareness, guidance and counselling on HIV/AIDS and other STDs to employees;
5. Provide safety tools such as condoms to employees

### 5.2.12 *Occupational Health & Safety*

Waste material such as pieces of glass and nails left lying on the ground may cause injuries/accidents to the workers on site. Food for the construction workforce is usually provided by mobile individuals most of which operates without licenses. This can compromise health of the workers especially if such foodstuffs are prepared in unhygienic conditions. During construction phase, there will be increased air and noise pollution which are considered harmful to human health. The neighbours and workforce involved shall be subjected to this noise.

***Potential Mitigation Measures***

1. All workers shall use properly fitting PPEs to avoid injuries and illness which include working boots, overalls, helmets, goggles, earmuffs, masks, gloves etc.
2. Comply with OSHA 2007 and all other relevant regulations governing health and safety of workplaces.
3. Ensure proper solid waste disposal and collection facilities
4. Ensure dustbin cubicles are protected from animals, rains and are well covered
5. Proper handling and disposal of solid waste
6. Proper treatment of wastewater
7. Construction activities must therefore be limited to the hours of 8:00 a.m. and 6:00 p.m.
8. Local individuals preparing food for the workers at the site shall be controlled, monitored and evaluated to ensure that food is hygienically prepared.
9. Provide adequate and functional sanitary facilities for the workers.
10. Provide appropriate signage and warnings in work areas to avoid injuries to the workers and occupants.
11. Provide first aid facilities and ensure that workers are trained on emergency response such as first aid skills.
12. Safety awareness may be gained through regular safety meetings, safety training or personal interest in safety and health.
13. The contractor shall adapt a suitable emergence response plans to manage occurrence of anticipated hazards during construction phase.
14. Workers shall always be sensitized on social issues such as drugs, alcohol, diseases such as HIV/AIDS and STIs etc.

### 5.2.13 *Loss of vegetation*

1. Landscape the site by planting grass and trees at all disturbed areas
2. Care for the trees/plants
3. Retain vegetation screens to reduce the visual effect of this stage of the development.
4. Ensure that local building materials and muted colors are used to reduce the visual impacts of the development and the landscaping to hide it or blend in with the local environment.
5. Maintain all mature trees (trees > 25 cm) within the development where possible;
6. Incorporate as much local plants found within the area into the final landscaping of the property;
7. The developer should incorporate trees that are used by bird species for foraging to attract bird species to the area.

# 6 PUBLIC CONSULTATIONS & ENGAGEMENT

Consultation with various stakeholders and public participation was done throughout the Environmental Impact Assessment Project Report preparation and compilation. This was in line with the requirements of Legal Notice No. 101, Kenya Gazette Supplement No. 56 of June 13th 2003, the Environmental (Impact assessment and Audit) Regulations, 2003. Consultations and public participation was encompassing, interactive and intensive, so as to ensure that as many stakeholders as possible and the public were reached. Special attention was paid to general public especially those drawn from the proposed project site, and the immediate neighbourhood in Nyali. Views, comments, concerns and opinions of stakeholders concerning the proposed project were sought. The consultation was vital as it served to;

- ✓ Inform all stakeholders of the proposed development within their locality.
- ✓ Explain to the stakeholders the nature of the proposed project, its objectives and scope.
- ✓ Give stakeholders a forum to present their views, concerns and issues regarding the proposed development.
- ✓ Obtain suggestion from stakeholders on possible ways that potential negative impacts can be effectively mitigated.

The consultation was in the form of household interviews, site visits, questionnaire survey and public baraza.

## 6.1 Household questionnaire survey

The households' questionnaire surveys was conducted in July 2021. The questionnaire was designed to obtain basic data on household characteristics, social and economic profiles of households, access to infrastructure services, and environmental and health conditions at the project site. A total of 20 questionnaires were distributed within the neighbourhood of the project area.

## 6.2 Summary of issues raised from the consultation process

### 6.2.1 *Positive Impacts*

1. Job opportunities. In case of job opportunities during construction stage like drivers, construction site casual laboures, and project operation stage like cleaners, maids, caterers, the local communities should be considered first.
2. A boost to business. The proposed project will provide more clientele to other already established businesses
3. There will be cooperation with other businesses on rooms and conference facilities in case of influx.
4. The project proponent is a good neighbour and construction of the proposed apartments will reduce the rate of insecurity in the area.

### 6.2.2 *Negative Impacts*

5. The project proponent should come up with efficient mitigation measures to counter the negative impacts and adhere to these measures.
6. There will be a lot of dust and noise during the construction of the proposed apartments.
7. The trucks ferrying building materials will cause traffic in the area.
8. There must be proper control of dust on the construction site. Construction nets may be used to control the dust from the site.
9. The project proponent should come up with an efficient traffic control plan.
10. The neighbours fear that the project will lead to increase in traffic in the area.

11. Too much congestion is not good for the environment and may also have an impact on the security of the residents.
12. The project site will be accessed by Moyen drive which is the only road going towards the beach. Therefore, there will be a lot of duct and mess during the construction of the proposed apartments.

The copies of completed questionnaires are attached in appendix

### 6.3 Consultations beyond ESIA Process

In order to ensure that the development runs smoothly, consultations should be structured to aid the completion of the project implementation. These consultations should therefore be preceded by further engagement of various stakeholders under the following stages:

- Construction phase and reported through the Initial Environmental Audit; and
- Operation phases and reported through the Statutory Environmental Audit of the project.

The consultation should address pertinent issues including the sustainability and suitability of the operation and maintenance to ensure acceptable standards

### 6.4 Grievance redress mechanism

A grievance redress mechanism will be required as a measure to ensure that social concerns related to the project are addressed in a timely fashion. The specific objectives of a grievance mechanism will include:

1. Establishing a timely, consistent, structured, and trusted procedure for receiving and addressing neighbours concerns and complaints;
2. Ensure that complainants are treated with respect;
3. Ensure proper documentation and disclosure of complaints and any resulting corrective actions; and
4. Contribute to continuous improvement in the proponent's decision-making processes by analyzing trends and learning from complaints received.

# 7 PROJECT NEED & ANALYSIS OF ALTERNATIVES

Analysis of project alternatives of the Aqua Vista Residential Apartments considered three possible alternatives / options namely:

Alternative 1: NO Project" Option
Alternative 2: the "YES" alternatives
Alternative 3: Alternative access route to project site

## 7.1 The "no project" alternative

This option will mean that the project will not be undertaken. This implies that the proposed project will not be undertaken. This implies that all potential home owners would have to seek home ownership in alternative developments. The project area would also remain in its rundown state.
In analysing this option, the following was considered;

- ✓ **Technology transfer**: implementation of the proposed housing development will see transfer of various technologies to our people locally. This includes design technologies for waste water treatment and renewable energy incorporation in buildings. Therefore, the 'no project' alternative will not be favourable to this realization.
- ✓ **Contribution to local housing needs;** it is the government policy to enable home ownership for its citizens. One way of achieving this is by encourage private sector involvement in contribution in meeting rising housing demand in the country. The proposed project if implemented will contribute to meeting housing needs in Mombasa. The no project alternative will negate this potential gain from the proposed project if implemented.
- ✓ **Employment creation**; - the current government policy on employment and wealth creation aims at creating as many jobs as possible to meeting the ever-increasing employment demand in the country. If the 'no option project' was to be considered, then this government target may not be realized.
- ✓ **Investor attraction; -** if the no option is considered it will not be consistent with the government aim of attracting investments in the country and especially encourage local private investment in the housing sectors to contribute to addressing rising demand for descent, affordable housing.
- ✓ **Financial investment:** -The 'no' option will mean that Mombasa county economy will have to forego 1 billion shillings in investment in the housing sector.

Therefore, if the no option will be pursued it is likely that we may lose more than what is to be gained if the proposed project is to be implemented.

## 7.2 The 'yes' project alternative

This was considered to be a viable option. This option was considered viable as opposed to the 'no option' because the yes project alternative implies that the project be implemented and once implemented there will be a number of gains that will be realised including the following;

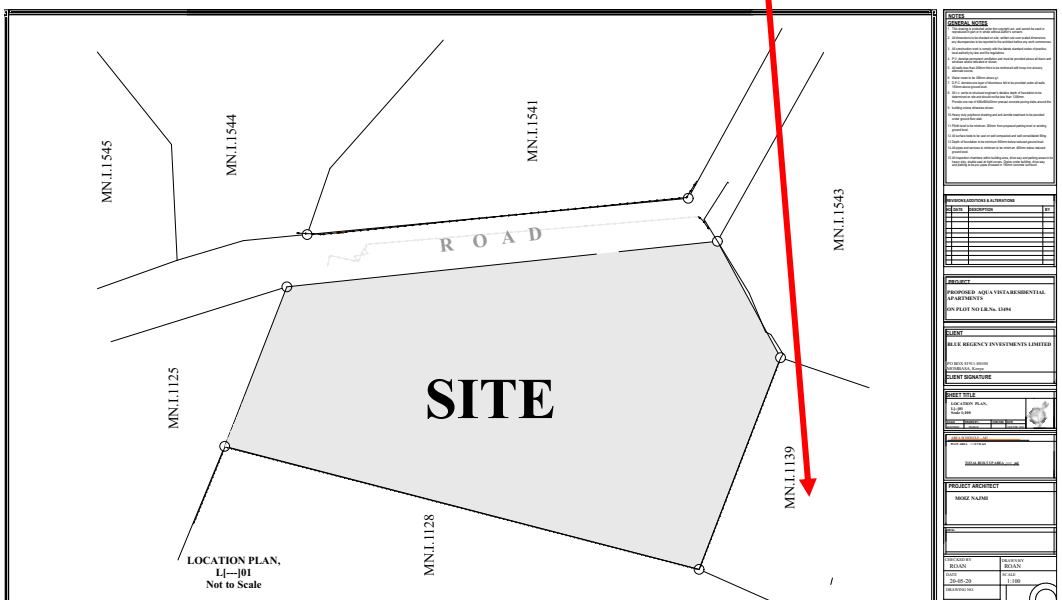
- ✓ Employment creation at the local level
- ✓ Increased quality housing stock
- ✓ Boost on investor confidence in the housing sector.
- ✓ Development and improvement of local infrastructure.

- ✓ Increased revenue in the form of taxes to the government.

## 7.3 Alternative project site access road

Currently the road leading to the project site is a 6-meter tarmac road (Moyen drive) that gives way to cabro pave road of the same width leading to the project site and continuing about 500 meters to the Nyali beach. The access road is expected to get congested and degraded during construction phase of the project due to use by commercial vehicles delivering building materials to the site. An alternative access to the site would be through the neighboring plot (shown in photograph) which connect to beach road.

*Plate 7 Neighbouring plot(with black gate) to the project site with direct connection to beach road*




The property adjacent to the proposed project site does not belong to the proponent and thus this option cannot currently be operationalised. It is strongly advised that the proponent engage the owner of plot

MN/I/1139 for either temporary use of the site or outright acquisition to ease vehicular movement during construction and operational period of the project.

## 7.4 Preferred building design

The existing structures will be demolished to pave way for construction of the proposed apartments. The proposed development intends to put up 6 blocks of 12 storey buildings per housing block.

## 7.5 Waste Water Management Alternatives

Four locally available technologies are discussed below:

Septic Tank & Soak Pit

This is the current technology being utilized by the single dwelling unit onsite. Given the increased density of occupancy, this system is not suitable for the proposed development.

*Plate 8 Existing manholes for the Septic tank & soakpit system at project site to be decommissioned*

### 7.5.1 *Stabilization Ponds/Lagoons*

This refers to the use of a series of ponds/lagoons that allow several biological processes to take place, before the water is released back to the river. 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 only available, and the local community are not likely to accept the option.

### 7.5.2 *Constructed/Artificial Wetland*

This is one of the powerful tools/methods used in raising the quality of life and health standards of local communities in developing countries. Constructed wetland plants act as filters for toxins. The advantages of the system are the simple technology, low capital and maintenance costs required. However, they require space and a longer time to

function. Long term studies on plant species on the site will also be required to avoid weed biological behavioural problems. Hence it is not the best alternative for this kind of project.

### 7.5.3 *Waste Water Treatment Plant*

This involves the construction of a plant that will enable the recycling of the waste water from the project activities to reusable standards and utilised within the site in activities such as irrigating the flower gardens and flashing of the toilets. It is usually expensive to construct and maintain, but it is the most reliable, efficient and cost-effective in the long term. This is the option that the project will make use of. The client has already undertaken geotechnical survey to ascertain suitability of the soils for the WWTP. Design details of the same are provided in annex 9.

## 1.1 Solid Waste Management Alternatives

A lot of solid wastes will be generated from the proposed project throughout its three phases (construction, operational and decommissioning) and an Integrated Solid Waste Management System (ISWMS) is recommended for its management. The following shall be given preference in its descending order:

1. The developer shall give priority to waste reduction at source of the materials. This option will demand a solid waste management awareness programme in the management and the residents.
2. Secondly, Reducing, Recycling, Reuse and composting of the waste. This calls for a source separation programme to be put in place.
3. The third priority in the hierarchy of options is combustion of the wastes that are not recyclable.
4. Finally, sanitary land filling will be the last option for the developer to consider.

# 8 ENVIRONMENT, SOCIAL MANAGEMENT & MONITORING PLAN

## 8.1 Introduction

The EMP is the key outcome of the Environmental and Social Impact Assessment (ESIA) process for the proposed Aqua Vista Residential Apartments. In real meaning, the ESMP is a mechanism to meet the recommended environmental and social mitigation measures. The ESMP is an instrument that will allow the proponent, developers and other key stakeholders to integrate environmental components during implementation, operation and decommissioning phases of the project.

### 8.1.1 *Scope and Objectives of the ESMP*

The Environmental Management Plan will focus on mitigating the impacts identified during the environmental and social assessment. It is an instrument that will allow developers, beneficiary communities and other key stakeholders to integrate environmental components during the various phases of the project. This plan is meant to establish measures and procedures to control the analysed impacts and monitor their progress. It will achieve the following in the long run:

(i) Provide the National Environment Management Authority (NEMA) with a tool to make ease the evaluation of the objectives at different phases of the project, taking into account the Kenyan environmental legislation;
(ii) Provide clear and mandatory instructions to the proponent, beneficiary communities and other key stakeholders with regard to their environmental responsibilities in all phases of project;
(iii) Ensure continuous compliance of Aqua Vista Residential Apartments, beneficiary communities and other key stakeholders with Kenyan legislation and policies regarding the environment;
(iv) Assure the regulators and interested and affected parties the satisfaction of their demands in relation to environmental and social performance.

### 8.1.2 *Applicable Legislation*

The developed ESMP will be in line with legislation applicable to the project. International normative instruments concerning the environment, as well as international best practice have also been considered.

### 8.1.3 *Principles of Environmental Management Plan*

The project should be implemented taking into account the need to minimize potential negative impacts and maximize its potential positive impacts on the biophysical and socio-economic environment as well as health and safety of workers and the public. This commitment must be made at various levels, from the senior management level of the proponent to the levels of all parties involved in the implementation of the project.

## 8.2 Recommendations/Commitments of the ESIA

The ESIA document contains a series of recommendations related to mitigation measures, monitoring and management. A key role of the ESMP is to put them all in a single framework. For each identified impact in the ESIA, the ESMP provides in a tabular format the following:

(i) A list of mitigation measures (activities) that Blue Regency Investments Limited and other key stakeholders will implement in accordance with each phase and activity of the project, to ensure that the mitigation objectives are met in full;
(ii) The role and responsibility of each of the stakeholders to ensure full implementation of mitigation measures; and
(i) The timetable of implementation/monitoring activities.

## 8.3 Responsibility

The proponent assumes full responsibility for implementing and monitoring the required measures to mitigate or enhance the environmental impacts. The effectiveness of mitigation measures should be evaluated by the proponent and the contractor.

## 8.4 Environmental Awareness

The proponent will be sensitive to the needs of the environment so as not to degrade (or degrade to a minimum) the existing environmental conditions. It is the proponent's primary responsibility to ensure that all parties that are directly involved in the construction and operation phases of the project, including managers and employees are aware about the need to prevent or minimize environmental degradation. The awareness activities will be guided by the following issues:
(i) Prevention of pollution of surface water and groundwater;
(ii) Prevention of air quality degradation;
(iii) Prevention of increased noise levels;
(iv) Prevention/reduction of social and economic disruptions;
(v) Prevention of risks to health and safety of workers and the general public.

## 8.5 Mitigation

All activities related to the lifecycle of the project will be subjected to appropriate mitigation measures to ensure that negative impacts are properly mitigated and managed. Mitigation involves identifying the best options to be adopted to minimize or eliminate negative impacts, highlighting the benefits associated with the proposed project and the protection of public and individual rights.
Practical measures are therefore sought to reduce adverse impacts or enhance beneficial impacts of the project.

## 8.6 Monitoring

The key objectives of monitoring are:
(i) To ensure that the EMP is implemented;
(ii) To evaluate the effectiveness of the mitigation measures;
(iii) To verify predicted impacts;
(iv) To provide feedback to licensing authorities.

## TABLE 3 CONSTRUCTION PHASE ENVIRONMENTAL MANAGEMENT PLAN

| Environmental Impact /Activity | Mitigation Measures | Responsibility | Cost (Kes) | Indicators |
|---|---|---|---|---|
| Commissioning of the Construction Works | ▪ Site hand-over and Ground breaking | Project team (Lead Consultant/Architect, contractor /proponent) | Part of/Covered in the Project Cost | Presence of the project Team |
| Securing the Construction Site | ▪ Construction of Perimeter Wall and Hoarding | Contractor | Part of/Covered in the Project Cost | Presence of Perimeter Fence |
| Housing for Construction / Site staff | ▪ Construction of a Camp | Contractor | 200,000 | Presence of a Camp |
| Security for Construction Material | ▪ Construction of Site Stores<br>▪ Construction materials to be delivered in small quantities to minimize storage problems | Contractor | 100,000 | Presence of Site store |
| Extraction and Use of Building Materials | ▪ Availability and sustainability of the extraction sites as they are non-renewable in the short term<br>▪ Landscape changes e.g. displacement of animals and vegetation, poor visual quality and opening of depressions on the surface | Contractor/Proponent/project team | Part of/Covered in the Project Cost | Material site rehabilitation |
| Collapse of Building during Construction | ▪ Ensuring Building Strength and stability<br>▪ Use of appropriate construction materials and reinforcements as per specifications<br>▪ Ensuring building components are as per designs<br>▪ Proper supervision<br>▪ Ensure proper timelines are followed e.g. curing time | Contractor/project team | Part of/Covered in the Project Cost | Presence of the project Team |

| Environmental Impact /Activity | Mitigation Measures | Responsibility | Cost (Kes) | Indicators |
|---|---|---|---|---|
| Disturbance of Traffic flow during construction | ▪ Proper signage<br>▪ Awareness creation<br>▪ Education to truck drivers | Contractor/Project team and general public | 100,000 | Presence of site Noticeboard /Hoarding.<br>Presence of Security guards to control traffic<br>Presence of warning signs and education materials |
| Soil Erosion | • Create and Maintain soil traps and embankments.<br>• Landscaping after completion of construction | Contractor/Proponent Architect/Site engineer Landscape Architect | 400,000 | Lack/Absence of Soil Erosion |
| Soil Excavation leading to site disturbance | • Excavate only areas to be affected by buildings<br>• Dumping of excess excavated materials to sites designated by NEMA and Council<br>• Restoration of sites Excavated | Contractor | 200,000 | Landscaping after completion of construction |
| Noise Pollution and Vibration | • Ensure use of serviced and greased equipment<br>• Switch off engines not in use<br>• Construction work to be confined to between 8am to 5pm<br>• Ensure use of earmuffs by machine operators | Proponent and Contractor | Part of Routine operation procedure | Lack of complaints |
| Air Quality | • Water sprinkling of driveways or the use of biodegradable hydrant e.g. | Proponent and Contractor | Part of Routine operation procedure | Lack of complaints |
| Risks of Accidents and Injuries to Workers | • Education and awareness to all construction workers<br>• Ensure use of appropriate personal protective clothing<br>• Provide First Aid Kits on site<br>• Ensuring Building Strength and stability<br>• Proper supervision | Proponent<br><br>Contractor | Part of Routine operation procedure | Presence of well-equipped First Aid kit<br>Presence of Security Guards on site<br>Presence of a register on the site |

| Environmental Impact /Activity | Mitigation Measures | Responsibility | Cost (Kes) | Indicators |
|---|---|---|---|---|
| Health and Safety | • Provide First Aid Kits on site<br>• Proper signage and warning to public of heavy vehicle turning<br>• Ensuring Building Strength and stability<br>• Provide clean water and food to the workers<br>• The contractor to abide by all construction conditions | Proponent<br><br>Contractor | Part of Routine operation procedure | Presence of well-equipped First Aid kit<br>Presence of Security Guards on site<br>Presence of a register on the site |
| Solid Waste Generation | • Ensure waste materials are disposed of on Council and NEMA approved sites<br>• Ensure re-use of materials that can be re-used<br>• Use of the 3rs – Reduce, Re-use, Re-cycle | Proponent<br><br>Contractor | 200,000 annually | Absence of Solid waste on the site |
| Energy Consumption | • Use electricity sparingly since high consumption of electricity negatively impacts on these natural resources and their sustainability<br>• Use of Standby Generators | Proponent<br><br>Contractor | 300,000 annually | Presence of KPLC power lines<br>Presence of Generators |
| Excessive Water Use | • Excessive water use may negatively impact on the water source and its sustainability | Proponent<br><br>Contractor | 250,000 annually | Presence of MOWASCO water lines<br>Metering of water |

*Table 4 Operational Phase Environment Management Plan*

| Environment Aspect | Mitigation Measures | Responsibility | Cost (Kes) | Indicators Of Success |
|---|---|---|---|---|
| Traffic | 1. Provide adequate parking facilities within the project site<br>2. The timing of the truck arrivals and departures will largely be outside of the commuter peak periods<br>3. During the demolition and construction stages, all trucks will enter the construction site and not occupy the nearby roads with a traffic control plan<br>4. Warning signs will be placed to advise pedestrians and manage their safety when walking across the construction driveways.<br>5. During activity periods of high traffic volume (such as demolition, excavation and concrete pours), pedestrians will be guided walking across the construction driveways exit by traffic controllers.<br>6. The use of public transport and carpooling will be actively encouraged.<br>7. Vehicle access to neighboring properties will be retained.<br>8. No machinery or material will be stored on the footpath or verges or on public areas.<br>9. All materials handling will be done on site. There will be no need to establish construction zones on the Moyen drive in the Nyali Greenwood area since the public use the road to access the beach | Contractor/Proponent<br>Residents | Routine operation procedure | Presence of ample parking in the premises |
| Solid Waste Generation and Management | 10. Regular inspection and maintenance of the waste disposal systems during operation phase | Proponent<br>Estate Managers | 70,000 monthly | Presence of NEMA registered waste |

| Environment Aspect | Mitigation Measures | Responsibility | Cost (Kes) | Indicators Of Success |
|---|---|---|---|---|
| | 11. Establish a collective waste disposal and management system<br>12. Provide waste disposal bins to each house well protected from adverse weather and animals. | | | management companies<br>Presence of waste handling bins<br>Absence of wastes |
| Liquid Waste Generation & Management | 13. Regular inspection and maintenance of the waste disposal systems during the operation phase<br>14. Connection to Sewer system/septic tank/ bio digester | Proponent<br><br>Estate Managers | 400,000 monthly | Effective WWTP<br><br>Sludge disposal records<br>Register of licence sludge handler |
| Increased loading on Infrastructure services | 15. Have paved local access road and walkway system<br>16. Encourage rainwater harvesting<br>17. Provision of increased water storage capacity<br>18. Provide adequate storm water drainage system | Contractor<br><br>Proponent<br><br>Estate Managers | Contract cost | Absence of run-off<br>Presence of good roads<br>Pavements and drainage channels |
| Community wellbeing | 19. Increased Housing stock in the area and Kenya<br>20. Increased economic activities | Contractor | | |

| Environment Aspect | Mitigation Measures | Responsibility | Cost (Kes) | Indicators Of Success |
|---|---|---|---|---|
| | 21. Employment generation, income earnings and housing capital stock formation | Proponent Neighbourhood associations Estate Managers | | |
| Storm Water impacts | 22. Provide roof gutters to collect and direct roof water to drains<br>23. Construct drains to standard specifications<br>24. Develop a storm water drainage system and linkage to natural drains | Proponent<br>Contractor | 340,000 | Absence of Flooding and dampness in the building |
| Disruption of existing natural environment and modification of micro-climate | 25. Development restricted to follow zoning policy/approved density – building line, plot coverage and plot ratio.<br>26. Careful layout and orientation of buildings to respect wind and sun direction.<br>27. Adequate provision of green and open space planted with grass, shrub and tree cover.<br>28. Minimum use of reflective building material and finishes for roof, wall and pavement. | Mombasa County Governmer<br>Project team (Contractor<br>Proponent, Architect Or Lead Consultant | 50,000 | Proper orientation<br>Planted trees/Landscaping<br>Adherence to building master plan |
| Insecurity | 29. Ensure secure perimeter wall where applicable<br>30. Have a single entry point that is manned 24 hours | Contractor, Proponent Neighbourhood associations | | Presence of perimeter wall |

*Table 5 Conceptual Decommissioning Plan*

| Environmental Concern | Mitigation Measures | Responsibility | Cost (Kes) | Indicators |
|---|---|---|---|---|
| Building Safety | 1. Assess the condition of buildings to ascertain usefulness | Engineer/Proponent | 600,000 | Engineer and Tests on the building |
| Land and Building use | 2. Ascertain the Planning development policy | Local Authority<br>Physical Planner | 650,000 | Consultants present |
| Accidents/Injuries | 3. Securing the Site by fencing off | Contractor/Proponent | 500,000 | Presence of perimeter fence |
| Undisconnected Utilities | 4. Ensure disconnection of all services<br>5. Remove all surface and underground cables & wiring | Contractor | 600,000 | Absence of cabling |
| Solid Waste Generation (demolition waste) | 6. Ensure waste materials are disposed of on Council and NEMA approved sites<br>7. Ensure re-use of materials that can be re-used<br>8. Use of the 3rs – Reduce, Re-use, Re-cycle | Proponent/Contractor | 200,000 | Absence of Debris |
| Noise and Vibration | 9. Deploy adequately of serviced equipment<br>10. Switch off engines not in use<br>11. Demolition work to be confined to between 8am to 5pm<br>12. Ensure use of earmuffs by workers | Proponent/Contractor | 80,000 | Lack of complaints from the neighbours |

# 9 CONCLUSION & RECOMMENDATIONS

## 9.1 Conclusion

The proposed project is representing a significant change in land use density. This brings with it attendant challenges of providing infrastructure to support the increased density. Water and wastewater infrastructure have adequately been planned for. Access to the project site will require monitoring and engagement with the county planning authorities to ensure alterative access & exit routes to the proposed project site.

## 9.2 Recommendations

While the project is in alignment to the country's development framework. To increase the social acceptability of the project the following proposals are advanced:

1. Plan the project so that construction of housing units take the shortest time possible;
2. Mobilisation of building materials to be done in predictable manner to reduce nuisance & congestion on the access road;
3. All construction works to be limited to daylight hour only;
4. Ensure that worker's occupational health and safety standards are maintained through capacity building, proper training, providing protective clothing and equipment.
5. Annual environmental audits should be carried out on the project in order to ensure compliance of the project with the mitigation measures outlined in the Environmental Management Plan (EMP),
6. All activities concerning construction and maintenance such as, work execution and site inspection shall be strictly monitored by an engineer or a designated official. Engineers and/or designated official shall be trained and experienced enough to judge the appropriateness of the work executed in order to carry out the monitoring properly.
7. Upon completion and occupation, the tenants should engage services of waste handling companies registered by NEMA in compliance with Environment Management and Coordination (Solid Waste) Regulations 2006.

# 10 REFERENCES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# 11 APPENDICES

Annex 1 Copy of Titles for the project site
Annex 2 Certificate of Incorporation & PIN of proponent
Annex 3 EIA/EA practicing licences of Experts
Annex 4 ESIA terms of reference approval letter
Annex 5 PPA 2 Form & Approved drawings
Annex 6 Hydrogeological report
Annex 7 Baseline Air & Noise survey reports
Annex 8 Questionnaire responses and schedule of neighbours contacted
Annex 9 Waste water treatment plant drawings & design calculations

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