ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT STUDY REPORT

FOR

THE PROPOSED AFFORDABLE HOUSING UNITS AT MZIZIMA ESTATE IN MOMBASA COUNTY ON **LR NO. MOMBASA/BLOCK X/ 312**.

Proponent	Firm of Expert
JABAVU VILLAGE LTD P.O. BOX 47215-00100 NAIROBI	FRIN PLAZA, OLD MURANGA ROAD, P.O. BOX 235-01000 THIKA-KENYA

NOVEMBER 2021

CERTIFICATION

This Environmental and Social Impact Assessment Study Report has been prepared by Frinconsult Limited a Firm of Expert (**NEMA Reg. No. 1755**). The report has been done with reasonable skills, care and diligence in accordance with the Environmental Management and Co-ordination Act, 1999 (Amended 2015) and the Environmental Impact Assessment and Audit Regulations, 2003.

We certify that the particulars given in this report are correct to the best of our knowledge.

FIRM OF EXPERTS

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For Frinconsult Limited

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For Jabavu Village Ltd.

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Fatma Awale

Signed: _____ **Date:** _____

For Jabavu Village Ltd.

PROJECT DETAILS

PROJECT TITLE

Environmental and Social Impact Assessment Study Report for Proposed Affordable Housing Units at Mzizima Estate in Mombasa County on **LR No. Mombasa/Block X/ 312**.

PROJECT LOCATION

The proposed project is located in Mombasa town along Sheikh Abdullas F. Road in Tononoka Location, Tononoka Ward, Mvita Sub- County, Mvita Constituency, Mombasa County.

PROJECT PROPONENT

JABAVU VILLAGE LTD

P.O. Box 47215-00100

NAIROBI.

PROJECT VALUE

Kshs 7,365,916,000

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ABBREVIATIONS, ACRONYMS AND SYMBOLS

BS	British Standards
Cap	Chapter
CCTV	closed-circuit television
COVID-19	Corona Virus Disease 2019
CPP	Consultation and Public Participation
dBA	Decibels (Acoustic)
EIA	Environmental Impact Assessment
EA	Environmental Audit
EMCA	Environmental Management and Coordination Act
ESIA	Environmental and Social Impact Assessment
ESMP	Environmental and Social Management Plan
GDP	Gross Domestic Product
GOK	Government of Kenya
IFC	International Finance Corporation
LN	Legal Notice
NEMA	National Environment Management Authority
NHC	National House Corporation
NHIF	National Hospital Insurance Fund
PPE	Personal Protective Equipment
PSV	Public Service Vehicle
SGR	Standard Gauge Railway
TOR	Terms of Reference
WRA	Water Resources Authority
WHO	World Health Organisation

EXECUTIVE SUMMARY

Jabavu Village Ltd is proposing to develop an affordable residential complex at Mzizima Estate in Mombasa Town, along Sheikh Abdullas F. Road in Tononoka Ward, Mvita Sub-County, Mombasa County, in collaboration with the County Government of Mombasa. The project is located on land registration number Mombasa/Block X/ 312 measuring 2.324Ha which is leased to Mzizima LLP by County Government of Mombasa.

The Environmental (Impact Assessment and Audit) Regulations of June 2003 stipulate that all proposed facilities and utilities listed in the Second Schedule of the Environmental Management and Co-ordination Act (EMCA), 1999 (amended 2015) must undertake an Environmental and Social Impact Assessment pursuant to Section 58 of the Act and the report submitted to the National Environment Management Authority (NEMA). The proposed housing project is listed under the Second Schedule (s.58 (2). Jabavu Village Ltd is committed to conducting business in an environmentally responsible manner and is integrating its environmental policies within the existing business strategy and operations.

In pursuant to The Environmental (Impact Assessment and Audit) Regulations (June 2003) and in fulfilling the statutory requirements and Jabavu Village Limited's internal environmental policy, Frinconsult Limited was commissioned to undertake Environmental and Social Impact Assessment (ESIA) study report for the proposed affordable residential housing complex at Mzizima Estate located in Mombasa County.

The proposed project will involve construction of an Affordable Residential Complex of a three 16 storey towers. The ground level is designated for Parking and Commercial facilities and the upper floors comprise of 500 one bedroom, 600 two bedroom and 600 three-bedroom affordable apartments. The project design also comprises of Recreational area, Rooftop Astro Football Pitches, Garden Spaces, Ocean Views and Commercial Facilities (Chemist, Shops, Football Pitches, Gym, Nursery School). The design has also provided for a mini-water treatment plant while a perimeter wall will be erected around the estate.

The assessment was carried out at different levels including desk study to collect baseline information, onsite assessments/scoping to identify the extent of potential environmental impacts of the project, public consultation to identify the concerns of the local community in the project site, data analysis and evaluation and the collation of the information gathered to prepare this ESIA report.

The main purpose of this ESIA was to ensure adequate identification of potentially negative environmental impacts of the proposed project, propose workable mitigation measures and formulate an environmental monitoring and management plan articulating anticipated impacts.

The overall objective of this study on the other hand is to ensure that all the negative environmental concerns are integrated in the development proposals and the proposed project activities in order to contribute to the sustainable development of the proposed project area.

Specifically, the objectives are: -

- To highlight and integrate environmental concerns into the project planning, management processes and provide guidelines for environmentally sustainable development.
- Identify actual or potential problems that may affect natural resources, the public and the environment.
- Identify and recommend policy and legislative approaches to guide in the prevention, control and mitigation of adverse impacts on the environment.
- Propose guidelines for the integration of standards of environmental, health and safety protection into planning, development implementation and management of the project.
- To find out impacts associated with implementation of the proposed Mzizima affordable housing project and suggest mitigation measures for the negative impacts.
- To determine the compatibility of the proposed project with the neighboring land uses and evaluate local environmental conditions.
- To Identify and contact the project stakeholders to seek their views on the proposed project.
- To assess the relative importance of the impacts of alternative plans, design and sites
- To generate baseline data for monitoring and evaluation of how well the proposed mitigation measures are being implemented during the project operation period
- To develop an Environmental and Social Management Plan (ESMP) to guide in decision making and for future auditing
- To develop an ESIA report in conformity with the EMCA 1999 (amended 2015), Environmental (Impact Assessment and Audit) Regulations 2003 and and legislation under it;
- To Submit the final ESIA report to NEMA and subsequent follow up to obtain relevant authorization/permit in order for the project to commence.

The scope of the Environmental and Social Impact Assessment will include but not necessarily be limited to:

1. Project Objectives.
2. Complete description of the existing site proposed for development.
3. Significant environmental issues of concern through the presentation of baseline data, which should include social, cultural and heritage considerations.
4. Assess public perception of the proposed development.
5. Policies, Legislation and Regulations relevant to the project.
6. Likely impacts of the development on the described environment, including direct, indirect and cumulative impacts, and their relative importance to the design of the development's facilities.
7. Mitigation action to be taken to minimize predicted adverse impacts if necessary and quantify associated costs.
8. Monitoring plan that should ensure that the mitigation plan is adhered to.

The ESIA process was carried out using a combination of methods including physical examination; site assessments; laboratory sampling; literature reviews; public meetings and informal interviews/ questionnaires administration with stakeholders 'e.g., immediate neighbors and business persons. The key approach utilized included the following:

i. Environmental screening of the proposed project in line with EMCA Cap 387 and EIA/EA Regulations, we established that the residential development falls under High-Risk Projects (Urban development including establishment of new housing estate developments exceeding one hundred housing units).
ii. A site reconnaissance and visual survey to determine the baseline information of the project area and development of the Terms of Reference for approval by NEMA, the ToR were approved on 22nd October, 2021.
iii. Analysis of the project documents such as the architectural plans with the proponent and project team.
iv. Assessment of occupational health and safety issues during the implementation of the proposed project.
v. Seeking public views through public meetings, direct Key Informant Interviews and administering of Household questionnaires.
vi. Proposal of feasible mitigation measures to minimize anticipated negative impacts during the project cycle.
vii. Preparation and submission of the ESIA Study report to NEMA.

The potential negative environmental impacts of the proposed project and possible mitigation measures are summarized below:

Table 1: Summary of project Impacts and the mitigation measures

Environmental/Social Impact	Proposed Mitigation Measures
Tenants' relocation	– Agreed relocation package should target tenants currently resident at Mzizima estate – Implement a robust grievance redress mechanism
Soil erosion	– Ensure management of excavation activities – Providing soil erosion control structures on the steeper areas of the site & controlling activities during the rainy season. – Compact loose soils to minimize wind erosion
Air pollution	– Regular sprinkling of water on dusty areas and access roads – Careful screening of construction site to contain and arrest construction related dust. – Enclosing, covering and watering of exposed stockpiles e.g. sand – Ensure construction machinery and equipment are well maintained to reduce exhaust gas emission

Environmental/Social Impact	Proposed Mitigation Measures
	– Drivers of construction including bulldozers, earth-movers etc. will be under strict instructions to minimize unnecessary trips and minimize idling of engines. – Using efficient machines with low emission technologies for the ones that burn fossil fuels. – Comply with EMCA (Air quality) Regulations 2014
Noise and excessive vibrations	– Construction activities to be restricted to daytime i.e. 8am to 6pm – Use of suppressors or noise shields on noisy equipment for instance corrugated iron sheet structures – Sensitize operators of construction machinery on effects of noise – Trucks used at construction site shall be routed away from noise sensitive areas where feasible. – Maintain plant equipment to suppress frictional noise – Workers in the vicinity or involved in high-level noise to wear PPE – Minimize vibrations by using hi-tech equipment that produces lesser vibrations during excavation. – Comply with EMCA (Noise and excessive vibration pollution control) Regulations 2009
Oil pollution	– Proper storage, handling and disposal of new / used oil and related wastes – Maintain construction machinery and equipment to avoid leaks – Maintenance of construction vehicles to be carried out in the contractor's yard (off the site)
Storm water drainage	– Proper installation of drainage structures/facility – Ensure efficiency of drainage structures through proper design and maintenance
Solid waste and liquid waste	– Segregate the waste at the site – Ensure proper disposal of construction waste to approved sites – Engage services of a registered NEMA waste handler to dispose the waste – Covering of the trucks during transportation, all the building materials and waste – Sensitize workers on the reuse of materials where appropriate. – Provision of adequate and appropriate sanitary facilities for the construction workers – Proper decommissioning of all the sanitary facilities

Environmental/Social Impact	Proposed Mitigation Measures
	– Comply with EMCA (Waste management) Regulations 2006
Increased water demand	– Drill a borehole to supplement the county supply. – Employ services of waters vendors to supplement water supply – Sensitize occupants and workers to reduce water wastage e.g., by reusing where applicable – Install water efficient appliances
Traffic congestion	– Employ traffic marshals to control traffic in and out of site – Ferry building materials during off-peak hours – Provide traffic control signs at the site/entrance to notify motorists and general public about the development – Enforce speed limits for construction vehicles especially along the roads leading to the site – Ensure that the vehicles comply with axle load limits – Employ well trained and experienced drivers
Health and safety of workers	– Construction work shall be limited to daytime only – Workers to be adequately insured against accidents. – All workers will be sensitized before construction begins on how to control accidents related to construction. – Keep record of the public emergency service telephone numbers including: Police, Fire brigade, Ambulance at strategic points – Provide first aid kits at strategic places in the site – All workers to wear protective gear during construction e.g. helmets. – A comprehensive contingency plan shall be prepared before construction begins on accident response.
Insecurity	– Provide security guards to monitor movement in and out of the site during construction period for both day and night – Install security lights at the site to enhance security.
Fire	– Installation of firefighting facilities – Develop and adapt an (fire) emergency response plan for the project – Ensure that all firefighting equipment are regularly maintained and serviced. – Provide fire hazard signs such as 'No Smoking' sign, direction to exit in case of any fire incidence and emergency numbers.
Conflict with neighbours	– Establish a grievance redress mechanism that is easy to access for stakeholders to report their concerns as they happen

Environmental/Social Impact	Proposed Mitigation Measures
	– Continuous communication between the developers and the stakeholders on the progress of the project and its effects
Emergence and Spread of Social Vices	– Conduct periodic sensitization forums for employees on ethics, morals, general good behaviour and the need for the project to co-exist with the neighbours. – Ensure enforcement of relevant legal policy on sexual harassment and abuse of office. – It is recommended that the contractor employs workers from the immediate area where possible to avoid social conflict – Offer awareness, guidance and counselling on HIV/AIDS and other STDs to employees; – Provide safety tools such as condoms to employees
Covid -19 Prevention and Mitigation	– The Workplace should develop and implement action plans to prevent and mitigate COVID-19. – Carry out workplace risk assessments addressing Covid-19. – Observe preventive measures at the workplace including thermal screening of workers, provision and sensitization of the need to wear facemasks, regular hand washing with soap or sanitizing and social distancing as per Ministry of Health and WHO Protocols.
Operation Phase	
Liquid waste	– Regular inspection and maintenance of the internal sewer system. – Expansion of the trunk sewer system to accommodate the increasing load from the development
Solid waste generation	– Encourage segregation of waste (organic and inorganic) – Provide for clearly marked dustbins to serve the specified use. – Ensure that wastes generated are efficiently managed through recycling, reuse and proper disposal procedures. – A private NEMA licensed company to be contracted to handle solid waste and dispose it of in designated dumpsites. – Routine cleaning of the waste collection points/cubicles
Air pollution	– Regular cleaning of dust prone areas such as driveways and corridors – Comply with EMCA (Air Quality regulations) 2014
Noise and vibration Pollution	– Do annual noise monitoring, to adhere to acceptable standards – Sensitize occupants on minimal permissible noise levels

Environmental/Social Impact	Proposed Mitigation Measures
	– Comply with EMCA (Noise and excessive vibration pollution control) Regulations 2009
Storm water drainage	– Proper maintenance of drainage structures – Inspection and maintenance of water harvesting facilities – Collection of excess storm water into underground tanks for reuse e.g., car washing
Increased water use	– Use water efficient appliances and fittings – Reuse of harvested rain-water e.g. cleaning pavements and cars – Place notices at water taps e.g. 'TURN OFF TAP AFTER USE – Provision of roof/ underground tanks for water storage – Regular maintenance of all water components
Increased energy use	– Switch off electrical appliances when not in use. – Maintenance of electrical components. – Use energy efficient electrical appliances and fixtures such as bulbs – Use of solar energy as alternative energy supply for the project
Fire	– Install firefighting equipment – Sensitize the occupants on fire risks i.e. conduct regular fire drills – Provide escape routes/emergency exits in the buildings – Adapt effective emergency response plan – Inspect firefighting equipment regularly – Provide emergency numbers at strategic points
Insecurity	– Engage services of security guards to man the premises day and night – Installation of CCTV cameras at strategic points for monitoring and enhancing the security of the property during operation phase. – Placing alarms around the project and establishing emergency preparedness and response procedures – Place hotline numbers on strategic places – Sensitize occupants on security precautions – Encourage community policing and formation of Nyumba Kumi communities
Traffic	– Provide traffic signs to reduce risk of accidents – Provision of adequate on-site parking bays – Regular maintenance of the parking bays – Provide separate entry and exit points for motorized and nonmotorized traffic to ease traffic flow and avoid collisions.

In conclusion, the majority of the proposed project's possible environmental consequences are low to medium risk, and can be efficiently and simply controlled without causing harm to the surrounding environment. According to the ESIA study's Cost and Benefit Analysis, the benefits considerably outweigh the expenses and negative consequences. Many of the detrimental effects that have been documented are of a short to medium term nature. The socio-economic benefits associated with the project are long term and rated high, it is therefore proposed that the project proponent should be permitted to continue with the project implementation subject to commitments to the mitigation measures proposed and adherence to all necessary approvals from different Authorities. The project proponent shall continue to work closely with the environmental consultants, NEMA, local residents and County officials to enhance the protection of the environment and to ensure that issues that the environmental concerns might arise are all addressed and integrated into the project at every stage of successive implementation. This will ensure that the planned residential project coexists with the environment during the building, operation, and occupation phases, and will have an impact on the decommissioning phase. The study assessed the expected impacts and generated an ESMP that the proponent should follow to ensure environmental protection, worker health and safety, and the general public's safety. As a result, we urge that the proponent be awarded an ESIA license so that the proposed residential project can be implemented.

1 INTRODUCTION

1.1 INTRODUCTION

Jabavu Village Limited is the real estate investment arm of the Hass Petroleum Group, one of Africa's leading oil and marketing companies. The Hass Petroleum Group's flagship business is in the selling and distribution of petroleum products with its headquarters in Dubai and operates in nine other countries across Eastern Africa, the Horn of Africa and the Great Lakes region. The Hass Group has diversified investments in transport and logistics, bulk storage terminal operations and has a sizeable investment in real estate assets portfolio.

The 'Big Four Agenda' are President Uhuru Kenyatta's legacy projects that he has committed to execute by the time he exits office in 2022. The projects directly relate to Kenya's Vision 2030. The President has promised to dedicate energy, time and resources to the ensure the success of these projects. The four pillars of the agenda are food security, affordable housing, universal health care, manufacturing and Job creation. Affordable housing implies the development of adequate, standardized and well-spaced houses with continuous supply of clean water and electricity. The houses are to be located in decent places and be readily available to both the lower, middle and upper class in the society.

Mzizima Project Concept is a proposal by Mombasa County to build affordable residential housing units in collaboration with Jabavu Village Limited under Public Private partnership framework. Mzizima Estate redevelopment project involves the relocation of existing tenants, demolition of old housing structures and construction of a new housing units in the Mzizima estate for outright sale to the general public under the affordable housing government scheme. The development will also revamp social amenities within the estate to support the population that will be resident there. The project sits on a 41,700m^2 (10.3) acres of land. The residential complex will solely sit on 4.8 acres of the land.

Under section 58 (1) of Environmental Management and Coordination Act (EMCA), Number 8 of 1999 (Amendments, 2015) and Environmental Impact Assessment and Audit Regulations of June, 2003; an ESIA study is necessary and a fully detailed Study Report is to be compiled and submitted to NEMA for approval before commencing the proposed development. The proposed Residential Development Project is stipulated under the Second Schedule (s.58 (2), (c): 2 Urban Development. The Terms of Reference for the ESIA Study were prepared and approved on 22nd October 2021 by NEMA so that an Environmental and Social Impact Assessment for the proposed affordable residential development project could be undertaken.

In pursuant to The Environmental (Impact Assessment and Audit) Regulations (June 2003) and in fulfilling the statutory requirements and Jabavu Village Limited's internal environmental policy, Frinconsult Limited was commissioned to undertake Environmental and Social Impact Assessment (ESIA) study for the proposed development at Mzizima Estate located in Mombasa Island, Mombasa County and submit the ESIA report to NEMA. The assessment and public participation were conducted between 17th November 2021 and 19th November 2021.

1.2 Objectives

1.2.1 Project's Objectives

The objectives of the affordable housing project at Mzizima estate are:

- To develop affordable housing units;
- Provide adequate, functional, safe and pleasant living space for Mzizima area residents;
- Optimum utilization of land; and
- Increase the taxable value of property in the project area.

1.2.2 ESIA Objectives

The overall objective of ESIA is to ensure that environmental concerns are integrated in the proposed project in order to contribute to sustainable development. The core objectives of undertaking the ESIA are to:

- To describe the scope of the proposed project and associated works;
- To establish the baseline environmental status of the project site;
- To identify and assess the potential environmental and social impacts of the proposed residential development project;
- Have a series of dialogues with the identified stakeholders, local residents/households living around the proposed project site as well as other stakeholders of the project to obtain their views;
- To identify and quantify pollution sources and determine the significance of impacts on sensitive receptors;
- To predict and evaluate environmental and social impacts expected during the construction and operational phases if any;
- To develop mitigation measures so as to minimize pollution, environmental disturbance and nuisance during construction and functional phases;
- To design and specify the monitoring schedule necessary to ensure the implementation and the effectiveness of the mitigation measures adopted;
- Propose an Environmental and Social Management Plan (ESMP) to guide the implementation of mitigatory measures and monitoring throughout the implementation of the project and contribute to the overall process of project monitoring and auditing. This will enable the project developer to take timely action to prevent negative environmental and social impacts before they become irreversible;
- To prepare an ESIA Study Report compliant with EMCA, Cap 387 and in compliance with the acceptable format as stipulated in the Environmental (Impact Assessment and Audit) Regulations, 2003; properly addressing all the items specified in the Terms of Reference (ToR) approved by NEMA and detailing findings and recommendations from the study.
- Submission of the final EIA report to NEMA and subsequent follow up to obtain relevant authorization/permit in order for the project to commence.

1.3 Justification of the project

Low-income households in cities of Africa and other developing regions are faced with an acute housing affordability challenge. In these cities, housing has become unavailable and unaffordable partly because housing markets have become distorted and dysfunctional working against the interests of the urban poor. Public-driven attempts to provide decent housing to slum residents in developing countries have either failed or achieved minimal output when compared to the growing slum population. This has been attributed mainly to shortage of public funds. The proposed project is a brilliant Public Private Partnership joint venture between the County Government and the developer to bridge the housing problem in Mombasa. Due to financial challenges the County Government has engaged Jabavu Village Limited to redevelop Mzizima Estate and then sell the houses at an affordable rate.

1.4 Terms of Reference of the ESIA

The general Terms of Reference (ToRs) for this study was to conduct an ESIA for the Proposed Affordable Housing Units with associated civil works at Mzizima Estate, Mombasa County. This is in accordance with Environmental (Impact Assessment and Audit) regulations, 2003 and the Environmental Management and Coordination Act of 1999 (Amended 2015). Specifically, this assessment was commissioned under the following Terms of Reference;

1. The ecological effects. This covered: -
    - Provision of background and baseline information
    - The effects of the development on biodiversity diversity both within and outside the project development site i.e., effects on flora and fauna, habitat quality and issue of habitat disruption.
    - Surface water run-off, containment and flood control
    - Sustainable use of resources and ecosystem maintenance and enhancement
2. Social implications of the development within the locality and nationally. These included:
    - Economic implications of the development, employment and livelihoods
    - Security – threats, risks and enhancement
    - Public health implications.
    - Social cohesion, culture, emigration and communication.
    - Demand and development of infrastructure and social amenities.
3. Determination of the effects on landscape and land use
    - Assessment of the effects on scenery modification
    - Analyzation of the compatibility of the development with the surrounding land uses.
4. Effects of the development on current demands on water resource as well as possible implications on surface and underground water qualities and quantities.
5. Proposition of mitigation measures to be taken during and after implementation of the project; and development of an Environmental and Social Management Plan with mechanisms for monitoring and evaluating the compliance and environmental performance.

1.5 Environmental and Social Impact Assessment Study Methodology

1.5.1 Environmental Screening

The projects to be subjected to ESIA are specified in the Second Schedule of EMCA (1999). As part of the screening process, the study was guided by Legal Notice No. 31 issued on 30th April 2019 which amended the second schedule of the Environmental Management and Coordination Act No. 8 of 1999. The amendment classified projects into three categories, Low risk, Medium risk, and High-risk projects. The proposed Residential Development Project is stipulated under the Second Schedule (s.58 (2), (c): 2 Urban Development. Some of the information considered in the screening process include, population densities, existing land uses, vegetation, topography, soil types, ecological settings, and public safety. Other references include the IFC Performance Standards on Environmental and Social Sustainability.

1.5.2 Environmental Scoping

In scoping, focus was on environmental impacts of great concern. Environmental issues were categorized into physical, natural/ecological, and social, economic and cultural aspects. Impacts were also classified as short term and/or long-term impacts.

1.5.3 Desktop Study

This involved review of project documents, architectural drawings, site layouts, past ESIAs, relevant policy, legal and institutional frameworks. Documents containing climatic, demographic, and hydrological data on Mombasa County were used to understand the project area. The client provided relevant documents for this study.

1.5.4 Site Visits and Public Participation

Field visits were carried out for site acquaintance and understanding the project area, identifying constraints, developing impressions on topography, soils, existing developments, practicality of relocation of tenants and infrastructure in the proposed area. The initial visit also marked the major inception meeting with National Government and County officials to pave way for further indulgence of the residents in subsequent meetings and consultations. Several photos of the project site were taken for inclusion in this report.

The study also sought public opinion/views through Consultation and Public Participation (CPP) exercises. Three public meetings were held with the Stakeholders during public baraza sessions conducted at Tononoka Social Hall in Mombasa County on 17th, 18th & 19th November 2021. During the meeting, members of the public made submissions on project priorities that the proponent would consider. Questionnaires were administered to the public and interviews held with neighboring community. The exercise generated primary data on the socio-economic impacts on the area; anticipated impacts and suitable solutions and recommendations. More details are given elsewhere in the report as well as in the appendices section.

1.5.5 Data analysis and reporting

All the data and information collected during the preparation process of the project report was processed in the consultants' office. A preliminary report was prepared and submitted to the client for review and comments.

Upon receipt of comments a final report was prepared and submitted to the client and ten copies to NEMA as required by the Environmental (Impact Assessment and Audit), Regulations of June 2003. These regulations require that the ESIA report should contain descriptions of the following where possible:

Chapter One; The project background including the objectives of the project;

Chapter Two; A description of the project including: project design, activities, technology, procedures and processes, materials to be used, products, by-products and waste generated during the project construction, operation and de-commissioning phases;

Chapter Three; Description of the recipient environment;

Chapter Four; A description of the national environment legislative and regulatory framework, baseline information and any other relevant information related to the project;

Chapter Five; Alternative locations, technologies or processes available; analysis of alternatives, and reasons for preferring the proposed design options;

Chapter Six; Public Consultation and Participation as well as measures to prevent health hazards and to ensure security in the working environment for the employees, the project area residents and for the management of emergencies;

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

Chapter Eight; An Environmental and Social Management Plan matrix outlaying the activities, associated impacts, mitigation measures, monitoring indicators, implementation timeframes, responsibilities, and cost;

Chapter Nine; Conclusions, recommendations for the success of the project;

Any other information that NEMA may require.

1.6 Estimated Project Cost

The estimated project cost is Kenya Shillings Seven Billion, Three Hundred & Sixty Five Million, Nine Hundred and Sixteen Thousand (Kshs 7,365,916,000).

1.7 Assessment team

As required by Environmental Management and Coordination Act (EMCA) sections 58 and 68 and Environmental Impact Assessment and Audit Regulations of 2003; this Environmental and Social Impact Assessment was conducted by a NEMA-registered 'Firm of Experts' - Frinconsult Ltd. NEMA Reg. No. 1755. The team comprises environmental scientists with experience in carrying out ESIA in the construction sector, and is conversant with the legislative and regulatory requirements pertinent to this assignment.

2 PROJECT DESCRIPTION

2.1 Project Location and Size

Mzizima Estate is set on the Northern Side of Mombasa Island overlooking Tudor Creek with stunning view of Indian Ocean and Nyali Bridge. The project is located along Sheikh Abdullas F. Road on land registration number Mombasa/Block X/ 312 measuring 2.324Ha which is leased to Mzizima LLP by County Government of Mombasa. **Appendix 1** shows copies titles for the project area. The geographical coordinates of the project site are 4^0 2' 48.8" S, 39^0 40' 14.1" E.

Plate 1: Site Location Satellite Image (*Source: Google Map*)

2.2 Project Design and Technology

The proposed project will involve construction of an Affordable Residential Complex of a three 16 storey towers. The ground level is designated for Parking and Commercial facilities and the upper floors comprise of 1-bedroom, 2-bedroom and 3-bedroom affordable apartments. The project design also comprises of Recreational area, Rooftop Astro Football Pitches, Garden Spaces, Ocean Views and Commercial Facilities (Chemist, Shops, Football Pitches, Gym, Nursery School). The design has also provided for a mini-water treatment plant while a perimeter wall will be erected around the estate. The total breakdown of the apartments is as follows:

Table 2: Number of Housing Units

Apartment Type	Units	Floor space (M^2)	Percentage (%)
1 Bedroom	500	40	29.4
2 Bedroom	600	60	35.3
3 Bedroom	600	74	35.3
Total	**1700**		100

The technology used in the design and construction of the building will be based on international standards, which have been customized by various housing complexes in Kenya.

Plate 2: Proposed project master plan

2.3 The Project Specifications and Components

2.3.1 One Bedroom Housing Unit

The proposed one-bedroom unit has a total area of 40m^2. Bedroom size can comfortably accommodate a bed and wardrobes. The living room is spacious enough to accommodate a sofa set and coffee table while the section next to the kitchen serves as the dining area. The kitchen is an open space and has been provided with a service area (Store). The kitchen has been designed with a sink, a worktop area and kitchen cabinets. A common washroom has been provided that serves as a bathroom and a toilet. All the rooms are well ventilated as the design allows for air flow through the windows and main door. The windows and door also allow for natural lighting during the day. Below is the layout of the proposed one-bedroom unit:

Plate 3: Layout of one-bedroom unit

2.3.2 Two Bedroom Housing Unit

The proposed two-bedroom unit has a total area of 60m^2. It has two identical bedrooms which can comfortably accommodate a bed and wardrobes. The living room is spacious enough to accommodate a sofa set and coffee table while the section next to the kitchen serves as the dining area. The kitchen is an open space and has been provided with a service area (Store). The kitchen has been designed with a sink, a worktop area and kitchen cabinets. A common washroom has been provided that serves as a bathroom and a toilet. All the

rooms are well ventilated as the design allows for air flow through the windows and main door. The windows and door also allow for natural lighting during the day. Below is the layout of the proposed two-bedroom unit:

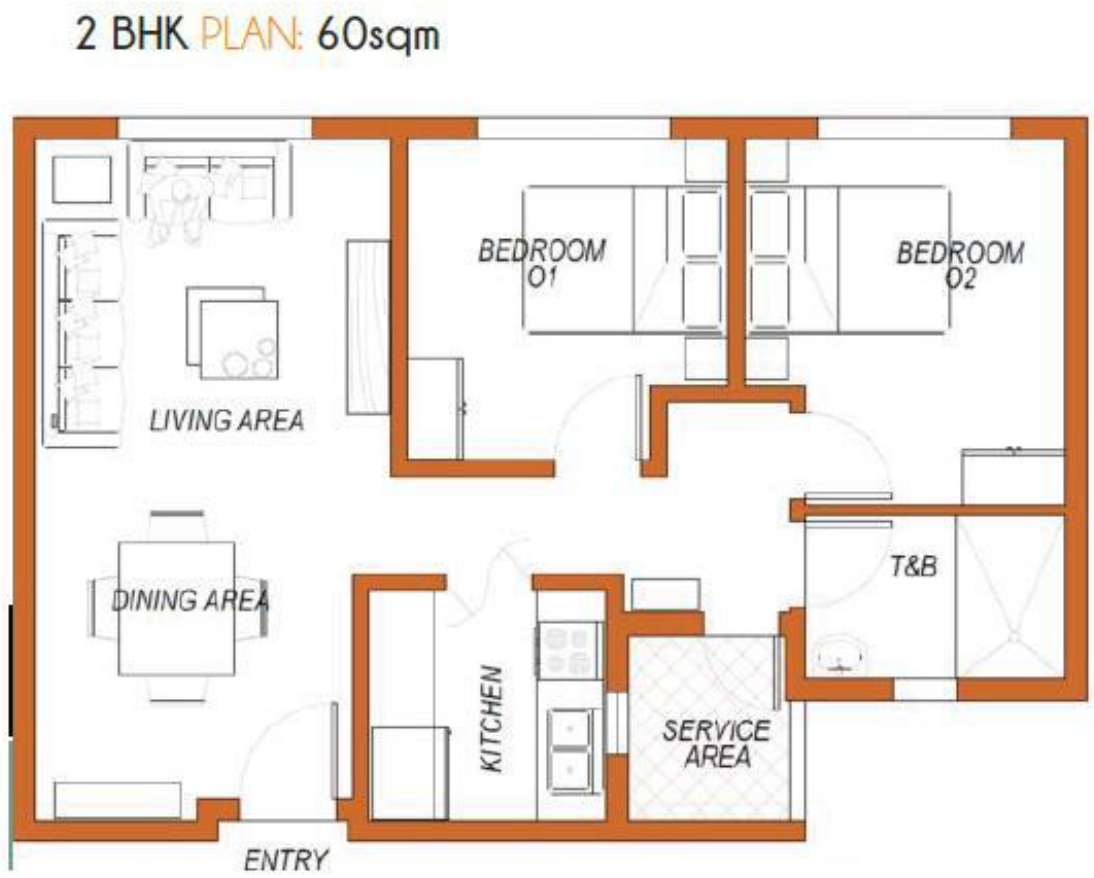

Plate 4: Layout of two-bedroom unit

2.3.3 Three Bedroom Housing Unit

The proposed three-bedroom unit has a total area of 74m^2. It is designed with a master en-suite bedroom and two identical bedrooms. The bedrooms have adequate space can comfortably accommodate a bed and wardrobes. The master en-suite is provided with a washroom with a bathroom and a toilet. The living room is spacious enough to accommodate a sofa set and coffee table. An open area next to the living room and kitchen provide adequate space for a dining area. The kitchen is enclosed and has been provided with a service area (Store). The kitchen has been designed with a sink, a worktop area and kitchen cabinets. A common washroom with a bathroom and a toilet has also been provided. All the rooms are well ventilated as the design allows for air flow through the windows and main door. The windows and door also allow for natural lighting during the day. Below is the layout of the proposed three-bedroom unit:

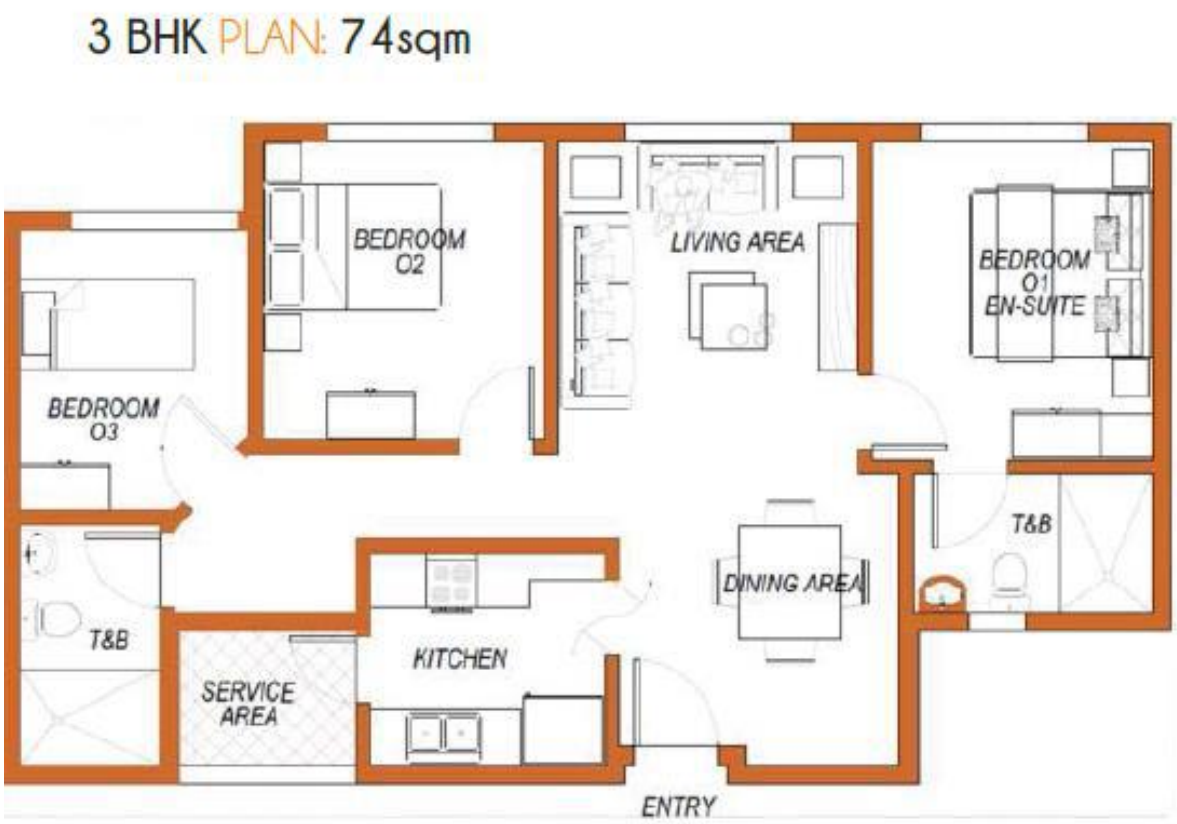

Plate 5: Layout of three-bedroom unit

2.4 Proposed Project Implementation (Construction)

The project will be constructed within a period of 24 months based on applicable building standards of Kenya. These include but not limited to the Building Code and the British Building Standards *BS 8110* and *BS 5950, BS4449, BS4461 etc*. The constructions will as well incorporate environmental guidelines, health and safety measures. The first activities will involve ground preparation. The site vegetation is a few mainly a few trees and grass and thus only minimal site clearing activities will be required.

2.5 Construction Activities and Inputs

2.5.1 Construction Inputs

The project inputs include the following:

- Construction raw materials i.e. sand, cement, stones, crushed rock (gravel/ ballast), ceramic tiles and other ceramic fittings, parquet, clay vent blocks, steel and wooden fixtures and fittings (such as doors windows), glass, steel metals, timber, painting materials among others. All these should be obtained from licensed dealers and especially those that have complied with the environmental management guidelines and policies.
- Construction machines including machinery such as trucks, concrete mixers, and tools and other

relevant construction equipment. These will be used for the transportation of materials and in the construction of the project. Most of the machinery will use petroleum products as the source of energy but electricity is also available.

- A construction labour force of both skilled and non-skilled workers. These will require services such as, water supply and sanitation facilities.
- Large volumes of water for construction purposes. It will be supplied from the County mains as well as mobile bowsers with approval by the relevant departments.
- Power from the mains grid or provided by generators.

2.5.2 Construction activities

The construction stage activities are known to be labor-intensive and will be supplemented by machinery. This phase shall include the following:

1. Establishment of related work and support infrastructures that are significant for the construction work. This would involve the transportation of machinery and deployment of the workers to the construction site.
2. Site Clearance and preparation: This will involve clearing of the site of any vegetation and debris, stripping of top soil for site levelling and securing the project site to restrict access to the site by the public. It will also involve setting up temporary construction offices and storage rooms for construction materials and first aid facilities as well as constructing adequate sanitary facilities for workers.
3. Acquisition and transportation of building materials: The contractor shall source for materials for construction from the various available suppliers. Supply of materials will be a continuous activity throughout the project life since different materials will be needed at different phases of the construction.
4. Excavation and land filling works: Excavation works are carried out to prepare the site for laying of foundation, construction of basement and drainage system.
5. Source of construction materials and equipment. Structural construction of the new site will largely apply ordinary materials that are not expected to have significant impacts on the environment.
6. Infrastructure construction: The project will be constructed based on applicable standards of Kenya and any other standards which may be incorporated. The constructions will as well incorporate environmental guidelines, health and safety measures.
7. Electrical and Mechanical work: Electrical work during construction of the premises will include installation of electrical cabling, gadgets, devices and appliances, lighting apparatus, sockets outlets etc. In addition, there will be other activities involving the use of electricity such as welding and metal cutting. All the electrical works will be carried out by licensed electricians to the satisfaction of the relevant authorities. The mechanical works during the construction stage will include setting up:
    - Plumbing and drainage pipes
    - Soil vent pipes (SVP) provided on doors and windows
    - Storm drainage pipes

- Inspection chamber covers and framing

All works shall be done by qualified technicians under the supervision of the Project Mechanical Engineer and shall follow the set standards.

8. Structural Steel works: Structural steel works will involve steel cutting, welding and fixing on the already constructed formwork before concreting is done.
9. Water Reticulation System: Water supply for the development during construction phase of the project will be from the county mains and water vendors. Other sources could be rain water harvesting through roof gutters installed on site storage and staff accommodation buildings
10. Masonry, Concrete Work and Related Activities: General masonry and related activities include concrete mixing and laying for foundations, beams, columns and floor slabs, erection of building walls, pavement works, construction of drainage systems, plaster finishing and curing of fresh plastered and concrete surfaces.
11. Solid Waste Management: Waste and construction by-products are usually produced on the project site in all construction projects. These include nails, steel re-bar pieces, broken glass, broken masonry blocks and demolition debris, and wood waste. Waste management infrastructure shall be set up including waste receptacles with bulk storage capacity located at convenient points where necessary. Collection, transportation and final disposal of waste will be done by solid waste management (garbage collection) service providers/contractors. The service provider shall be licensed as stipulated on LN No. 121 of 2006. The wastes will be disposed at the county designated landfill site. Reuse and recycling methods will be considered to reduce amount of waste on the site.
12. Sewerage: Wastewater will be managed by a septic tank-soak pit system connected to the sanitary facilities
13. Interior and Exterior Finishes: Finishes will entail plastering to improve the aesthetic value and to ensure the building is structurally strong. Both internal and external finishes will be carried out in accordance to the specifications of the project architect. The ultimate step will be fixing of wall and floors tiles followed by painting of the entire development.

2.8 Project Budget and Duration

The proposed project is estimated to cost Seven Billion, Three Hundred & Sixty Five Million, Nine Hundred and Sixteen Thousand (Kshs 7,365,916,000). The project implementation works is estimated to take 2 years to completion.

3 DESCRIPTION OF THE PROJECT AREA

3.1 Introduction

This section describes the spatial project location, existing climate, water and geological characteristics, biological, socio-economic environment, aesthetics and cultural resources at the proposed project location. The description provides the baseline against which impacts of the project is be determined.

3.2 Location and Size

The proposed project is located along Sheikh Abdullas F. Road in Tononoka Sublocation, Tononoka Location, Island Division, Mvita Subcounty, Mombasa County. The project is located on land registration number Mombasa/Block X/ 312 measuring 2.324Ha which is leased to Mzizima LLP by County Government of Mombasa. **Appendix 1** shows copies titles for the project area. The geographical coordinates of the project are 4^0 2' 53.9" S 39^0 40' 14.1" E, 4^0 2' 48.6" S 39^0 40' 11.4" E, 4^0 2' 44.82" S 39^0 40' 16.9" E and 4^0 2' 44.89" S 39^0 40' 19.09" E.

3.3 Physical Environment

3.3.1 Climate

The project is located within Mombasa County and thus has similar climatic conditions as the County. Mombasa County lies within the coastal strip in the hot tropical region where the climate is influenced by monsoon winds. The rainfall pattern is characterized by two distinct long and short seasons corresponding to changes in the monsoon winds. The long rains occur in April – June with an average of 1,040 mm and correspond to the South Eastern Monsoon winds. The short rains start towards the end of October lasting until December and correspond to the comparatively dry North Eastern Monsoons, averaging 240mm. The annual average rainfall for the county is 640mm.

The annual mean temperature in the county is 27.9^0C with a minimum of 22.7^0C and a maximum of 33.1^0C. The hottest month is February with a maximum average of 33.1^0C while the lowest temperature is in July with a minimum average of 22.7^0C. Average humidity at noon is about 65 per cent.

3.3.2 Physical and Topographic Features

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.

The second category is the hilly areas mainly found within the Western part of the County that is underlain by shells and rises gently from 45m to 132m above sea level. This is characterized by poorly drained clay soils which restrict settlement and infrastructural development. The third category is the Indian Ocean and the shoreline covered with geologically sedimentary rocks of Jurassic to recent age. The topography has evolved as a result of the lowering of the sea level over time leading to severe erosion by the storm water draining into the sea. In addition, the Subsequent rise in sea level led to the submergence of the valleys and the creation of Mombasa Island surrounded by deep natural creeks, ports and harbors such as Kilindini, Tudor, Makupa, and Old Port creeks.

3.3.3 Land use

Land in the County Mombasa County has number of land tenure regimes which include public land, private land and community owned land. Land use zoning includes mainly for residential; industrial and warehousing; physical infrastructure; social amenities; urban; agriculture; mining; and tourism activities. The proposed site is situated within a private land owned by the County in a mainly residential zone.

Plate 6: Existing houses and make shift structures at Mzizima Estate

Table 3: Immediate land uses neighbouring the site

Direction	Land use	Distance
South	Sheikh Abdullas F. Road	Adjacent
North	Indian Ocean	60m
East	Coast General Hospital Staff Quatters	Adjacent
West	Hindu Crematorium	Adjacent

3.4 BIOLOGICAL ENVIRONMENT

3.4.1 Flora

The proposed area has little vegetation comprising mainly of scattered grass and few trees while the surrounding environment is mainly built up. The key trees identified at the project area are listed below:

Table 4: List of trees identified within the project site

	Local Name	English Name	Scientific Name	Location
1	Un identified trees	NA	NA	4º2'51.039''S, 39º40'14. 658''E
				4º2'48.11''S, 39º40'15. 408''E
				4º2'48.858''S, 39º40'14. 178''E
2	Mkungu	Almond tree	Terminalia catappa	4º2'46.392''S, 39º40'15.846''E
				4º2'46.857''S, 39º40'15.871''E
				4º2'46.452''S, 39º40'15.822''E
				4º2'46.874''S, 39º40'15.887''E
				4º2'51.454''S, 39º40'14.67''E
3	Mwembe	Mango tree	Mangifera Indica	4º2'47.652''S, 39º40'15.138''E
				4º2'47.202''S, 39º40'15.37''E
4	Mkunazi	Jujube	Ziziphus mauratiana	4º2'47.931''S, 39º40'14.788''E
				4º2'47.964''S, 39º40'14.663''E
				4º2'47.725''S, 39º40'15.782''E
5	Mwarobaini	Neem tree	Azadirachta Indica	4º2'49.686''S, 39º40'17.526''E
				4º2'47.109''S, 39º40'16.22''E
				4º2'50.742''S, 39º40'15.756''E
				4º2'51.408''S, 39º40'14.838''E
				4º2'50.388''S, 39º40'13.8''E
6		Yellow flower	Cassia siamea	4º2'48.546''S, 39º40'15.294''E
				4º2'49.356''S, 39º40'16.266''E
7	Un identified tree			4º2'47.777''S, 39º40'15.594''E

	Local Name	English Name	Scientific Name	Location
8	Yago	Sausage tree	Kigelia africana	4⁰2’50.178’’S, 39⁰40’15.804’’E
9	Mfenesi	Jack Fruit	Artocarpus heterophyllus	4⁰2’50.598’’S, 39⁰40’15.492’’E
10	Acacia			4⁰2’52.224’’S, 39⁰40’14.52’’E
11	Moringa	Moringa tree	Moringa oleifera	4⁰2’48.81’’S, 39⁰40’12.432’’E

Almond tree (Mkungu)	Jujube tree (Mkunazi)
	
Neem tree (Mwarobaini)	Sausage tree
	
Mango tree (Mwembe)	Acacia tree

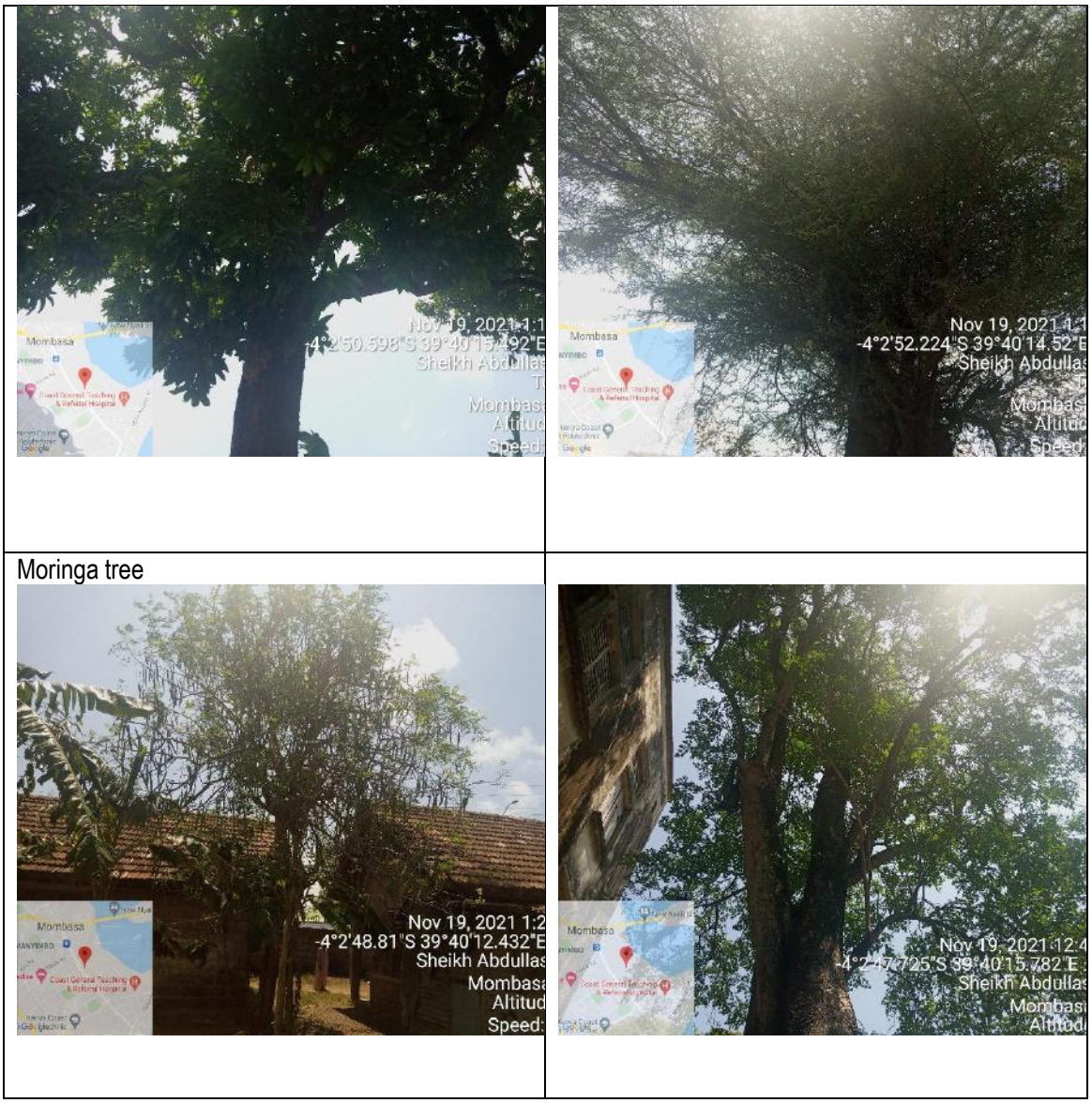

Plate 7: Vegetation at the proposed site

3.4.2 Fauna

There are no major animals in the environs except birds, insects, and small rodents. Therefore, there is no fauna threatened by the proposed project.

3.4.3 Sensitive ecosystems or places of cultural importance

There are no sensitive ecosystems in the project area. There are no places of cultural importance in the environs either.

3.5 SOCIO ECONOMIC ENVIRONMENT

The plot is one of the subdivisions done on a larger plot. The location is well accessible via Juja – Gatundu road. The plot is within Juja Town where all social amenities (hospitals, schools, religious places, shopping areas etc.) are within easy reach. All major urban infrastructures (water, electricity, sewer, roads, and landline telephony) are connected or within close proximity to the proposed project site. All emergency facilities (fire

brigade, ambulances etc) are within easy reach from the various providers. There are no sites of cultural, historic or traditional significance in the immediate neighbourhood.

3.5.1 Infrastructure and Services

A. Roads and accessibility

There is a total of 257.17km of bitumen surface roads, 127km of gravel surface roads and 91.29km of earth surface roads in the county. Main classified roads include Mombasa-Nairobi highway, Mombasa - Malindi road and Likoni - Lunga Lunga Road connecting Kenya and Tanzania. While the major roads are in fair condition, access roads within the residential and industrial areas are in deplorable state. The situation is worsened by the poor storm drainage systems most of which are in dilapidated conditions. The roads are maintained by the national government through Kenya Rural Roads Authority (KeRRA) and overseen by Sub-county Road Committees, Kenya Urban Roads Authority (KURA) and the Kenya National Highways Authority (KeNHA) and the private sector. The County has key bridges linking the Island with the mainland and other coastal areas; these include Nyali and Mtwapa bridges. The construction of the Dongo-Kundu by-pass will ease congestion at the central Business Sub-county as traffic from Nairobi to South coast shall be diverted at Miritini towards Likoni and Diani.

Plate 8: Traffic along Sheikh Abdullas F. Road

B. Railway

The County has ten kilometres of railway line and three railway stations from the colonial era. The Standard Gauge Railway replaces this parallel and colonial Uganda Railway that was originally built during the British colonial rule in the 19th century. It is the country's largest infrastructure project since independence. Under the East African Railway Master Plan, the Mombasa–Nairobi SGR will link up with other standard gauge railways that are being built in East Africa.

C. Port

The port of Mombasa is also a key resource and the gateway to the East and Central African region, as it serves the entire region's export and import needs. In 2012, dredging was being undertaken with a view of deepening the Likoni channel to facilitate usage of the port by larger post panamax vessels. The figure below depicts the container terminal at the port of Mombasa.

D. Ferries

The Likoni Ferry links the Island to Likoni and subsequently to Kwale and Tanzania through the Lunga-Lunga Border. Kenya Ferry Services operates more than 7 ferries and carries over 250,000 people and over 5,000 vehicles per day across the Likoni channel. It also operates in Mtongwe area at peak hours to minimize congestion at the Likoni Ferry crossing.

E. Airport

The County has one international airport, the Moi International Airport in Changamwe sub-county. The airport is the second largest airport in Kenya and is used by both domestic and international flights. The airport is essential in the promotion of tourism and investment opportunities in the county and in the coast region.

F. Sewer system

The sewerage system faces a similar predicament with only one sewerage system serving the Island. The system is connected to two treatment plants i.e. Kipevu treatment plant located on the mainland and Kizingo treatment plant located in Kizingo. Whereas the Kizingo plant is currently nonfunctional, the Kipevu one operates at 70% potential leading to the disposal of partially treated sewage into the sea at Makupa, Ziwani and Port Tudor. The rest of the municipality depends on privately constructed soak pits and pit latrines which have a potential to pollute water sources.

G. Water resources

Water in the County is managed by the Mombasa Water and Sewage Company. Water supply for the county is from Mzima Springs in Taita Taveta County, Marere, and Sabaki/Baricho in Kilifi County and Tiwi Boreholes in Kwale County. This supply only meets 65 per cent of the county water demand. Additionally, most residents rely on borehole water that contains a high percentage of feacal contamination and not very safe for domestic use. In total, 73.9 per cent of the total population has access to safe water.

The proposed project site will be connected to Mombasa Water and Sewage Company water supply network.

Plate 9: Water kiosk within the estate

H. Surface Drainage

Drainage systems along the road will effectively drain the area. The proposed design has provided for internal drains to collect the surface run-off and safely dispose to the existing public drainage system along the road.

I. Solid waste Management

The main waste generation sources are domestic, commercial ventures, hotels, markets, industries and institutions including health facilities. All types of waste are transported to the waste disposal (Mwakirunge) site including hazardous types containing pesticides, heavy metals, oils, batteries, acids, domestic and hospital wastes. The private sector has initiated ways to address the problem of waste management through construction of compost pits in areas where collection is limited and providing waste disposal services to complement those provided by the County Government.

The County Government or a private garbage company would not be able to dispose of construction site waste. Therefore, the proponent will provide a sound waste management system during construction to dispose waste all debris and liquid waste. All solid wastes should be dumped in approved dumpsites and in accordance with the County regulations. The proponent proposes to contract a private waste handler to collect and dispose waste from the residents when the project becomes operational.

Plate 10: Waste dumping within the estate

J. Housing

In the county, 65.6 per cent of all houses are stone walled while those made of brick walls stand at 7.5 per cent. Corrugated roofing accounts for 69.0 per cent of all roofing materials while tiles make up 9.7 per cent of all the houses in the county. Most of the mud walled houses are found in the slum areas where they are temporarily built. In these areas, land ownership is not guaranteed as most of the residents do not legally own land and the ones they live on are owned by absentee landlords.

K. Energy

The main source of cooking energy for the county residents is paraffin at 53.6 per cent, charcoal at 30 per cent, firewood at 8.8 per cent LPG at 4.7 per cent and electricity at 1.7 per cent. This trend continues when it

comes to lighting where paraffin also leads at 51.5 per cent followed closely by those relying on electricity at 47.5 per cent. The Kipevu power plant produces power which is fed into the national grid. The county has a high potential for generation of solar and wind energy, but this remains unexploited.

Construction machineries will require energy during construction phase. Electrical power will come in handy in driving the selected construction machinery. It will also be needed during occupation phase (on completion of the project). The estate is connected to the national grid (electricity) while petroleum fuels will power some machinery/equipment.

Plate 11: Power lines within the estate

L. Communication

Telecommunication services are available in literally every part of Mombasa County. The project area is well served with all the mobile phone network providers and the wireless phone connections including Safaricom, Airtel and Telkom service providers in the country. All these will facilitate communication throughout the project cycle.

3.5.2 Population and Settlement

Population distribution and settlement patterns in Mombasa County are influenced by proximity to vital social and physical infrastructure networks such as roads, housing, water and electricity. Other factors that influence settlement patterns include accessibility to employment opportunities and security. The total population of the county in 2019 was 1,208,333 persons of which 610,257 were male and 598,046 were female.

Highly populated areas are in Majengo, Bamburi, Bangladesh, Mikindani, Jomvu, Miritini, Migadini, Port Reitz, Mishomoroni and Bombolulu among others. The County has various settlement schemes namely Mwakirunge, Jomvu-Kuu, Bububu-A, Shika-adabu, Vyemani, Mwembelegeza and Majaoni. Despite efforts being made to settle people, the County still has a very large number of landless people most of whom live in the city‘s slums of Mishomoroni, Junda and Kisumu ndogo in Kisauni Sub-county; Shika-Adabu and Ngomeni in Likoni Sub-county and Bangladesh in Changamwe Sub-county. The land adjudication process is ongoing for Shika-Adabu

and Vyemani settlement schemes. There are other proposed schemes in the county namely; Maweche, Kibundani, Ujamaa-Shonda and Kidungunyi. There are also sparsely populated areas in the outskirts of the County which include Mwakirunge-Maunguja, Mwangala, Mreroni and the Mkupe Jetty area. These areas are least developed in terms of infrastructure such as road network, electricity and water supply. Education and health facilities are also scantly available in these areas making the inhabitants highly prone to poverty and disease incidences.

The high population densities in Mvita, Changamwe and Nyali are attributed to proximity to vital infrastructure such as roads, water, electricity and employment opportunities due to the presence of industries like the Export Processing Zones and other physical facilities such as the Port of Mombasa and the Moi International Airport, Mombasa.

The project is located in Island division the only division in Mvita Subcounty. The division has an area of 14.6 km². The division had an estimated population of 154,171 people, 38,710 households and a density of 10,543 people per kilometer square according to the census of 2019.

As per the 2019 population census, the area has the following demographic settlement:

Table 5: Island Division demographic settlement.

Location	**Population**
Ganjoni	17,581
Majengo	38,120
Mwembe Tayari	8,976
Old Town	18,712
Railway	5,952
Tononoka	27,513
Tudor	36,295
Total	**154,171**

4 LEGAL POLICY AND INSTITUTIONAL FRAMEWORK

4.1 Introduction

This Chapter outlines the existing national and international environmental and social legislation, policies, and institutions applicable to housing development that guide the development of the Project. As Kenya is a signatory to various international conventions and laws, national projects need to be aligned with their requirements; relevant international conventions and laws are therefore presented in this chapter.

The principal National legislation is the Environmental Management & Coordination Act of 1999 and its subsequent amendments EMCA (2015). EMCA empowers stakeholders to participate in sustainable management of the natural resources. The sole purpose of this section is to provide the proponent with quick reference to the critical legal and policy provisions to enable proper planning and impact assessment during project planning and implementation. The following is an outline of the relevant legislative, policy and regulatory framework for which the Proponent and the contractor shall observe.

4.2 The Constitution of Kenya

The Constitution of Kenya is the supreme law of Kenya. It establishes the structure of the Kenyan government, and also defines the relationship between the government and the citizens of Kenya. The constitution clearly provides for environmental protection and recognizes the right to clean environment as a fundamental human right.

4.2.1 The Bill of Rights

Chapter 4 outlines the rights and fundamental freedoms for all Kenyans. Article 42 of the same chapter states that every person has the right to a clean and healthy environment which include 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
- To have obligations relating to the environment fulfilled under Article 70

4.2.2 Land and Environment

Part 2 of Chapter 5 outlines provisions for environment and natural resources. Obligations on Environment and Natural resources are stipulated in Article 69 (1) (2) as follows: -

1. Obligation in respect of the Environment the State shall-
    - Ensure sustainable exploitation, utilization, management and conversion of the environment and natural resources, and ensure the equitable sharing of the accruing benefits;
    - Work to achieve and maintain a tree cover of at least ten per of the land area of Kenya

- Protect and enhance intellectual property in, and indigenous knowledge of, biodiversity and the genetic resources of the communities;
- Encourage public participation in the management, protection and conservation of the environment; protect genetic resources and biological diversity;
- Establish systems of environmental impact assessment, environmental audit and monitoring of the environment;
- Eliminate processes and activities that are likely to endanger the environment; and
- Utilize the environment and natural resources for the benefit of the people of Kenya.

(2) 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 rights provided for in Article 42 should be enforced as indicated in Article 70

(1) If a person alleges that a right to a clean and healthy environment recognized and protected under Article 42 has been, is being or is likely to be, denied, violated, infringed or threatened, the person may apply to a court for redress in addition to any other legal remedies that are available in respect to the same matter

(2) On application under clause (1), the court may make order, or give any directions, it considers appropriate-

(a) To prevent, stop or discontinue any act or omission that is harmful to the environment;

(b) To compel any public officer to take measures to prevent or discontinue any act or omission that is harmful to the environment;

(c) To provide compensation for any victim of a violation of the right to a clean and healthy environment.

For the purposes of this Article, an applicant does not have to demonstrate that any person has incurred loss or suffers injury.

4.3 NATIONAL POLICY FRAMEWORK

4.3.1 The National Environmental Action Plan (NEAP)

The NEAP for Kenya was prepared in 1994. It was a deliberate policy to integrate environmental considerations into the country's social and economic development process. The integration was achieved through a multi-sectorial approach to develop a comprehensive framework that ensures that environmental management and conservation of natural resources is an integral part of our societal decision-making process.

The proponent should comply with the NEAP policy with regards to preventing, controlling or mitigating specific as well as general adverse impacts on the environment.

4.3.2 Kenya's Vision 2030

The Kenya Vision 2030 is a policy document outlining Kenya's development programme covering the period between the years 2008 to the year 2030. The objective of Vision 2030 is to help transform Kenya as a newly industrializing, middle-income country providing a high quality of life to all its citizens in a clean and secure environment by 2030. The Kenyan Vision 2030 has a housing and urbanization strategy within its second pillar on investing in the Kenyan society.

The proposed Mzizima Housing Project will facilitate construction of affordable residential houses which is a timely project in line with this vision

4.3.3 National Environment Policy, 2012 Revised Draft No 4

The major objective of the policy is to provide a framework for an integrated approach to planning and sustainable management of Kenya's environment and its natural resources. The policy further ensures that the environment is integrated in all government policies in order to facilitate and realize sustainable development at all levels. This would help promote green economy, enhance social inclusion, improve human welfare and create opportunities for employment and maintenance of a healthy ecosystem.

This ESIA study has developed an environment and social management and monitoring plan to mitigate the impacts that may result during the project cycle. The developer should ensure that the provisions of this policy are followed to ensure the protection of the environment.

4.3.4 Big Four Agenda

The President 's Speech during the 54th Jamhuri Day Celebrations on 12th December 2017 elaborated the specific agenda (Big Four Agenda) and measures the Jubilee administration will focus on and dedicate energy, time and resources over the next 5 (2018-2022) years. The agendas are as follows:

- Enhance manufacturing in the country from 9.2% to 20% of GDP by 2022.
- Food security and nutrition through 100% food and nutrition security commitment.
- Universal health coverage by scaling up NHIF uptake to 100%.
- Affordable housing by implementing 500,000 new affordable homes.

The proposed residential development is aimed at addressing the fourth agenda in regard to affordable housing within the Country.

4.3.5 Sessional Paper No. 10 of 2014 on the National Environmental Policy, 2014

The overall goal of this Session Paper is to ensure better quality of life for present and future generations through sustainable management and use of the environment and natural resources. This Session Paper calls

for the use of environmentally sound technologies based on the best available techniques and policies as a way of minimizing negative impacts to the environment.

Section 5.6 of this Session Paper focusses on infrastructure development and environment and makes explicit policy statements to ensure sustainable management and use of the environment and natural resources during the construction and operation of infrastructure developments. These policy statements require the commitment of the government to:

- Ensure Strategic Environmental Assessment (SEA), Environmental Impact Assessment, Social Impact Assessment and Public participation in the planning and approval of infrastructural projects.
- Develop and implement environmentally friendly national infrastructural development strategy and action plan.
- Ensure that periodic Environmental Audits are carried out for all infrastructural projects

In line with the above policy statements, this ESIA has been conducted for the proposed (Housing Development) to ensure that environmental and social issues are appropriately addressed. Once approved by NEMA, the Project Proponent will also need to conduct periodic Environmental Audits to ensure continuous conformity with the overall goal of this Session Paper. In addition, this ESIA has considered analysis of alternatives including alternatives to technology to ensure that the best available and appropriate technology is used.

4.3.6 Environmental and Development Policy (Session Paper No. 6 1999)

The paper presents broad categories of development issues that require sustainable approach. The paper harmonizes environmental and development objectives so as to ensure sustainability. The paper provides comprehensive guidelines and strategies for government action regarding the environment and development.

The proposed project will proceed under auspices of these guidelines and strategies that foster environmental values in development projects.

4.3.7 National Policy on Water Resources Management and Development

While the National policy on water resources management and development seeks to enhance systematic development of facilities in all sectors for promotion of the country's socio-economic progress, it also recognizes the by-products of this process as wastewater. It, therefore, calls for development of appropriate sanitation systems to protect people's health and water resources from institutional pollution. Industrial and business development activities therefore should be accompanied by corresponding waste management systems to handle the wastewater and other waste emanating there from.

The proposed project design has provided a mini wastewater plant.

4.3.8 Public Health (Prevention, Citation. Control and Suppression of COVID-19) Rules, 2020

This is captured in Legal Notice 49 of 2020. The rules requires that in the wake of the Corona Virus Disease 2019 (COVID – 19) pandemic that has ravaged the World over, Kenya has not been spared. COVID – 19 has affected the health, economic and social status of Kenya's population. In line with its mandate, Kenya Law has kept track of the various directives and legislation that the government has passed in tackling the COVID – 19 pandemic.

The proponent is required to ensure full compliance to Covid-19 Protocols during the entire project life.

4.3.9 National Land Policy 2009

The Land Policy in Kenya is guided by the environmental management principles which are aimed at restoring the environmental integrity through introduction of incentives and encouragement of use of technology and scientific methods for soil conservation, among others. The policy further requires fragile ecosystems to be managed and protected by developing a comprehensive land use policy bearing in mind the needs of the surrounding communities. The policy also requires zoning of catchment areas to protect them from degradation and establishment of participatory mechanisms for sustainable management of fragile ecosystems. The policy also calls for development of procedures for co-management and rehabilitation of forest resources while recognizing traditional management systems and sharing of benefits with contiguous communities and individuals. Lastly, all national parks, game reserves, islands, front row beaches and all areas hosting fragile biodiversity are declared as fragile ecosystems under the policy.

The policy recognizes that sustainable management of land based natural resources depends largely on the governance system that defines the relationships between people, and between people and resources. To achieve an integrated approach to management of land-based natural resources, all policies, regulations and laws dealing with these resources need to be harmonized with the framework established by the Environmental Management and Coordination Act (EMCA Cap 387).

4.3.10 HIV and AIDS Policy 2019

The proposed project is to be implemented in the rural area; these areas have high freelance cases of HIV and Aids. This policy shall provide a framework to both the project proponent and contractor to address issues related to HIV and Aids. In Summary the policy provides a mechanism for:

- Establishing and promoting Programmes to ensure non-discrimination and non- stigmatization of the infected;
- Contributing to national efforts to minimize the spread and mitigate against the impact of HIV and AIDS;

The proponent will be complying with Policy during implementation of the Project; the Contract will in cooperate in tender document and implement HIV awareness initiatives during construction of the Project

4.3.11 Climate Change Act, 2016

The Act is aimed to reduce vulnerability to climate change and improve our country's ability to take advantage of the opportunities that climate change offers. The Act is to be applied for the development, management, implementation, and regulation of mechanisms to enhance climate change resilience and low carbon development for the sustainable development of Kenya.

The Purpose and Objectives Clause of the Act (Part 1, Section 3) provides that- (2) Without prejudice to subsection (1), this Act shall be applied to all sectors of the economy by the national and county governments to –

- Mainstream climate change responses into development planning, decisions making, and implementation;
- Build resilience and enhance adaptive capacity to the impacts of climate change.
- Formulate programmes and plans to enhance the resilience and adaptive capacity of humans and ecological systems to the impacts of climate change.
- Mainstream and reinforce climate change disaster risk reduction into strategies and actions of public and private entities.
- Mainstream intergenerational and gender equity in all aspects of climate change responses.

The development and implementation of Mzizima Affordable Housing project will contribute towards the stated objectives of the climate change act and enhance the resilience of the community.

4.4 KENYA LEGAL FRAMEWORK

Application of national statutes and regulations on environmental conservation suggest that the Proponent has a legal duty and social responsibility to ensure that the development is carried out without compromising the status of the environment, natural resources, public health and safety. This position enhances the importance of this environmental social Impact Assessment for the site to provide a benchmark for its sustainable operation.

Kenya has approximately 77 statutes that relate to environmental concerns. Most of these statutes are sector specific, covering issues such as public health, soil erosion, protected areas, endangered species, water rights and water quality, air quality, noise and vibration, cultural, historical, scientific and archaeological sites, land use, resettlement, etc. The key national laws that govern the management of environmental resources in the country have been discussed below. It is noteworthy that wherever any of the laws contradict each other, EMCA 1999 (Amended in 2015) prevails.

4.4.1 Environmental Management and Co-ordination Act (EMCA), 1999 (Amended in 2015)

Environmental Management and Co-ordination Act, No. 8 of 1999, provides a legal and institutional framework for the management of the environment and development related matters. It is the framework law on the

environment, which was enacted on the 14th of January 1999 and commenced in January 2002. The Act was amended in June 2015. Top-most in the administration of the Act is National Environment Council (NEC), which formulates policies, set goals, and promotes environmental protection programmes. The implementing organ is the National Environment Management Authority (NEMA).

This ESIA is in compliance with Section 58 of the Environmental Management and Coordination Act (EMCA) No.8 of 1999 Second Schedule Part 3 (a). Environmental quality conservation aspects of this project will be realized through the implementation of the Environmental and Social Management Plan aimed at mitigating the potentially negative impacts and enhancing the potentially positive impacts predicted through this ESIA study.

4.4.2 The Environment (Impact Assessment and Audit) Regulations, 2003

These rules require that, an Environmental Impact Assessment study shall be conducted in accordance with terms of reference developed during the scoping exercise by the proponent and approved by the Authority NEMA. The terms of reference shall include matters required to be considered in the making of an Environmental Impact Assessment as may be contained in the Second Schedule to these Regulations and such other matters as the Director General-NEMA may in writing require. An Environmental Impact Assessment study shall be conducted in accordance with the general Environmental Impact Assessment guidelines and sector Environmental Impact Assessment guidelines set out in the Third Schedule to these Regulations.

This study has been carried out as stipulated in the regulations

4.4.3 Environmental Management & Co-ordination (Waste Management) Regulations 2006

This regulation gives guidelines on both operational and administrative activities that are used in handling, packaging, treatment, condition, storage and disposal of waste and is implemented by NEMA. It prohibits anyone from disposing any waste on any part of the environment except in designated waste receptacle or facility provided by the relevant local authority which may be legitimate dump sites or landfills. Waste generators are responsible for ensuring collection, segregation at source and proper disposal of their wastes. They are also responsible for minimization of waste generation through adoption of cleaner production methods such as improved production process, monitoring of product cycle and incorporation of environmental concerns in design and disposal of product. This regulation also provides guidelines for management of hazardous and biomedical wastes.

The proponent to ensure that there is a waste management programme in place for all kind of waste which will be generated in all phases of the project.

4.4.4 The Environment Management and Co-ordination Act, (Water Quality) Regulations, 2006

These regulations were drawn under section 147 of the Environmental Management and Coordination Act. In accordance with the regulations, every person shall refrain from acts that could directly or indirectly cause

immediate or subsequent water pollution and no one should throw or cause to flow into water resources any materials such as to contaminate the water. The regulation also provides for protection of springs, streams and other water sources from pollution.

Regulation 8 of these regulations provides for compliance with water quality standards. It states that "all operators and suppliers of treated water, containerized water and all water vendors shall comply with the relevant quality standards in force as may be prescribed by the relevant lead agencies".

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

Effluent generated from the proposed housing project during construction will be directed to the county sewerage system while during the operational phase the project will have a mini wastewater treatment plant.

4.4.5 Environmental Management & Co-ordination (Noise & Excessive Vibration Pollution control) Regulations 2009

This regulation prohibits any person to cause unreasonable, unnecessary or unusual noise which annoys, disturbs, injures or endangers the comfort, repose, health or safety of others and the environment. Part 11 section 6(1) provides that no person shall cause noise from any source which exceeds any sound level as set out in the First Schedule of the regulations. It gives standards for maximum permissible noise levels for construction sites, mines and quarries. It also gives maximum permissible noise levels for silent zones, places of worship, residential (indoor/outdoor), mixed residential; and commercial.

The proponent is required to implement noise control measures during construction to minimize noise level by maintaining the sound level limits of 60dBA during the day and 35dBA at night. The proponent can also obtain a license to emit noise/vibrations in excess of permissible levels if necessary.

4.4.6 Environmental Management and Coordination (Air quality standards) 2014

In the year 2014, an air quality regulation referred to as Environmental Management and Coordination (Air Quality) Regulations 2014 was adopted for regulatory purposes. Its objective is to provide for prevention, control and abatement of air pollution to ensure clean and healthy ambient air. It also provides for the establishment of emission standards for various sources as outlined in the Environmental Management Coordination Act, 1999. Emission limits for various areas and facilities have been set.

The proponent will ensure that operations at the site do not generate dust, particulates and other emissions beyond allowable limits especially during construction by deploying efficient dust screens, PPE and other dust suppression measures.

4.4.7 Environmental Management and Coordination (Wetlands, River Banks, Lake Shores and Sea Shore Management) Regulation, 2009

The objectives of these Regulations include-

- To facilitate the sustainable utilization and conservation of resources on river banks, lake shores, and on the seashore by and for the benefit of the people and community living in the area;
- Promote the integration of sustainable use of resources in riverbanks lake shores and the seashore into the local and national management of natural resources for socio economic development;
- Enhance education, research and research related activities; and prevent siltation of rivers and lakes and control pollution or and other activities likely to degrade the environment.

The Proposed Project site is a seashore area in close proximity to the Indian Ocean. The Proponent shall comply with the provisions of the above regulations in-order to preserve the surrounding seashore ecosystem.

4.4.8 The Water Act (Act No.8 of 2002) revised in 2016

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. The legislation provides for the management of water resources at national and county level. 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. 108(1) sewage & effluent management to avoid environmental pollution.

A permit will be required from WRMA for any water borehole construction works and an abstraction licence. The proponent will comply fully with the Act.

4.4.9 County Government Act No. 17 of 2012

The Act established the County Government after the enactment of the Kenya's new constitution of 2010. Part 11 of the Act empowers the county government to be in charge of functions described in Article 186 of the constitution (county roads, water and sanitation, health). Part XI of the Act vests the responsibility of planning and development facilitation to the county government in collaboration with the national government. This arrangement has been adopted for interventions in order not to conflict with provisions of the Kenyan Constitution.

Implementation of this project is a partnership between Jabavu Village Ltd and County Government of Mombasa.

4.4.10 Physical Planning Act Cap 1999

Section 24 of the Physical Planning Act gives provision for the development of local physical development plan for guiding and coordinating development of infrastructure facilities and services within the area of authority of County, Municipal and Town Council and for specific control of the use and development of land.

The plan should show the manner in which the land in the area may be used. Section 29 of the physical Planning Act gives the county councils power to prohibit and control the use of land, building, and subdivision of land, in the interest of proper and orderly development of its area. The same section also allows them to approve all development applications and grant development permissions as well as to ensure the proper execution and implications of approved physical development plans. On zoning, the act empowers them to formulate by-laws in respect of use and density of development.

The proposed project is in complete cognizance with the provisions of the Physical Planning Act, as it going to sit on land already approved by the County Government of Mombasa. The proponent has secured planning approval for the site from the County Government of Mombasa.

4.4.11 The Public Health Act (Cap 242)

The Public Health Act (Cap 242) aims at protecting and promotes human health and the prevention, limitation or suppression of infectious, communicable or preventable diseases within Kenya. It also aims to advise and direct local authorities in regard to matters affecting public health and to promote or carry out researches and investigations in connection with the prevention and treatment of human diseases. This Act provides the impetus for a healthy environment and gives regulations to waste management, pollution and human health.

Section 119 states that a medical officer may require the owner of dwelling causing nuisance to remove the nuisance in the dwelling failure to which legal proceedings may be taken against the owner of the dwelling and penalties.

Under section 126 the act includes The Public Health (Drainage and Latrine) Rules which in section 63 deals with sewerage and prohibits the disposal of solid or liquid sewage or sewage effluent in such a manner or in such a position as to cause or be likely to cause dampness in any building or part thereof, or to endanger the purity of any water supply, or to create any nuisance.

Health issues will be integrated into the project to ensure environmental health. Measures to mitigate all forms of nuisance will be put in place throughout the phases of projects. Licensed waste handlers will manage solid waste arising during operational phase.

4.4.12 Penal Code Act (Cap. 63)

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

The penal code is one of the oldest statutes on air quality management. It contains a chapter on offences against health and convenience. The code strictly prohibits releasing of foul air, which affects the health of

other persons. Section 175 of the penal code outlines the misdemeanor of common nuisance, which may cover situations involving the handling of hazardous and non-hazardous wastes. The section provides that: "Any person who does an act not authorized by law or omits to discharge a legal duty and thereby causes any common injury, or danger or annoyance, or obstructs or causes inconvenience to the public in the exercise of common rights commits the misdemeanor termed a common nuisance and is liable to imprisonment for one year".

Section 191 provides that: "Any person who voluntarily corrupts or fouls the water of any public spring or reservoir, so as to render it less fit for the purpose for which it is ordinarily used, is guilty of misdemeanor".

Section 192 states: "Any person who voluntarily vitiates the atmosphere in any place, so far as to make it noxious to the health of persons in general dwelling or carrying business in the neighborhood or passing along public way is guilty of misdemeanor". The punishment for misdemeanor is imprisonment not exceeding 2 years with no option of a fine.

Section 193 prohibits fouling of air by industrialists and manufacturers, among others and provides: "Any person who for the purposes of a trade or otherwise makes loud noise or offensive or unwholesome smells in such places and circumstances as to annoy any considerable number of persons in the exercise of their rights, commits an offence and is liable to be punished for a common nuisance" punishment for a common nuisance is imprisonment not exceeding 1 year and no option of a fine. The Penal Code has therefore best intentions for controlling pollution from industrial establishments.

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. Jabavu has committed to comply with all these provisions.

4.4.13 The National Construction Authority Act (NCA), 2011

The National Construction Authority Act, Number 41 of 2011 is set to streamline, overhaul and regulate the construction industry in Kenya. The industry has for many years suffered poor legislative framework and has been dominated by quacks and unqualified persons. The industry has also suffered a lot of competition from foreign contractors who are seen to offer cheaper and more quality work. The new Act is a win for the public as it guarantees public safety. All contractors must be registered with the Authority-NCA, meaning that shady contractors and quacks will be locked out of the industry. It is an offence to carry out any construction work without first having been registered.

4.4.14 The Workmen's Injury and Benefits Act, 2007

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 dependent'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.

4.4.15 The Employment Act, 2007

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.

4.4.16 Kenya Roads Act, 2007

Section 10 shows the Kenya Urban Roads Authority responsibility for the management, development, rehabilitation and maintenance of all public roads in cities and municipalities in Kenya except where their roads are national roads. Section 10 Part 11 shows the authorities powers and duties which entails; constructing, rehabilitating and maintaining roads, control road reserve and access to road side developments, implement the road policies, ensure quality of road works is in accordance with the standards, planning development and maintenance of urban roads, liaising and coordinating with other road authorities in planning and operation in respect of the road.

Section 22 gives the authority powers a) to acquire land when not public land by negotiating and agreeing with the registered land owner, b) if such land is public land and the authority is unable to acquire it by agreement; the Minister for public land can be notified who may place such land at the disposal of the authority.

Section 24 gives power to the employee of an authority to enter land, prevent accidents, preserve traffic safety, and ensure safe operation of any service provided by such an authority or repairing damage caused by accidents.

The proposed housing project location complies with the provision of the Act. It is not on road reserve.

4.4.17 Occupiers Liability Act Cap 34

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.

The proponent will ensure safety of workers during construction and possible decommissioning phases and occupants upon occupation of the housing units.

4.4.18 The Occupational Health and Safety Act, 2007

The Occupational Safety and Health Act, 2007 generally requires that all occupiers provide safe and healthy work conditions and safeguard welfare of all employees in workplaces. It requires that workplaces be kept safe, emission of dust or fumes from work places as well as noise should be to the acceptable levels. Workers that are exposed to wet or any injurious or offensive substances are required under Section 101 of the Act to be provided with suitable protective clothing. The Act requires the management to appoint a competent person who is a member of the management staff to be responsible for safety, health and welfare in the factory or workplace. Section 11 states the requirement of annual health and safety audits of the workplace. The Act was found relevant for reference in this audit.

The other rules which are included in this Act include: First Aid rules, 1977, Eyes Protection Rules, 1978, Electric Power (special) rules, 1979, Safety and Health Committee Rules, 2004; Medical Examination Rules, 2005; Noise Prevention and Control Rules, 2005; and Hazardous Substances Rules, 2007.

Safeguarding the health and safety of workers during both construction and operation phases of the project will be important as they will be exposed to various hazards. The proponent proposes to take adequate measures to ensure this.

4.4.19 The Environment and Land Court Act, 2011

This is an Act of Parliament that gives 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 or occupation of land. The Environment and Land Court is one of the courts contemplated by article 162 (2). It is a Superior Court and has the same status as the High Court. The court is established under section 4 of the Environment and Land Court Act No. 19 of 2011. It has jurisdiction to hear any other dispute relating to environment and land. The jurisdiction of the court is provided under section 13 of the Act.

The court has powers to deal with disputes relating to land administration and management. The court is also empowered to hear cases relating to public, private and community land and contracts or other instruments granting any enforceable interests in land. The court also exercises appellate jurisdiction over the decisions of subordinate courts or local tribunals in respect of matters falling within the jurisdiction of the Court. The court further exercises supervisory jurisdiction over the subordinate courts, local tribunals, persons or authorities in accordance with Article 165(6) of the Constitution.

4.4.20 Urban and Cities Act No 13 of 2011

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

schedule, the Act enlists the services that any municipality shall provide to its residents which include but not limited to traffic control and parking, water and sanitation, refuse collection, solid waste management, pollution abatement services among others (GOK, 2011).

The project is in line with the County Integrated Development Plan.

4.4.21 Land Act, 2012

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

4.4.22 Energy (Solar Water Heating) Regulations, 2012

Regulation 3, make provision for installation of solar water heating system in all premises within the jurisdiction of a local authority with hot water requirements of a capacity exceeding one hundred litres per day to install and use solar heating systems. The responsibility for compliance as per regulation 6 is imposed on:

- Developer of a housing estate, a promoter of the construction, an owner of the premises or an Architect or an Engineer engaged in the design or construction of premises.
- An owner of premises, architect and an engineer engaged in the design, construction, extension or alteration of premises shall incorporate solar water heating systems in all new premises designs and extensions or alterations to existing premises.
- An owner or occupier of premises that has a solar water heating system shall use and carry out the necessary operational maintenance and repairs required to keep the installation in good and efficient working condition.
- An electric power distributor or supplier shall not provide electricity supply to premises where a solar water heating system has not been installed in accordance with these Regulations.
- An owner or occupier to whom these regulations apply may investigate the inclusion of the relevant solar water heating system into a project to be registered under any carbon finance mechanism that may be established from time to time including the Clean Development Mechanism (CDM).

The proponent is required to comply with this regulation

4.4.23 Housing Act Chapter 117

The Housing Act Cap 117 establishes a Housing Fund under the control of NHC. The Housing Fund which will play a pivotal role as the catalyst to increased supply of affordable housing by private developers (via the Offtake Agreement), and as the bridge to the demand of affordable housing by low- and middle-income Kenyans. The Housing Fund will provide affordable long-term financing to home owners through a nationwide Tenant Purchase Scheme. (TPS). It will also allow potential home owners to save towards the purchase of an

affordable home through the affordable housing Home Ownership Savings Plan (HOSP). In addition, the Housing Fund will work with development partners and local financiers in providing long-term finance for end users. The Housing Fund will provide developers with Offtake Agreements to purchase qualifying affordable housing units. The Offtake Agreement will be effected twelve months following the completion of a development to allow for a sufficient contractor defects liability period and payments will be made in a pre-agreed staggered timeline. All the activities of the Housing Fund will be executed in an objective and transparent process under publicly disclosed operational rules.

4.5 Environmental Institutional Framework

The environmental impact assessment for the proposed development is bound to be influenced by the operational interests of several lead agencies. These include, but not limited to the following key institutions:

4.5.1 National Environment Management Authority (NEMA)

The objective and purpose for which NEMA is established is to exercise general supervision and co-ordinate over all matters relating to the environment and to be the principal instrument of the government in the implementation of all policies relating to the environment. The Authority co-ordinates the various environmental management activities being undertaken by the lead agencies and promote the integration of environmental considerations into development policies, plan, programmes and projects with a view to ensuring the proper management and rational utilization of the environmental resources on a sustainable yield basis for the improvement of the quality of human life in Kenya.

4.5.2 County Environment Committee

The County Environment Committee is responsible for the proper management of the environment within the county for which it is appointed and also develop a county strategic environmental action plan every five years for consideration and adoption by the County Assembly.

The committee 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 Committee. The committee will review environment related reports of the project and on occasions could attend site meetings.

4.5.3 National Environment Complaints Committee, NECC (Public Complaints Committee)

The Committee performs the following functions:

- Investigate any allegations or complaints against any person or against the authority in relation to the condition of the environment in Kenya and on its own motion, any suspected case of environmental degradation and to make a report of its findings together with its recommendations thereon to the Council.

- Prepare and submit to the Council periodic reports of its activities which shall form part of the annual report on the state of the environment under section 9 (3) and
- To perform such other functions and excise such powers as may be assigned to it by the council.

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

4.5.4 National Environmental Tribunal

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

4.5.5 Mombasa County Government

The Mombasa County Government was formed under County Governments Act No. 17 of 2012 and its mandate is to provide services to residents of the county. Among other functions, the county government is responsible for the provision of essential services like water, sewer and public safety.

Some of the County Government departments whose functions are pertinent to the project include the following:

- City planning Department
- Public Health Department
- Social Services and Housing Department
- Housing Development Department
- City Inspectorate Department
- City Engineer's Department
- Department of Environment

4.6 INTERNATIONAL ENVIRONMENTAL MANAGEMENT AGREEMENTS/ CONVENTIONS AND PROTOCOLS

4.6.1 The United Nations Declaration on the Rights of Indigenous Communities

The Declaration is the most comprehensive international instrument on the rights of Indigenous peoples. 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.

4.6.2 The Rio Declaration- Agenda 21

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 will be put into consideration by the developer, to protect the environment while still sustainably developing.

4.6.3 World Commission on Environment and Development of 1987

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.

4.6.4 Convention on Biological Diversity (CBD) of 1992

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.

4.6.5 United Nations Framework Convention on Climate Change UNFCCC (1993)

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 proponent will endeavor to be in line with this convention and ensure that atmospheric pollution through greenhouse gases are minimized as is practically possible.

4.6.6 Stockholm Convention on Persistent Organic Pollutants (POPs) (2002)

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 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

The developer will ensure that all POPs are properly disposed in order to protect the environment

4.6.7 Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, 1972 (London [Dumping] Convention)

The "Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter 1972", the "London Convention" for short, is one of the first global conventions to protect the marine environment from human activities and has been in force since 1975. Its objective is to promote the effective control of all sources of marine pollution and to take all practicable steps to prevent pollution of the sea by dumping of wastes and other matter. Currently, 87 States are Parties to this Convention.

The proponent will ensure that the housing project will not dump any waste to the Indian Ocean.

4.6.8 IFC Performance Standards

IFC's Sustainability Framework articulates the strategic commitment to sustainable development and is an integral part of IFC's approach to risk management. The Performance Standards provide standard guidance on how to identify risks and impacts and are designed to help avoid, mitigate, and manage risks and impacts as a way of doing business in a sustainable way, including stakeholder engagement and disclosure obligations of the developer in relation to project-level activities. In the case of its direct investments (including project and corporate finance provided through financial intermediaries), IFC requires its clients to apply the Performance Standards to manage environmental and social risks and impacts so that development opportunities are enhanced. IFC uses the Sustainability Framework along with other strategies, policies, and initiatives to direct the business activities of the Corporation in order to achieve its overall development objectives. Other financial institutions may also apply the Performance Standards.

4.6.9 World Bank Policies

The World Bank classifies its projects into four Environmental and Social Assessment categories according to the likely impacts on the environment and community they will have. This classification is as summarized below:

Category A: A proposed project is classified as Category A if it is likely to have significant adverse environmental and social impacts.

Category B: A proposed project is classified as Category B if it's potential adverse environmental and social impacts on human populations or environmentally important areas—including wetlands, forests, grasslands, and other natural habitats—are less adverse than those of Category A projects. These impacts are site specific; few if any of them are irreversible; and in most cases mitigation measures can be designed more readily than for Category A projects.

Category C: A proposed project is classified as Category C if it is likely to have minimal or no adverse environmental and social impacts. Beyond screening, no further environmental assessment action is required for a Category C project.

Category FI: A proposed project is classified as Category FI if it involves investment of Bank funds through a financial intermediary, in subprojects that may result in adverse environmental and social impacts.

4.6.10 Operational Policy (OP) 4.01: Environmental Assessment, 2001

The World Bank has well-established environmental assessment procedures, which apply to its lending activities and to the sub-projects undertaken by borrowing countries. The World Bank follows a relatively standard procedure for the preparation and approval of an environmental assessment study, which:

- Identifies and assesses potential risks and benefits based on proposed activities, relevant site features, consideration of natural/human environment, social and trans-boundary issues
- Compares environmental pros and cons of feasible alternatives
- Recommends measures to eliminate, offset, or reduce adverse environmental impacts to acceptable levels (sitting, design, technology offsets)
- Proposes monitoring indicators to implement mitigation measures
- Describes an institutional framework for environmental management and proposes relevant capacity building needs.

The environmental assessment evaluates a project's potential environmental risks and impacts in its area of influence; examines sub-project alternatives; identifies ways of improving sub-project selection, siting, planning, design, and implementation by preventing, minimizing, mitigating, or compensating for adverse environmental and social impacts and enhancing positive impacts; and includes the process of alleviating and managing adverse environmental impacts throughout sub-project implementation.

This report has established all the significant impacts that need to be addressed and proposed appropriate measures to prevent or reduce any risk that may be posed to the environment (physical, biological and social). The adverse impacts and their mitigation measures are well outlined in the ESMP including responsible parties, duration and cost in the whole project cycle. The experts also consulted the public in developing this ESIA report as required by this policy

5 ANALYSIS OF PROJECT ALTERNATIVES

5.1 Introduction

The consideration of alternatives is one of the more proactive sides of environmental assessment. This process enhances the project design through an examination of potential options instead of only focusing on the more defensive task of reducing adverse impacts of a single design; this therefore calls for comparison of feasible alternatives for the proposed project in terms of site, technology, design and operation.

5.2 No Action Alternative

The No Action Alternative in respect to the proposed project implies that the status quo is maintained, that is no construction/redevelopment activity takes place. This option is most suitable alternative from an extreme environmental perspective as it ensures non-interference with the existing conditions. However, the need for such redevelopment is high and the anticipated environmental and social impacts resulting from construction have already been experienced. The land will remain under-utilized or neglected. The No Project Option is the least preferred from the socio-economic and partly environmental perspective since if the project is not done:

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

5.3 Alternative Site

Relocation option to a different site is an option available for the project implementation. At the moment, there are no alternative sites for the proposed development (i.e. the project proponent does not have an alternative site). This means that the proponent has to look for the land if relocation is proposed. Looking for the land to accommodate the scale and size of the project and completing official transaction on it may take a long period. In addition, it is not a guarantee that such land would be available. It is also worth noting that the said project is already underway in terms of seeking development approvals in various government departments and conducting of various other essential activities like socio-economic surveys, neighborhood analysis and geotechnical surveys. Therefore, the project proponent would spend another long period of time on design and approvals of the plans by the relevant government departments. The project design and planning before the stage of implementation would call for costs; already incurred in the proposed development i.e. whatever

has been done and paid to date would be counted as a loss to the proponent. In consideration of the above concerns and assessment of the current proposed site, relocation is not a viable option.

5.4 Alternative Designs

All designs made for this project have been done professionally taking into account the topography, soil types and structure and with all environmental considerations to make sure that the developments do not negatively affect the surrounding environments and the people in the area. The architectural designs, structural engineering of the proposed buildings and roads are specially designed and the construction will use modern technologies that are in accordance to sustainable development and green economy.

Sustainability design principles and construction parameters will be incorporated in the proposed project. Thus, the selection of materials will be informed by sustainable environment practices. Equipment that saves energy and water and minimizes hazards will be given first priority without compromising on cost or availability factors. The recruitment of labor and procurement of materials and equipment will be guided by national laws and best practice guidelines.

5.5 Materials

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

5.6 Alternative Land Use Activities

The area is in a mixed residential zone i.e. used for commercial establishments and some residential development like the upcoming Buxton Apartment that is nearby. Alternative land use activities may conflict with surrounding land use activities. For uniformity purposes, the proponent is interested in redevelopment of affordable units similar both in form and character to what is existing in the nearby neighborhood.

5.7 Waste Management Alternatives

Solid wastes will be collected from the site for safe disposal by a NEMA licensed waste collector after necessary contractual agreement during both construction and operational phases. For solid wastes management, an integrated solid waste management system is recommended which is as follows. a) First the

proponent should give priority to reduction at source of the materials. This option will demand a solid waste management awareness programme. b) The proponent should also consider recycling and reusing of the waste as a second alternative in priority. This shall call for at source separation programme to be put in place. The recyclables may be sold to waste buyers locally or directly to any company that recycles waste such as plastic bags. c) The third priority in the hierarchy of options is landfilling of the waste that is not recyclable or reusable. It is to the interest of the proponent and the community that the waste is effectively managed so as to maintain a safe and healthy environment to the workers and the community at large through appropriate disposal mechanism.

The proposed housing project proposes to use a septic tanks system to handle sewage from the proposed development. The septic tanks will be emptied of sludge from time to time using waste exhausters.

6 ANTICIPATED IMPACTS AND MITIGATION MEASURES

6.1 Introduction

This section focuses on the anticipated impacts during the construction, operation as well as decommissioning phases of the proposed project. The impacts can be positive or negative, direct or indirect, reversible or irreversible. The extent of the environmental impacts is determined by its significance and magnitude as well as whether temporary or permanent, long or short term, localized or widespread. This section also outlines proposed mitigation measures for the identified possible adverse impacts for the proponent's action throughout the project implementation.

6.2 Positive Impacts

6.2.1 Positive Environmental Impacts during Construction Phase

I. Creation of Employment Opportunities

Several employment opportunities will be created for construction workers during this phase of the project and will employ both skilled and unskilled labour. Most of the construction labour will be sourced locally and this will benefit the local residents, especially the youth who are the main victims of the high rate of unemployment in the project area.

II. Provision of Market for Supply of Building Materials

The project will require supply of large quantities of building materials, most of which will be sourced locally. This provides ready market for local building materials. This will in turn improve income generation for local materials suppliers, quarrying companies, hardware shops etc.

III. Increased Business Opportunities

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

IV. Revenue to National and County Governments

The project construction phase will generate revenue for both the national and county government. The national government will benefit from various taxes (e.g. income tax, Value Added Tax (VAT) etc.) and approval fees (e.g. NCA). The county government will gain revenue in the form of construction plan approvals, local business licenses/permits etc. All materials will be imported through the existing transports hubs which will earn revenue to the county.

V. Improved Infrastructure

The project activities will involve installation of new public utility infrastructure like roads, electricity network, water supply network and wastewater treatment system as well as improvement of existing ones. Access to education and health facilities will also be improved through construction of a school and dispensary respectively. Improvement of infrastructure has the potential to spur further development in the project area.

VI. Optimal use of land

By building the affordable housing units the design has incorporated an optimal use of the available land. Land is a scarce resource in Kenya. Where only 114 houses occupied the area, the project intends to construct 1700 units, social amenities comprising of shops, an Early Childhood Development Centre, playgrounds/pitches at rooftops among others therefore maximizing on us of the land.

6.2.2 Positive Environmental Impacts during Operational Phase

I. Provision of Affordable Housing Facilities

The project will provide modern housing facilities. The county government will ensure availability of power, water supply and sanitation utilities. The project will utilize improved construction standards, materials and technology, with a shift from old construction methods such as mud and thatch buildings. This will ensure health and safety standards are maintained for the benefit of the occupants.

II. Employment Opportunities

More employment opportunities will be created during the operation phase. These will include estate management personnel, security guards, repair and maintenance technicians, waste management service providers etc.

III. Improved Security

During the occupation phase there will be need to improve the security of the project area due to increase in population occasioned by the arrival of new settlers. Part of the security apparatus to be put in place will include street lighting along the access roads as well as enhanced vigilance through the Nyumba Kumi Initiative.

IV. Promotion of social cohesion

The development will bring together people with diverse traditions and culture. It will lead to promotion of cultural interaction. The proposed project shall bring at least 1700 households to live on the same estate. This may help the households in saving some of the overheads such as security, waste disposal etc since if they were to live on individual plot, and some of these costs would have to be borne individually without any economies of scale which are otherwise shared.

6.2.3 Positive Environmental Impacts during Decommissioning Phase

I. Rehabilitation

Upon decommissioning the project, rehabilitation of the project site will be carried out to restore the site to acceptable environmental status. This will include replacement of topsoil and re-vegetation. Landscaping will also be conducted where necessary to improve the visual quality of the area.

II. Employment Opportunities

Several employment opportunities for both skilled and unskilled workers will be created during the decommissioning phase. These will include demolition workers, technicians for disconnection of both electrical and water supply utilities, waste management service providers and transporters to move the occupants and allowing for demolition to commence.

6.3 Potential negative impacts and mitigation measures

6.3.1 Tenants Relocation

Mzizima estate on which the project is proposed is owned by the Mombasa County government. The housing units within the estate have tenants who have lived in the house over a lengthy period of time. By the records held by the Mombasa County government, the legitimate tenant's number is 114. The existing tenants will be affected by the demolition of existing housing stock to pave way for the housing units to be built. The disruption will be both in the form of social networks disruptions, loss of livelihoods and social support structures that have developed over the lengthy period most of the tenants have been resident at the estate.

Potential Mitigation Measures

- *Agreed relocation package should target tenants currently resident at Mzizima estate*
- *Implement a robust grievance redress mechanism*

6.3.2 Construction Phase

I. Vegetation clearing

Most of the vegetation within Mzizima Estate will be cleared to create space for construction of structures and the needed supporting services and facilities. The overburden shall be removed from the construction site. This process of vegetation clearing is associated with loss of biodiversity, soil erosion and increased run off. The loss of vegetation also has a great effect on the general and localized environment and normally can modify microclimate. There will be some temporary and permanent disturbances to small animals / bird life especially those that inhabit the project area. With regards to flora, there are no known red data species or significant indigenous vegetation on-site or within the project area. The only areas of concern with regards to biodiversity are a few trees and grass vegetation.

Mitigation measures

- *Landscape and plant vegetation in all open areas after the completion of the project and manage the introduced vegetation on completion of the development to restore or improve the site.*
- *Restriction of construction activities to defined project areas.*
- *Provide drainage channels to natural drains and rivers/streams to minimize erosion.*
- *After completion of soil work, grasses are to be planted to minimize soil erosion.*
- *No vehicle shall be allowed access onto the stockpiles after they have been placed.*
- *Stockpiles shall not be allowed to become contaminated with oil, diesel, petrol, garbage or any other material, which may inhibit the later growth of vegetation.*
- *Soil conservation measures would be taken to the stockpiles to prevent erosion. This can include the use of erosion control fabric.*
- *Soil stockpiles shall not be higher than 2.5 m or stored for a period longer than 2 months.*

II. Land Degradation

Most of the building materials such as stones, aggregates, and sand required for construction of the proposed project will be obtained from nearby quarry sites, concrete block sites and borrow pits. Since substantial quantities of these materials will be required for construction of the residential development, the availability and sustainability of land resources at the extraction sites will be negatively affected as they are not renewable in the short term. Similarly, during demolition of existing structures and construction of the proposed housing project a lot of construction solid wastes will be generated. These include papers used for packing cement, plastics, timber remains, landscape and land clearing debris, asphalt pavement, gravel and aggregate products, concrete, masonry scrap and rubble (concrete masonry, stone) among others. These will have a negative impact on the receiving environment. It is expected that the contractor will obtain these materials for construction purposes from licensed suppliers or from authorized areas. Likewise, disposal of construction waste will be on designated sites. The extent of this impact is localized with a low intensity. The impact will be highly reduced /eliminated with mitigation. Therefore, the impact is negative and of low significance. Movement of this material could have an impact on the environment and settlements.

Mitigation measures

- *The contractor to obtain raw materials from sources that are compliant with NEMA Regulations.*
- *The contractor to procure quantities that are sufficient for the intended works only.*
- *Recycling as far as practical to stem wastage is recommended.*
- *The contractor shall commit to extensive use of recycled raw materials as will be appropriate and in a manner that does not compromise the safety of the development.*

III. 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

- *Efficient use of building material to reduce waste and recycling/reuse where feasible.*
- *Engage the services of registered waste handlers to collect and transport waste to designated disposal sites.*
- *Provision for waste management rooms at strategic places within the development facility.*
- *Segregation of waste at the source during the project cycle.*
- *To manage waste in line with the Waste Management Regulations, 2006.*
- *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*

IV. Liquid Waste Generation

During construction a large number of workers will be employed who will require adequate sanitation facilities. Waste water will also be generated during construction activities such curing. This will be a concern that the contractor has to address as he engages in construction of the proposed houses.

Mitigation Measures

- *The proponent will install portable toilets that will be maintained clean and ensure adequate water supply.*
- *Control of water usage during construction activities to minimize on wastage.*
- *Provide water and soap for washing hands after visiting the toilets.*

V. 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

- *Ensure no burning of waste such as paper and plastic containers on sites/non-designated areas.*
- *Minimize exposed areas through the schedule of construction activities to enable dust control.*
- *Minimize the period for idling of machinery and construction vehicles.*
- *Monitor the air pollution levels regularly as per the Air Quality regulations.*

- *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.*
- *All staff employed at the construction site and visitors must be provided with dust masks and other PPEs.*
- *All waste must be transported off-site for processing, not burnt or stored for any longer than is absolutely necessary.*
- *Machines must not be left idling for unnecessary periods of time.*
- *Alternatively, fueled construction equipment shall be used where feasible.*
- *Perform construction at times that persons are expected to be at work and school.*
- *All raw materials where possible must be sourced as close as possible to the construction site thus reducing the emissions from vehicular traffic.*
- *Regular and prompt maintenance of construction machinery and equipment to minimize generation of hazardous gases.*
- *Regular sprinkling of water on work areas to prevent fugitive dust violations.*
- *Restricting heights from which materials are to be dropped, as far as practicable to minimize the fugitive dust arising from unloading/loading.*
- *Use environmentally friendly fuels such as low sulphur diesel.*
- *Buffer area of trees and other vegetation will serve as natural windbreaks.*
- *Use of dust nets/screens around the construction site to contain and arrest dust.*
- *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.*

VI. Oil Leaks and Spills

During construction phase, some of the site's construction equipment will require diesel and/or oil. It is also important to note that oil/grease spills are prevalent in construction sites and in most areas that make use of petroleum products. Such products contain detrimental elements to the environment. Though this may not be common at the site, it is wise to control and observe the little that could occur especially during maintenance of the involved machinery. There is therefore the risk of leaks or spills and the potential for contaminating the site's soil. The impacts of improperly stored fuel and other chemicals could prove detrimental if these fluids infiltrate the surface waters or groundwater systems. Management guidelines should be implemented in order to regulate and document the use of explosives, chemicals and fuels within the project site. Operators should express due caution when it comes to the re-fueling of equipment on site, as an accidental oil spill is more likely to occur during these activities. Spillage of hazardous materials shall be managed by implementing the following measures;

- *Train personnel on the risks of oil spills and leakages.*

- *Refueling and maintenance of large vehicles will only take place at a designated garage.*
- *All hazardous materials will be stored in appropriately bunded containers and placed on concrete floor as where applicable.*
- *Maintaining spill response kits at the construction site at all times.*
- *Prepare and display on site spill response procedures and training of workers on spill response and management.*
- *The site design should incorporate oil sumps at the parking areas to isolate oil spills from parked vehicles that might spill to the storm drains.*
- *No solid waste, fuels or oils shall be discharged on land surface or into drains.*
- *All oil products and materials should be stored in site stores.*
- *Any wash off from the oil/grease handling area or workshop shall be drained through impervious drains.*
- *Regularly check for leaks from paint containers.*
- *Unwanted paint will not be disposed by pouring it on soil or storm water drains.*
- *All machinery must be keenly observed not to leak oils on the ground. This can be affected through regular maintenance of the machinery. Maintenance must be carried out in a designated area (protected service bays) and where oils are completely restrained from reaching the ground. Such areas should be covered to avoid storm from carrying away oils into the soil or water systems.*

VII. Occupational health and safety hazards

The movement of materials in the construction site by workers and machine handling during construction may cause accidents and injuries. This has a direct effect on the health of the workers and productivity.

Mitigation measures

- *Provision of adequate and appropriate PPE including safety shoes, helmets, gloves and overalls.*
- *Employees to be given the correct tools and equipment for the jobs assigned.*
- *Employees to be trained in the use of all equipment that they will be required to operate.*
- *The contractor will conduct periodic safety inspection and risk assessment.*
- *First aid services and an emergency vehicle to be readily available at site.*
- *Moving parts of machines and sharp surfaces to be securely protected with guards to avoid unnecessary contacts and injuries during installation phase.*

VIII. 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

- *Serviceable machines will be used for excavation to ensure vibrations are kept at below risk levels.*
- *Construction work and delivery of raw materials will be limited to daytime on weekdays only.*
- *Employees using equipment that produce peak sounds shall be provided with earmuffs.*
- *The contractor will deploy compact machinery and fit them with mufflers and vibration dampers.*
- *The contractor will endeavor to comply with Noise Regulations, 2009.*

IX. Traffic impact

This will occur as vehicles bring in deliveries at the site and as workers leave or come to the site. The site will generate higher traffic than normally experienced in the project area. Considering the existing traffic which is mainly bodaboda/tuktuks, inter and intracounty PSV transport vehicles, the additional vehicles serving the project will definitely be a significant number. This has the potential to cause an increase in road accidents. Precautions have to be put in place to reduce traffic accidents and incidents.

Mitigation measures

- *Heavy Commercial Vehicles (HCVs) delivering material shall observe designated speed limits for the area.*
- *Speed bumps should be erected on road sections passing through populated residential and market centers and near schools and worship centers.*
- *Proper signage and warnings shall be placed at appropriate places along the site road to forewarn other motorists of HCVs turning and transportation of abnormal loads.*
- *Delivery of material for the installation shall be undertaken during off-peak hours.*
- *All materials will be offloaded on the site and adequate space for that will be provided. Flagmen / traffic marshals shall be deployed at the entrance to guide traffic.*

X. Increased Water Demand and Usage

Construction projects utilize significant quantities of water for concrete mixing laying and curing. Water will also be required for human use including drinking and sanitary needs. This could lead to strain on the available water resources.

Mitigation measures

- *The contractor will ensure water conservation in all activities.*
- *Water will be recycled where possible without compromising on quality and health.*
- *Ensure good use of water resources during construction by installing taps on all outlets, and minimize wastage by ensuring regular repair and replacement of broken or worn-out pipes and fittings.*
- *The contractor will put in place sound sufficient water storage reservoirs that are leak proof.*
- *The contractor will instill water use discipline among employees.*

- *The contractor will seek alternative water source apart from the reticulated supply from County Supply line.*

XI. Increased energy demand

Construction activities will use engine-driven machinery such as transportation vehicles, concrete mixers and vibrators, compressors and power generators that require fossil fuel inputs such as diesel and petrol. Their continual application will increase the demand for energy.

Mitigation measures

- *Switch off engines when not in use.*
- *Use well serviced construction machinery that is efficient in fuel consumption.*
- *Maximize the use of natural lighting by limiting construction works to day time.*
- *Create awareness among workers on the importance of conservation of energy resources.*
- *Employ technologies that demand less energy consumption.*
- *Use energy saving lighting systems.*

XII. Insecurity

Construction sites in Kenya attract all manner of people not directly engaged in the work. These will include people hoping to secure some form of casual work, outside caterers and idlers. This introduces an element of insecurity at the construction site.

Mitigation measures

The contractor together with the proponent will undertake the following to mitigate insecurity:

- *Secure the site and have security personnel manning the site.*
- *The contractor to give out information of suspecting conduct within the site to the local administration.*
- *Hire services of security firm to monitor personnel or visitor movement within and close to the site.*
- *Formulate and instill place of work conduct.*
- *The proponent will work closely with the interior ministry to ensure the government provides security during construction.*
- *The proponent will fence off the project land.*

XIII. 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;

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

6.3.3 Operation phase

I. Increased water demand

The proposed premises will require significant volumes of water to run. Water will be needed for various household activities and uses e.g. drinking, sanitary use, laundry etc.

Mitigation measures

- *The occupants will put in place structural provisions for rain water harvesting e.g. roof gutters, to supplement huge demand by the settlement.*
- *Water be recycled without compromising on quality and health.*
- *Create awareness among residents on the importance of conservation of water resources.*
- *Seek a water extraction permit from WRA if a borehole is needed to supplement the supply demand.*
- *Put in place sound water storage reservoirs that are leak proof.*

II. Solid waste generation

The new settlements will generate substantial volumes of solid waste from human household activities. These will include waste papers, plastics, broken glass, kitchen waste etc. The waste may accumulate to undesirable volumes if not segregated and disposed of regularly thereby becoming a nuisance.

Mitigation measures

- *Use of an integrated solid waste management system (i.e. through a hierarchy of options: Reduce Reuse, Recycling and Dispose) is recommended.*
- *Provide a central waste receptacle.*

- *Dust bins to be provided at household level and be well secured from adverse weather and access by animals.*
- *Transportation of wastes from the site to be done by a NEMA registered solid waste handler.*

III. Effluent discharge

Large volumes of waste water will be generated from kitchens, laundry activities, ablution, toilets etc. This has a potential to infiltrate and contaminate both ground and surface water sources if not well managed. This may pose a health risk for both humans and animals when they consume polluted water through diseases and poisoning.

Mitigation Measures

- *Installation of septic tank/soak pit system to manage waste water*
- *Regular inspection and maintenance of internal sewer system*
- *Constant monitoring of water resources through regular sampling and testing*

IV. Storm water management

Additional construction activities are likely to generate large amounts of runoff from paved outdoor surfaces and rooftops during heavy rains. Additionally, poorly sited buildings could impede natural flow of surface runoff leading to flooding.

Mitigation measures

- *Plumbing to be undertaken by competent personnel.*
- *Rain water will be harvested by rain gutters that will be feeding water storage tanks.*
- *The gutters will be very effective at keeping building areas clear of falling water.*
- *To accommodate potential increase in construction developments in the future, construction of a storm drainage network should be considered to channel runoff away from residential areas.*

6.3.4 Decommissioning phase

The activities to be carried out during the decommissioning phase will include relocation of the existing population from the site, disconnection of electrical cables and fittings, disconnection of water supply and wastewater management system, demolition of buildings, transportation of demolition waste from the site and final landscaping and restoration activities.

These activities will result in negative economic, social and environmental impacts. At this stage, the proponent will prepare a due diligence decommissioning audit report and submit it to NEMA for approval at least three months in advance. All hazards such as exposed electrical wiring, residual gas in tanks, etc. to be safely removed and all hazardous materials disposed appropriately.

I. Solid waste generation

Significant amounts of solid waste will be generated during this phase of the project. Solid waste mostly generated will be in the form of soil, broken blocks, ceramics, timber, metal, glass, plastics and other debris.

Mitigation measures

- *Debris be collected from the site by NEMA licensed waste handlers*
- *Some waste materials should be collected and reused/recycled where possible e.g. soil can be used to backfill foundation trenches and septic tanks/soak pits; doors and windows in good, resalable condition might substitute for new products, or be donated and or sold for use on another project – a form of beneficial reuse.*
- *The contractor will endeavor to comply with the provisions of Legal Notice 121 of 2006 pertaining waste management and the National Solid Waste Management Strategy.*

II. Air pollution

During decommissioning phase dust will be expected from demolition activities and movement of vehicles. If generated in large quantities dust may present a respiratory hazard and also cause visual intrusion hence presenting accident risks. Dust is also a mechanical irritant to the eye. The health impacts as a result of the air quality will reduce the workers' productivity on the site and also have financial impacts in case they require treatment and medication.

Mitigation measures

- *Truck drivers will maintain low speeds to avoid raising dust.*
- *Employees will be provided with dust masks and goggles.*
- *Install dust trappers around the site to prevent dust from spreading in the neighborhood.*
- *Sprinkle dusty areas with water to keep dust level low.*
- *Trucks removing soil and other solid materials from the site should be covered to prevent spreading of dust into the surrounding areas.*

III. Occupational health and safety hazards

Demolition works at the site by workers and machine handling may cause accidents with potential to cause injury. This will affect the health of the workers and their potential to work.

Mitigation measures

- *Provision of adequate and appropriate PPE including safety shoes, helmets, gloves and overalls.*
- *Employees to be given the correct tools and equipment for the jobs assigned.*
- *Employees to be trained in the use of all equipment that they will be required to operate.*
- *The contractor will conduct periodic safety inspection and risk assessment.*

- *First aid services and an emergency vehicle to be readily available on site.*
- *Moving parts of machines and sharp surfaces to be securely protected with guards to avoid unnecessary contacts and injuries during installation phase.*
- *The contractor will fully implement the provisions of the Occupational Safety and Health Act, No. 15 of 2007.*

Table 6: Impact Analysis Matrix

Impact Matrix	Duration		Location		Magnitude			Extent			Significance		
Activity /Impact	**Long**	**Short**	**Direct**	**Indirect**	**High**	**Moderate**	**Low**	**National**	**Regional**	**Local**	**High**	**Moderate**	**Minor**
Vegetation clearance	X		X				X			X		X	
Soil erosion due to vegetation removal	X		X				X			X			X
Increased pollutants in the air		X	X			X			X		X		
Noise and excessive vibrations pollution		X	X			X				X	X		
Increased water pollution		X		X			X			X			X
Increased runoff	X		X			X				X		X	
Increased water demand	X		X			X				X		X	
Energy demand	X		X				X		X				X
Accidents and injuries to workers		X	X			X				X	X		
Solid waste generation	X		X			X			X			X	
Effluent generation	X		X				X			X		X	
Increased traffic	X		X				X			X			X
Increased pressure on public utilities	X			X			X		X				X
Increased potential for oil spills		X	X				X			X		X	
Displacement of residents		X	X			X				X	X		
Creation of employment	X		X			X			X			X	

7 PUBLIC CONSULTATION AND PARTICIPATION

7.1 Introduction

This chapter discusses the public engagement approach that was used to determine the project's primary issues and impacts. The Government of Kenya has made the Consultation and Public Participation (CPP) process a policy requirement and an obligatory practice. Section 58 of the EMCA (1999) on EIA for the purpose of achieving the fundamental principles. Section 17 (1) of the Environmental (Impact Assessment and Audit) Regulations of 2003 state that, in order to conduct an environmental impact assessment study under these Regulations, the proponent must confer with the Authority.

In order to achieve the goal of open decision-making, public participation is essential before project implementation. It allows people who are interested or affected parties a voice in matters that may influence their health, welfare, or quality of life and their surrounding directly or indirectly. The local community can also engage in determining project options, such as establishing and specifying feasible and long-term mitigation and compensation strategies, through consultation. Therefore, it is a good method for acquiring local environmental information by gaining a better knowledge of projected impacts from individuals who have lived in and know their environment.

The Government of Kenya wants to involve communities in policy development and implementation at the local level. Furthermore, the EMCA requires that the project proponent seek the opinions of persons/communities who may be impacted by the project, at the very least, describe the project's potential impacts and receive oral/written comments, which will be included in the ESIA for the proponent to execute. The views of all stakeholders, including the local community of the proposed project site, were taken into account and included in the ESIA report in accordance with the Environmental (Impact Assessment and Audit) Regulations (2003) and the Environmental Management and Co-ordination Act (1999).

7.2 Approach to the Public Participation and Stakeholders' Engagement Process

Objectives of the Consultation and Public Participation (CPP)

The purpose of the public consultation was to:

- Disseminate and enlighten stakeholders about the proposed project, including its essential components, location, and expected implications.
- To raise public knowledge about the need for an ESIA for the proposed project and the proper procedure for conducting one.
- Collecting opinions, concerns, and suggestions from those who are interested and affected.
- To guarantee that the developer and partners were aware of the stakeholders' issues early in the project development process

Consultation and Public Participation Methodologies

For public engagement and consultation, the following strategies and devices were used.

a. Questionnaires

The views of the public regarding the proposed project were sought through administration of questionnaires. Filled questionnaires are attached to this report as ***Appendix 3.*** The information gathered was analyzed and subsequently incorporated into the ESIA report.

b. Public Meeting

Three public meetings were held with the Stakeholders during public baraza sessions conducted at Tononoka Social Hall in Mombasa County on 17th, 18th & 19th November 2021. During the meeting, members of the public made submissions on project priorities that the proponent would consider. The public baraza meeting was organized through the office of the Mombasa County Commissioner in conjunction with Tononoka Chief's office. Mobilization was done through A3 printed notices put up at Mzizima Estate, Chief office and Tononoka Social Hall 14 days prior to the meeting dates and public meetings announcements aired on Radio Salaam radio station. The infomercial ran five times a day on days prior to the meeting dates. A newspaper advert was published on Daily Nation on 16th November 2020. The soft copy of this report includes an audio version of the commercial. In addition, on the days leading up to the meeting, a vehicle equipped with speakers drove around Mzizima estate and the surrounding region to remind residents of the meeting. The meeting brought together members of the public, CEC, representatives from the Department of Lands, Planning, Housing and Urban Renewal, Ward administrators Mvita Sub County, Shimanzi/Ganjoni, Majengo, Tononoka, Tudor and Old Town/Kizingo area, Senior Chief and Assistant Chief Tononoka, the developer (Jabavu Village Limited), Environmental Experts (Lead Experts, Sociologists and Associate experts).

Plate 12: Mounting of A3 printed notices at Mzizima Estate


Plate 13: Members of public reading the notice at Mzizima Estate

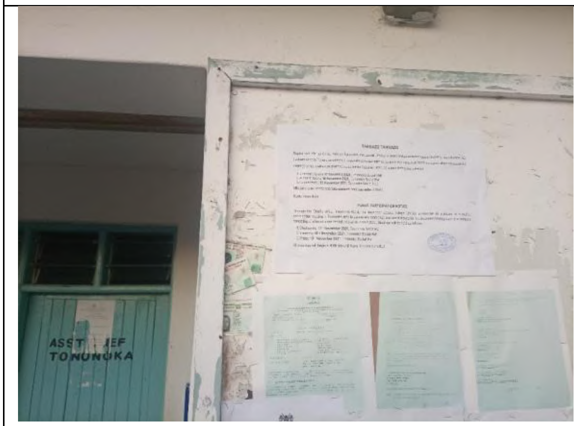

Plate 14: A3 printed notice mounted at the Chief's notice board

Plate 15: Members of public reading the notice at Chief's entrance

DAILY NATION MONDAY, NOVEMBER 15, 2021

PUBLIC NOTICE

Physical and Land Use Planning Act No. 13 of 2019

CHANGE OF USE

The owner of the plot bearing Land Registration Number 37/4/740; Located in Lavington along Tende Drive; within Nairobi City County; proposes to change its use from Residential use to Professional offices (Charitable organization). Subject to approval by the Nairobi Metropolitan Services. Any person or institution with any representation in connection to the proposal should forward them in writing within 14 days from the day of this notice to:-

The Director General
Nairobi Metropolitan Services
P. O. Box 40530-00100, Nairobi.

JABAVU

5th Floor, CIC Plaza II Mara Road, Upper Hill
Tel: +254798865764
info@jabavu.com

PUBLIC PARTICIPATION NOTICE

Jabavu limited, in conjunction with the County Government of Mombasa, department of Land, Planning, Housing & Urban renewal announces an invitation to a public participation meeting to assess environmental and social issues for the proposed development of a complex consisting of affordable residential units at Mzizima Estate. Meetings will be held as follows:

1. Wednesday 17th November 2021, Tononoka Social Hall
2. Thursday 18th November 2021, Tononoka Social Hall
3. Friday 19th November 2021, Tononoka Social Hall

All meetings will begin at 9:00 am until 1pm.

You are all invited

REPUBLIC OF KENYA
IN THE ENVIRONMENT AND LAND COURT
AT MOMBASA
CIVIL SUIT NO. 78 OF 2020

SAID SALEH .... PLAINTIFF

VERSUS

1. THE COURT REGISTRAR OF LANDS
2. OSMAN ALI ....
3. THE CHIEF LAND REGISTRAR .... DEFENDANTS

SUBSTITUTED SERVICE BY ADVERTISEMENT

TAKE NOTICE that the above matter in which you are named as the 2nd Defendant has been fixed for hearing on the 30th November 2021. Substituted service of hearing notice has been ordered by the Honorable Court by means of Advertisement.

TAKE NOTICE that failure to appear by yourself or by authorized representative, the Court shall proceed with the matter thereof and make further orders as shall be deemed just and expedient your absence notwithstanding.

DATED at MOMBASA this ... day of November 2021

ADVOCATES FOR THE PLAINTIFF

DRAWN & FILED BY,

ADVOCATES,

MOMBASA OUR REF.

WHERE TO STAY

A571 Hotels

PUBLIC NOTICE

Plate 16: Extract of the newspaper public notice advert

Plate 17: A3 printed notice mounted along the access to Amazon Slum

The baraza meeting were well attended with a total of 535 stakeholders signing the public participation attendance form. The consultants also consulted 103 immediate residents where their views were recorded on a questionnaire with specific queries on environmental and social cultural concerns.

Table 7: Public Participation and Stakeholders in attendance

No.	Meeting Venue	Dates	Attendance
1	Tononoka Social Hall	17th November 2021	189
2	Tononoka Social Hall	18th November 2021	194
3	Tononoka Social Hall	19th November 2021	152

COVID-19 prevention measures were observed during these meeting, the attendees observed social distancing and wore facemasks throughout the meetings and hands sanitize.

7.3 Overall Consultation Outcomes

Positive Impacts

- Avail affordable housing in the area;
- Improve security of the project area;
- The project will offer employment to the residents and improve the economic status of the proponent;
- Boost local business opportunities for the local traders and materials suppliers;
- Skills transfer to the local workforce;
- Generate revenue to the national and county government;

Negative Impacts

- The project will lead to increased emission of air and pollutants;
- Project will lead to increased crime scenes of insecurity, thefts and immoral behaviour;
- Generation of solid waste;
- Generation of surface run-off and waste water;
- The project will generate noise and vibrations;
- Traffic increase along the access roads.
- Relocation of current residents.

Table 8: Summary of concerns and responses to the concerns

Table below includes concerns raised during the Baraza meeting and responses given to specific concerns

No.	Concerns Raised	Responses
1	Need to assist low-income earners get mortgage facilities.	Mortgage facilities are available through Kenya Mortgage Refinance Company which provide mortgage at low interest. The County Government will organize an open day with specific banks that provide financing to offer more information on their services noting Bank regulations will be followed in the whole financing process.
2	Current Mzizima Residents should be prioritised and easy way of buying the houses provided	A discount is being offered only to the bonafide tenants at Mzizima and on buying the houses and will be given the first priority during the allocation of the houses. All parties have agreed on a return formula. The prices of the houses will range differently based on the location of the house
3	Residents requested if the cost of houses will be the same for Mzizima estate residents and general public	The developer will give a payment plan to allow the public to pay gradually as the construction is ongoing
4	If the project will be friendly to PLWD	All apartments have been provided with lifts and friendly paths
5	if there plans to upgrade old dilapidated houses owned by individuals	Estate upgrading project is only being carried on selected old County Estates
6	Amazon slum requested to be considered during the evacuation	The area chief noted residents at Amazon Slum have settled on the land illegally but as agreed in a previous meeting with them, they will be given adequate notice to vacate the land
7	Size of the house unites to be constructed	The developer assured the residents sizes of the rooms offer adequate spacing and they have followed the set guidelines
8	If there are other institutions within the estate other than the nursery school	The design has only provided for a nursery school that will be built as per set guidelines by the Ministry of Education
9	How the social amenities will be managed	The developer will run the management of the estate for 3 years and then the home owners' association will take offer
10	If the owners of the houses will be paying land rates to the County Government	Each house will have a certificate of ownership and as per the Sectional Properties Act the land rates will apply. However, the rates will be low since it will be shared by a large number of occupants on the same piece of land

No.	Concerns Raised	Responses
11	What the return formula for the resident is and the amount of deposit required to secure a unit	Mzizima Estate residents have been given a discount on buying the houses and will be given the first priority during the allocation of the houses. All parties have agreed on a return formula. The facility will have a management that will run the estate affairs. A deposit is allowed to book a unit with subsequent payments as the construction is ongoing. Mortgage services will be availed. Non-residents also stand a chance to own house within the estate
12	The locals asked whether locals will be given jobs	Jobs will be allocated to the local residents especially the youth and those interested to register with the ward administrator as informed earlier
13	Residents from Mandizini slum asked if they be facilitated to evacuate from the area	The area Chief pointed out Mandizini slum is not related to the proposed project
	Mzizima residents living in make shift houses within the estate asked if they will be facilitated to relocate	A discount is being offered only to the bonafide tenants at Mzizima
14	Whether temporary settlement equivalent to amount being allocated for evacuation will be provided	Temporary settlement plan is not feasible. Half of the housing units that will be allocated to the County Government will be rented. Proper legal documentation has been done and the transactional advisor at the meeting is handling the legal issues of the project
15	Who owns Mzizima Estate land	Mzizima land is a municipal land owned by the County Government. The National Land Commission is very much aware of the whole project.
16	Benefits of the county from the project	A percentage of the houses will be owned by the County Government. Half of the houses allocated to the County will be rented, and thus they will generate income to the County. The County will also gain through payment of Land rates and overall, it will achieve its mandate of providing houses to the residents. The project will also give a good appeal to Mombasa being a tourist city.
17	The project developer to consider a desalination plant to sort water problems	The residents were informed that Coast Water Works Development Agency is constructing a new waterline that will sufficiently supply water to the project area

7.4 Public Baraza Photo Gallery

Plate 18: Photos of Public Baraza meeting held on 17th November 2021

Source: Public Baraza meeting

Plate 19: Photos of Public Baraza meeting held on 18th November 2021

Source: Public Baraza meeting

Plate 20: Photos of Public Baraza meeting held on 19th November 2021

Source: Public Baraza meeting

7.5 Consultations beyond ESIA Process

Consultations should be planned to facilitate the completion of the project implementation in order to ensure that the development runs smoothly. 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 survey should cover important topics such as the operation and maintenance's long-term viability and suitability to assure acceptable standards.

*Copies of these questionnaires and baraza minutes are appended to this report (**Appendix 2 and Appendix 3**).*

8 ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

8.1 Introduction

The Environmental and Social Management Plan (ESMP) is a site-specific plan developed to ensure that the project is implemented in an environmentally sustainable manner where all stakeholders including the project proponents, contractors and subcontractors, including consultants, understand the potential environmental risks arising from the proposed residential project and take appropriate actions to properly manage the risks. Adequate environmental management measures need to be incorporated during the entire planning, construction and operation stages of the project to minimize any adverse environmental impact and assure sustainable development of the area. The ESMP is proactive in nature and should be upgraded if new facilities or modification of existing facilities, with environmental concerns, come up at a later stage.

8.2 Objectives of the ESMP

The purpose of this Environmental and Social Management Plan (ESMP) is to provide a consolidated summary of all the Environmental and Social commitments relevant for all phases of the housing project. The measures focus on environmental (such as air emissions, biodiversity and environmental contamination) and social aspects (such as the protection of human rights, communication with local stakeholders, safety of workers and communities). This ESMP also gives an overview about the Environmental and Social Management System that is being implemented to ensure systematic and effective execution of these commitments, including roles and responsibilities between the developer, contractor and any other stakeholder.

The ESMP can be updated as the project proceeds through detailed design and construction to reflect the results of discussions with stakeholders and to include details of any other Environmental and Social developments. This ESMP section outlines a vital output which constitutes the final output of the environmental and social impact assessment exercise. The ESMP extended herein outlines the: -

- Safety considerations
- Health and environmental risks associated with the project
- Detailed mitigation measures
- Estimated financial costs
- Persons responsible for implementation and monitoring.

8.3 Training

The developer will provide an Induction Training to all its employees and Contractor personnel working on the Project before early works start. This Induction Training shall be conducted for all new workers, including those

that join the construction site later during construction phase. The goal of the training is for developer employees and contractor personnel (including sub-contractors) to understand:

- The mitigation measures included in this ESMP and how it will be implemented on site including responsibilities;
- The sensitivities of the area (if any) in which the Project will be constructed and operated;
- Occupational Health and Safety (H&S) rules at the construction site (e.g. personal protective equipment, rules of conduct, first aid);
- The Project's Grievance Mechanism and the basic worker's rights (Core Labour Standards);
- How to deal with enquiries/ questions/ grievances by the public/ local stakeholders;
- Interaction rules with the people living close to the construction site (Code of Conduct) and how to deal with unauthorized visitors to the site;
- How to deal with unforeseen incidents/emergency situations;
- The roles and responsibilities within the developer, the Contractors, sub-Contractors and workers with respect to environmental and social issues;

The developer shall keep records of the training sessions. The training shall be repeated as needed during the construction activities.

8.4 Stakeholder Engagement and Grievance Mechanism

The developer will ensure that the local communities are informed at an early stage about the proposed project, timelines, expected impacts and communication channels. The Resettlement Action Plan Policy Framework should provide clear guidelines on this process and it should be adopted at all stages of project implementation. The developer will also seek for feedback from the communities about the Project. As part of its community liaison process, the developer will implement a Grievance Mechanism to ensure that all stakeholder comments, suggestions and objections are captured and considered. It will allow the affected community and the workers to express their concerns and any complaints directly to the developer. Contact details and information on the procedure, including grievance form, will be distributed to the local communities. It is envisaged that in general, grievances will be responded to within 20 working days after receipt. All comments and complaints will be investigated by the developer and appropriate action taken as necessary. Records of all complaints and actions will be maintained on site.

Table 9: Environmental and Social Management Plan

Environmental/ Social Impact	Proposed Mitigation Measures	Responsibility for mitigation	Monitoring frequency	Estimated Cost (Kshs)
CONSTRUCTION PHASE				
Soil erosion	– Ensure management of excavation activities – Providing soil erosion control structures on the steeper areas of the site & controlling activities during the rainy season – Compact loose soils to minimize wind erosion	Proponent Contractor	Routine inspection	200,000
Air pollution	– Regular sprinkling of water on dusty areas and access roads – Careful screening of construction site to contain and arrest construction related dust. – Enclosing, covering and watering of exposed stockpiles e.g. sand – Ensure construction machinery and equipment are well maintained to reduce exhaust gas emission – Drivers of construction including bulldozers, earth-movers etc. will be under strict instructions to minimize unnecessary trips and minimize idling of engines. – Using efficient machines with low emission technologies for the ones that burn fossil fuels.	Proponent Contractor Workers and Drivers	Daily inspection Routine maintenance	300,000

Environmental/ Social Impact	Proposed Mitigation Measures	Responsibility for mitigation	Monitoring frequency	Estimated Cost (Kshs)
	– Comply with EMCA (Air quality) Regulations 2014			
Noise and excessive vibrations	– Construction activities to be restricted to daytime i.e. 8am to 6pm – Use of suppressors or noise shields on noisy equipment for instance corrugated iron sheet structures – Sensitize operators of construction machinery on effects of noise – Trucks used at construction site shall be routed away from noise sensitive areas where feasible. – Maintain plant equipment to suppress frictional noise – Workers in the vicinity or involved in high-level noise to wear PPE – Minimize vibrations by using hi-tech equipment that produces lesser vibrations during excavation. – Comply with EMCA (Noise and excessive vibration pollution control) Regulations 2009	Proponent Contractor Workers Drivers	Random inspection Routine maintenance	500,000
Oil pollution	– Proper storage, handling and disposal of new / used oil and related wastes – Maintain construction machinery and equipment to avoid leaks	Proponent Contractor	Routine maintenance	100,000

Environmental/ Social Impact	Proposed Mitigation Measures	Responsibility for mitigation	Monitoring frequency	Estimated Cost (Kshs)
	– Maintenance of construction vehicles to be carried out in the contractor's yard (off the site)			
Storm water drainage	– Proper installation of drainage structures/facility – Ensure efficiency of drainage structures through proper design and maintenance	Proponent Contractor	Routine inspection and maintenance	700,000
Solid waste and liquid waste	– Segregate the waste at the site – Ensure proper disposal of construction waste to approved sites – Engage services of a registered NEMA waste handler to dispose the waste – Covering of the trucks during transportation, all the building materials and waste – Sensitize workers on the reuse of materials where appropriate. – Provision of adequate and appropriate sanitary facilities for the construction workers – Proper decommissioning of all the sanitary facilities – Comply with EMCA (Waste management) Regulations 2006	Proponent Contractor Workers	Weekly inspection	500,000
Increased water demand	– Employ services of waters vendors to supplement water supply	Contractor Workers	Daily inspection	350,000

Environmental/ Social Impact	Proposed Mitigation Measures	Responsibility for mitigation	Monitoring frequency	Estimated Cost (Kshs)
	– Sensitize occupants and workers to reduce water wastage e.g., by reusing where applicable – Install water efficient appliances			
Traffic congestion	– Employ traffic marshals to control traffic in and out of site – Ferry building materials during off-peak hours – Provide traffic control signs at the site/entrance to notify motorists and general public about the development – Enforce speed limits for construction vehicles especially along the roads leading to the site – Ensure that the vehicles comply with axle load limits – Employ well trained and experienced drivers	Proponent Contractor Drivers	Daily inspection	200,000
Health and safety of workers	– Construction work shall be limited to daytime only – Workers to be adequately insured against accidents. – All workers will be sensitized before construction begins on how to control accidents related to construction. – Keep record of the public emergency service telephone numbers including: Police, Fire brigade, Ambulance at strategic points – Provide first aid kits at strategic places in the site	Proponent Contractor Workers	Weekly inspection	200,000

Environmental/ Social Impact	Proposed Mitigation Measures	Responsibility for mitigation	Monitoring frequency	Estimated Cost (Kshs)
	– All workers to wear protective gear during construction e.g. helmets. – A comprehensive contingency plan shall be prepared before construction begins on accident response.			
Insecurity	– Provide security guards to monitor movement in and out of the site during construction period for both day and night – Install security lights at the site to enhance security.	Contractor Proponent	Daily inspection	200,000
Fire	– Installation of firefighting facilities – Develop and adapt an (fire) emergency response plan for the project – Ensure that all firefighting equipment are regularly maintained and serviced. – Provide fire hazard signs such as 'No Smoking' sign, direction to exit in case of any fire incidence and emergency numbers.	Contractor Proponent Workers	Routine inspection and maintenance	100,000
Conflict with neighbours	– Establish a grievance redress mechanism that is easy to access for stakeholders to report their concerns as they happen	Proponent	Continuous communication	200,000

Environmental/ Social Impact	Proposed Mitigation Measures	Responsibility for mitigation	Monitoring frequency	Estimated Cost (Kshs)
	– Continuous communication between the developers and the stakeholders on the progress of the project and its effects			
Emergence and Spread of Social Vices	– Conduct periodic sensitization forums for employees on ethics, morals, general good behaviour and the need for the project to co-exist with the neighbours. – Ensure enforcement of relevant legal policy on sexual harassment and abuse of office. – It is recommended that the contractor employs workers from the immediate area where possible to avoid social conflict – Offer awareness, guidance and counselling on HIV/AIDS and other STDs to employees; – Provide safety tools such as condoms to employees	Contractor Proponent Workers	Continuous sensitization Random inspections	500,000
OPERATIONAL PHASE				
Liquid waste	– Regular inspection and maintenance of the internal sewer system. – Expansion of the trunk sewer system to accommodate the increasing load from the development	Proponent Occupants	Periodic checks Routine Maintenance	300,000

Environmental/ Social Impact	Proposed Mitigation Measures	Responsibility for mitigation	Monitoring frequency	Estimated Cost (Kshs)
Solid waste generation	– Encourage segregation of waste (organic and inorganic) – Provide for clearly marked dustbins to serve the specified use. – Ensure that wastes generated are efficiently managed through recycling, reuse and proper disposal procedures. – A private NEMA licensed company to be contracted to handle solid waste and dispose it of in designated dumpsites. – Routine cleaning of the waste collection points/cubicles	Proponent Occupants	Periodic inspection	250,000
Air pollution	– Regular cleaning of dust prone areas such as driveways and corridors – Comply with EMCA (Air Quality regulations) 2014	Proponent Occupants	Routine maintenance	100,000
Noise and vibration Pollution	– Do annual noise monitoring, to adhere to acceptable standards – Sensitize occupants on minimal permissible noise levels – Comply with EMCA (Noise and excessive vibration pollution control) Regulations 2009	Proponent Occupants	Periodic inspection	250,000
Storm water drainage	– Proper maintenance of drainage structures – Inspection and maintenance of water harvesting facilities	Proponent	Routine inspection and maintenance	100,000

Environmental/ Social Impact	Proposed Mitigation Measures	Responsibility for mitigation	Monitoring frequency	Estimated Cost (Kshs)
	– Collection of excess storm water into underground tanks for reuse e.g., car washing			
Increased water use	– Use water efficient appliances and fittings – Reuse of harvested rain-water e.g. cleaning pavements and cars – Place notices at water taps e.g. 'TURN OFF TAP AFTER USE – Provision of roof/ underground tanks for water storage – Regular maintenance of all water components	Proponent Occupants	Periodic Inspection Routine maintenance	150,000
Increased energy use	– Switch off electrical appliances when not in use. – Maintenance of electrical components. – Use energy efficient electrical appliances and fixtures such as bulbs – Use of solar energy as alternative energy supply	Proponent Occupants	Daily Observation	150,000
Fire	– Install firefighting equipment – Sensitize the occupants on fire risks i.e. conduct regular fire drills – Provide escape routes/emergency exits in the buildings – Adapt effective emergency response plan – Inspect firefighting equipment regularly – Provide emergency numbers at strategic points	Proponent Occupants	Routine inspection	100,000

Environmental/ Social Impact	Proposed Mitigation Measures	Responsibility for mitigation	Monitoring frequency	Estimated Cost (Kshs)
Insecurity	– Engage services of security guards to man the premises day and night – Installation of CCTV cameras at strategic points for monitoring and enhancing the security of the property during operation phase. – Placing alarms around the project and establishing emergency preparedness and response procedures – Place hotline numbers on strategic places – Sensitize occupants on security precautions – Encourage community policing and formation of Nyumba Kumi communities	Proponent Occupants	Periodic inspection Routine maintenance	150,000
Traffic	– Provide traffic signs to reduce risk of accidents – Provision of adequate on-site parking bays – Regular maintenance of the parking bays – Provide separate entry and exit points for motorized and nonmotorized traffic to ease traffic flow and avoid collisions.	Proponent	Routine maintenance	100,000
DECOMMISSIONING PHASE				
Demolition of existing structures	– Apply for demolition permit from relevant authorities before commencing the demolition	Project Proponent Contractor NEMA	Daily inspection	6,000,000

Environmental/ Social Impact	Proposed Mitigation Measures	Responsibility for mitigation	Monitoring frequency	Estimated Cost (Kshs)
	– Engage a registered private contractor to carry out the demolition – Provide workers with PPE – The demolition exercise to be limited to day time only – Comply with EMCA (Noise and excessive vibration pollution control) Regulations 2009	inspectors		
Air pollution	– Dust suppression with water sprays on dusty areas – Careful screening of construction site to contain and arrest construction related dust – Ensure demolition machinery and equipment are well maintained to reduce exhaust gas emission	Proponent Contractor NEMA inspectors	Daily inspection Routine maintenance	500,000
Noise and excessive vibrations	– Demolition activities to be restricted to daytime (8am to 5pm) – Use of Suppressors on noisy equipment or use of noise shields for instance corrugated iron sheet structures – Workers in the vicinity or involved in high level noise to wear respective safety & protective gear. – Comply with EMCA (Noise and excessive vibration pollution control) Regulations 2009	Proponent Contractor Workers NEMA inspectors	Routine inspection and maintenance	250,000

Environmental/ Social Impact	Proposed Mitigation Measures	Responsibility for mitigation	Monitoring frequency	Estimated Cost (Kshs)
Health and safety of workers	– All workers to wear PPEs e.g. helmets, safety boots and ear muffs – All workers will be sensitized before demolition begins, on how to control accidents related to construction. – Accordingly, adherence to safety procedures will be enforced. – All workers will be adequately insured against accidents.	Contractor Workers Proponent NEMA inspectors	Daily monitoring	200,000
Solid and liquid waste	– Ensure proper solid waste disposal and collection facilities – Refuse collection vehicles will be covered to prevent scatter of wastes by wind. – Demolition wastes to be collected by a licensed operator to avoid illegal final dumping at unauthorized sites. – All persons involved in refuse collection shall be in full protective attire. – Dismantling all fixtures and equipment of the internal sewer system	Contractor Proponent NEMA inspectors	Daily monitoring	500,000
Re-vegetation and comprehensive landscaping	– Put in place an appropriate re-vegetation programme to restore the site to its original status	Contractor Proponent	Random inspection and monitoring	350,000

Environmental/ Social Impact	Proposed Mitigation Measures	Responsibility for mitigation	Monitoring frequency	Estimated Cost (Kshs)
	– During the re-vegetation period, appropriate surface water run off controls will be taken to prevent surface erosion; – Monitoring and inspection of the area for indications of erosion will be conducted and appropriate measures taken to correct any occurrences; Fencing and signs restricting access will be posted to minimize disturbance to newly-vegetated areas;			

8.5 Environmental Monitoring

8.5.1 Scope and Purpose of Monitoring

The overall objective of environmental and social monitoring is to ensure that activities carried out during operations are environmentally and socially acceptable, and therefore sustainable.

Monitoring is a long-term process, which should begin at the start of construction of the site and should continue throughout the life of the project. Its purpose is to establish benchmarks so that the nature and magnitude of anticipated environmental and social impacts can be continually assessed. Monitoring involves the continuous or periodic review of construction, operation and maintenance activities to determine the effectiveness of recommended mitigation measures. Consequently, trends in environmental degradation or improvement can be established, and previously unforeseen impacts can be identified or pre-empted. Environmental monitoring allows measures to be implemented in order to prevent or avert negative impacts.

8.5.2 Identification of Performance Indicators

Performance indicators must be selected that are simple to monitor, and which will not necessitate the use of highly technical equipment or require specialized training. Three overall performance targets can be put forward to cover the construction of the sites, as well as operation and maintenance activities.

i. Improved environmental management
ii. Improved social management
iii. Enhanced occupational health and safety

8.5.3 Environmental Monitoring

Environmental monitoring programs for this project should be implemented to have all the activities that have been identified to have potentially significant impacts on the environment during normal operations. Environmental monitoring activities should be based on direct or indirect indicators of emissions, effluents, and resources. The key parameters to be closely monitored are the following:

- Soil erosion and sedimentation of water bodies during construction
- Changes in water quality during construction
- Air quality and noise impacts during both construction and operation
- Tree planting and re-vegetation of critical areas

Monitoring frequency should be sufficient to provide representative data for the parameter being monitored. Monitoring should be conducted by trained individuals following monitoring and record-keeping procedures and using properly calibrated and maintained equipment. Monitoring data should be analyzed and reviewed at regular intervals and compared with the operating standards so that any necessary corrective actions can be taken.

9 CONCLUSIONS AND RECOMMENDATIONS

This Environmental and Social Impact Assessment (ESIA) Study report has been prepared to provide sufficient and relevant information on the proposed Affordable Housing Units at Mzizima Estate in Mombasa County to enable the Authority-NEMA to establish the sustainability and compliant of the project and whether activities of the project are likely to have significant or adverse environmental or social impacts. Mitigation measures have been proposed for the identified impacts in this report and an ESMP for the implementation of the proposed measures presented. The ESMP presented in this report is a tool to be used by the project team and contractor during the entire life cycle of the project. From the foregoing analysis, the social and economic rating for this project is highly positive. Evaluation of alternatives has already shown that options are limited and costly. Already the proponent has sunk a substantial amount of money in the project up to design stage and relocation action planning.

Based on the findings of this study, the ESIA study team concludes that the project and subsequent operational activities will generate significant socio-economic benefits to the public, the proponent, local government and the nation at large. This study has also established a number of negative environmental consequences that the project activities are likely to induce if mitigation measures are not implemented effectively as they have been presented in Chapter 6 of this report.

This study indicates that the construction and occupation/operation of the proposed affordable houses will have positive impacts, which include employment, increase in the national/local housing stock and quality, increase in Government revenue, and improvement of standards of living. However, despite the outlined positive impacts, the proposed development will come up with some negative impacts such as increased pressure on existing infrastructure, potential pollution (to air, water, soil) mostly during construction phase, enhanced security risks and social crimes, occupational and safety hazards and increased waste (solid and liquid) generation among others. The proponent shall in liaison with the local administration respond appropriately to conserve the environment by avoiding activities that may negatively affect the environment. The proposed project design has integrated mitigation measures with a view to ensuring compliance with all the applicable laws and procedures as well as the legislation and regulatory framework that govern environmental management.

During project implementation and occupation, sustainable environmental management should be ensured; avoiding inappropriate use of natural resources, conserving nature and guaranteeing health and safety of all people, working at the project site, general public and inhabitants of the project.

From the foregoing and taking into consideration of all the foreseeable and relevant aspects, the proposed project is beneficial and important. It is our considerable opinion that the proposed residential development is a timely venture with a positive and significant contribution to the government housing policy as well as a key contributor to Governments of Kenya Big Agenda Four that incorporates affordable housing. The various service providers (power, sewer, water, garbage collection e.t.c.) must assess the respective requirements. The proposed design has met the basic requirements such as the minimum habitable room sizes and basic social services so far. Sound construction practices aimed at environmental conservation should also be adopted and special attention should be paid to the extended sources of raw materials such as water, sand, stones, and energy. We further note that wastes should be reduced to the minimum as this will save on costs and at the same time preventing environmental pollution. The waste contractors during both the construction and operational phases should exercise diligence in all activities to ensure environmental sustainability. During project implementation and occupation, sustainable environmental management (SEM) shall be ensured. The ESIA study team hereby recommends the approval of the project subject to the proponent 's commitment and adherence to all applicable Kenyan laws, project mitigation measures as presented in the ESMP section of this report and the implementation of all recommendation put forward as well as other best industry practices.

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APPENDICES

APPENDIX 1: LAND OWNERSHIP DOCUMENTS

APPENDIX 2: PUBLIC BARAZA MINUTES

APPENDIX 3: PUBLIC PARTICIPATION AND CONSULTATION FORMS

APPENDIX 4: PROJECT DRAWINGS

APPENDIX 5: CERTIFICATE OF INCORPORATION

APPENDIX 6: KRA PIN CERTIFICATE

APPENDIX 7: NEMA APPROVAL LETTER FOR ESIA TOR

APPENDIX 8: FIRM OF EXPERT AND LEAD EXPERT NEMA REGISTRATION CERTIFICATES AND PRACTICING LICENSES