Environmental and Social Impact Assessment (ESIA) Study Report for the Proposed Eco-friendly Sea Wall and a Ramp On Plot L.R. No. MN /I / 13373, Mombasa County.

Proponent	Firm of Experts
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CERTIFICATION

Certification by Lead Experts

We, Envasses Environmental Consultants Limited, hereby certify that this Environmental and Social Impact Assessment Study Report has been done under our supervision and that the assessment criteria, methodology and content reporting conform to the requirements of the Environmental Management and Coordination Act Cap. 387 of the Laws of Kenya.

Signed for and on behalf of: Envasses Environmental Consultants Limited
Firm of Experts No. 6175

Name: **Mr. Simon Nzuki** (NEMA Expert No. 1350) Designation: **Chief Executive Officer**

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Certification by Proponent

We, **Balbinus Investments Limited**, confirm that this Environmental and Social Impact Assessment Study Report has been submitted to NEMA with our authority as the project proponent.

Signed for and on behalf of: **Balbinus Investments Limited**

Name: _____

Signature: _____ Date: _____

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Official Rubberstamp or Seal

ACKNOWLEDGEMENTS

The preparation of this ESIA study report was made possible by a collaborative effort involving the proponent, the consultants, neighbors and project stakeholders. We thank the proponent, Balbinus Investments Limited, for providing financial, human resources and documentation on the proposed project.

We acknowledge the Mr. Thomas Ruwa, the Assistant Chief Nyali for facilitating the stakeholder engagement meeting. We also recognize the neighbors and stakeholders for participating in the meeting and providing their views, comments and concerns with respect to the proposed project.

Sampling and analysis of environmental media which included air quality, noise levels and ocean water quality were undertaken by Lahvens Limited. The consultants are grateful for their invaluable input in the preparation of the ESIA report.

The Envasses Environmental Consultants Limited staff assisted the lead experts in data collection, facilitating the community consultative meeting and report writing. We are particularly grateful to Ms. Jecinta Nthenya, Ms. Swalha Khan, Ms. Fridah Khamalishi and Ms. Joy Nyaga.

EXECUTIVE SUMMARY

The proponent, Balbinus Investment Limited, proposes to construct an eco-friendly seawall that will run along the shoreline of the property and a ramp. The area in which the project site lies is representative of the erosive part of the Kenyan shoreline with the presence of threatened infrastructure, vulnerability to shoreline retreat and instability due to wave attack. The proposed project will feature an eco-friendly sea wall which will be built using mass concrete and will follow on the configuration and rise of the shoreline pattern. Additionally, the wall will be built at an alignment of 45° stretching across a total length of 33m. A 6m long ramp with additional steps at the middle of the ramp will also be constructed and used to access the property's beach front area.

Pursuant to Section 58 of the Environmental Management and Coordination Act Cap. 387 of the Laws of Kenya, the nature of the proposed project is listed as high risk under the Second Schedule (5d) and should therefore undergo an Environmental and Social Impact Assessment (ESIA) Study process. To fulfill this legal requirement, ensure sustainability of the development activities and improve its environmental performance, the proponent contracted Envasses Environmental Consultants Limited, which is a Firm of Experts Licensed by NEMA, to carry out the ESIA Study. In addition to compliance with the law, the output of the ESIA process will provide a baseline of the environmental and social conditions of the project area to enable future monitoring of the environmental performance of the proposed project.

The methodology for preparing the ESIA study report was guided by the Third Schedule of the Environmental Management and Coordination (Impact Assessment and Audit) Regulations, 2003. Site visits were undertaken in December 2022 for purposes of area reconnaissance, assessing the baseline and environmental risks associated with the proposed project as well as applicable environmental safeguards and standards. Environmental screening criteria was informed by the Second Schedule of the Environmental Management and Coordination (Impact Assessment and Audit) Regulations, 2003. As per this Schedule the issues considered by the experts included; ecological issues, landscape changes and land use character. Data collection methods included literature review of relevant documents, observations during site visits and photography. The stakeholder engagement strategy included administration of questionnaires to the neighbours, and a stakeholder and community consultative meeting at the project site to obtain comments and concerns regarding the proposed project and providing information that will potentially influence the design of the proposed project. Further, baseline environmental data was collected on ambient air, noise levels and ocean water quality in collaboration with Lahvens Limited.

The findings of the ESIA study demonstrate that the proposed project is expected to have both positive and negative environmental and social impacts. The positive impacts included coastal stability and protection, sand accretion at the property's beach front and adjacent beaches and provision of a research model replication in other areas in the coastal zone that are facing challenges of coastal erosion and climate change. Alongside the positive impacts, several environmental and social impacts will arise at different phases of the project cycle.

At construction phase, the main environmental concerns will include water quality degradation, water demand and effluent generation, solid waste generation and management as well as occupational safety and health risks.

Construction activities may create loose soils that are susceptible to erosion. This may contribute to sedimentation within the adjacent ocean waters. Additionally, workers on site will generate solid waste including plastic debris and if not properly managed may pose a serious threat to marine biota such as fish, coral reefs, sea turtles and benthic habitats. In order to mitigate this, the proponent should undertake construction activities during low tide, ensure proper management of waste water

produced during construction activities and certify proper management of solid waste generated through providing waste bins and subsequent collection by a NEMA Licensed Contractor.

During the construction phase, water will be required for concrete mixing, drinking and sanitation purposes which will lead to increased demand for water. Water will be supplied by water vendors and water bowsers. Seventy percent (70%) of the water used for domestic purpose will generate effluent whereas the rest soaks into ground areas within the project site or drain to the sea. Poor disposal of the wastewater will have the potential to pollute underground aquifers and the sea. The proponent should sensitize the workforce on the need to conserve the available water resources, use the existing sanitary facilities for the workforce and comply with the provisions of the Environmental Management and Coordination (Water Quality) Regulations, 2006.

The construction activities will generate construction debris such as concrete, wood, soil, metal and packaging materials among others. Workers at the site will as well generate domestic waste such as food leftovers, plastics and wrappings among others. These will need to be disposed off appropriately. Poor disposal of solid wastes has negative environmental impacts which would include pollution of the ocean, providing habitat for disease causing pathogens and reducing the aesthetic value of the proponent's environment. The proponent should procure and strategically place adequate solid waste collection bins with a capacity for segregation within the site, sensitize workers on the process of solid waste collection, segregation and proper disposal, procure a sizeable central solid waste collection bin with chambers to accommodate separated waste, procure the services of a NEMA licensed waste handler to dispose off the solid waste and comply with the provisions of the Environmental Management and Coordination (Waste Management) Regulations, 2006 and The Sustainable Waste Management Act, 2022.

Safety and health issues during this phase will include physical hazards which could cause injuries or loss of life. Workers, property residents and the neighbors are likely to be exposed to safety and health risks such as drowning at high tide, falling objects, injuries caused by unprotected machinery or moving parts, and accidental falls among others. Thus the proponent should procure and provide adequate and appropriate Personal Protective Equipment (PPE) to workers and visitors to the site and enforce on their use, provide insurance cover to all employees, provide employees with correct tools and equipment for the jobs assigned and trained on their use, provide a fully equipped first aid box at the project site and comply with the provisions of the Occupational Safety and Health Act, 2007.

At operational phase, the main environmental concerns include structural failure, increased shoreline erosion, change in sediment types and change in associated benthic communities.

Prolonged exposure to saltwater, harsh weather, or age can all cause seawalls to deteriorate. This can lead to crack formation or collapsing, which then gives seawater the opportunity to erode the shore near the structure and cause instability in the foundation. The proponent should therefore ensure the seawall is inspected annually by a licensed engineer and oceanographer to check its structural integrity.

During operations, the seawall may accelerate erosion in front of the beach front area. When waves hit the wall, they are reflected back towards the ocean. The reflected wave (the backwash) takes beach sand with it. Additionally, seawalls can cause increased erosion in adjacent beach areas that do not have seawalls. This is so called flanking erosion which takes place at end of seawalls. Wave energy can be reflected from a seawall sideways along the shore causing coastal bluffs without protection to erode faster. Furthermore, the impact of sea walls as the cause for the increase in reflected wave energy leads to the erosion and flattening of adjoining beach areas. To mitigate the

impact of increased shoreline erosion, the proponent should utilize the slopping technique of 45º angle which allows for replication of the existing zone profile to ensure continuous sand deposition and ensure that the seawall has pockets and grooves that will use up energy of the waves instead of reflecting it.

During operations, the seawall may result to accretion of sand at the property's beach front area. However, this may cause change in the type of sediments deposited from course and medium sand to more refined sediments attributed to the reduced wave energy as it crosses from the outer reef and hits the surface of the seawall. The proponent is advised to undertake sediment budget assessment and slope analysis along the shoreline and nearshore waters and determine the changes in type, nature, source and net amount of sediments deposited.

Change in sediment type may further result to change in the habitat communities from the fiddler crabs (*Uca annulipes*) to the polychaetes (*Octobranchus floriceps*). Previous studies conducted indicate that sediment properties affect the distribution of the benthic communities. Benthic macroinvertebrates are widely used as indicators of ecological condition, because of their variety of responses to human disturbances, such as sedimentation. They also have an important role in food webs and are a major food source for many species of marine life. To mitigate this concern, the proponent is advised to undertake biodiversity monitoring along the beach corridor to determine the impact of the seawall on the marine biodiversity.

A decommissioning phase is possible in the event that the proponent decides to demolish the seawall due to end of project life or following an order by government agencies. Key environmental and social concerns at this phase will be solid waste generation and management, safety and health risks as well as coastal/beach erosion. In such an event the proponent should prepare and submit a due diligence decommissioning audit report to NEMA for approval at least three (3) months in advance.

In conclusion, the proposed project is considered important and beneficial particularly to the proponent as it will ensure fortification of the residential property. The ESIA study proposes a suite of comprehensive Environmental and Social Management and Monitoring Plans to address the anticipated negative impacts during the entire project cycle and improve the environmental performance of the proposed project. It is on this basis that we recommend that the project be allowed to proceed alongside conditions which will ensure compliance with the provisions of the Environmental Management and Coordination Act Cap. 387 of the Laws of Kenya.

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ACRONYMS

EACC	Eastern African Coastal Current
EIA	Environmental Impact Assessment
EMCA	Environmental Management and Coordination
EMP	Environmental Management Plan
ESIA	Environmental and Social Impact Assessment
ESMP	Environmental and Social Management Plans
GPS	Global Positioning System
GRM	Grievances Redress Mechanism
ICZM	Integrated Coastal Zone Management
IPCC	International Panel for Climate Change
ISUD	Integrated Strategic Urban Development
ITCZ	Inter-Tropical Convergence Zone
KWS	Kenya Wildlife Service
NCCAP	National Climate Change Action Plan
NCCAP	National Climate Change Adaptation Plan
NEMA	National Environmental Management Authority
PPE	Personal Protective Equipment
SDG	Sustainable Development Goal
TORs	Terms of Reference
UNFCC	United Nations Framework Convention on Climate Change

1 INTRODUCTION

1.1 Background information

The Earth's climate system is affected due to changing temperature (global warming), ocean levels and rainfall patterns. Thus, sea level rises worldwide and both mean water level and height of waves increases during extreme weather events causing coastal erosion along coasts. With a coast of about 600 km, the subject of coastal erosion and control in Kenya assumes great importance. This problem calls for the protection of houses, cultivable lands, valuable properties, monuments etc. in the coastal belt. The solution to this problem involves scientific analysis of the same with a view to devise methods for preventing and/or minimizing the damage due to erosion caused by the destructive forces of the waves. which result in intrusion on shore and affect human activity.

Sea wall is the most traditional method used in coastal management. A seawall is a structure built on the beach parallel to the shoreline and is designed to halt shoreline erosion caused by wave action. It works by reflecting incident wave energy back into the sea, thereby reducing the energy and erosion which the coastline would otherwise be subjected to. The design and type of seawall that is appropriate depends on aspects specific to the location, including the surrounding erosion processes. Seawalls, if properly engineered and constructed for a particular situation, are effective at saving beachfront property, provided the severe disadvantages they impose are acceptable. Further, The Shoreline Management Strategy for Kenya (2010) highlights that eroding coastlines where there is presently significant development should be protected either by hard structures and/or beach nourishment as appropriate.

Nyali area, particularly the Ras-Iwente Sediment Cell where the project site lies has been experiencing coastal / beach erosion over the last 10-15 years. However, the situation has worsened dramatically over the last two years caused by both natural and anthropogenic factors. Coastal erosion at the project site primarily has been exacerbated by the installation of hard-engineered seawall defenses in neighboring properties. This has resulted to a phenomena known as flanking erosion where there is increased erosion in adjacent areas of the shoreline that do not have seawalls. In the long-term, there is possibility of destruction of their sea front property hence threatening its existence and consequently the livelihoods of the property residents who depend on it for shelter. It is therefore important that the proponent secures the sea front area to mitigate the impacts of coastal / beach erosion to safeguard the local livelihoods as well as to improve the areas aesthetics.

The proponent, Balbinus Investments Limited, proposes to construct an eco-friendly seawall and a ramp with additional steps at the middle, Seawalls are listed under the Second Schedule (5d) of the Environmental Management and Coordination Act Cap. 387 of the Laws of Kenya as high risk projects. Pursuant to Section 58 of the Act, all high risk projects listed under the Second Schedule should undergo an Environmental and Social Impact Assessment (ESIA) Study process. Hence, the proponent contracted Envasses Environmental Consultants Limited which is a Firm of Experts Licensed by NEMA to prepare an ESIA Study Report for the proposal. In addition to compliance with the law, the output of the EIA process will provide a baseline of the environmental and social conditions of the project area to enable future monitoring of the environmental performance of the proposed project.

1.2 Project location and neighbourhood

The proposed project will be located on Plot L.R. No. MN /I / 13373 in Nyali area, Mombasa County. The GPS coordinates are **Latitude 4°00'49.99''S and Longitude 39°43'33.96''E** (Figure 1). The objective of this project is to construct an eco-friendly seawall that runs along the shoreline of the property together with a ramp. The shoreline along the property offers a good walking or picnicking location with spectacular shoreline views. The property fringes the shores of the Indian Ocean (Figure

2) within which the Mombasa Marine National Park and Reserve (cell 18) lies. The area is representative of the erosive part of the Kenyan shoreline (Figure 3) with the presence of threatened infrastructure, vulnerability to shoreline retreat and instability due to wave attack. The neighborhood is predominantly occupied by similar dwelling properties, apartments as well as tourism and hospitality facilities including Kingstone Beach Resort. Further the shoreline exhibits an exposed low lying sandy coast with characteristic tidal mud flats (Figure 4).

Figure 1: Location of the project site (Source: Google earth, December 2022)

Figure 2: A section of the boundary of the property fringing the shoreline (Source: Site visit, November 2022)

Figure 3: A section of the eroded shoreline at the property beach front depicting the erosive characteristic of Sediment cell 18 (Source: Site visit, November 2022)

Figure 4: Tidal mud flats that have formed on the beach fronting the property (Source: Site visit, November 2022)

1.3 Project site status

The proposed site status features residential properties as well as hospitality and tourism amenities fringing the shoreline of the Indian Ocean. The shoreline landscape describes a sandy coast with reef patches and characteristic tidal mud flats. Flora diversity includes mangrove tree species such as *Ceriops tagal*, grass vegetation, cactus and green algae along the beach (Figure 5). Further there is presence of marine fauna particularly marine invertebrates including the stone crabs, worms and shells among others.

Figure 5: Flora diversity at the project site (Source: Site visit, November 2022)

During the site visit, it was noted that the adjacent properties had put up sea walls for shoreline protection thus causing the so called 'flanking effect' to the proponent's beach front area (Figure 6)

Figure 6: A section of an existing seawall along the shoreline, adjacent to the project site(Source: Site visit, November 2022)

1.4 Project design and description

The proponent aims to mitigate his residential facility against coastal / beach erosion through construction of an eco-friendly seawall and a ramp along the beach front area (Figure 7). The sea

wall will be built using mass concrete and will follow on the configuration and rise of the shoreline pattern. Additionally, the wall will be built at an alignment of 45° stretching across a total length of 33m. A 6m long ramp with additional steps at the middle of the ramp will also be constructed and used to access the property's beach front area.

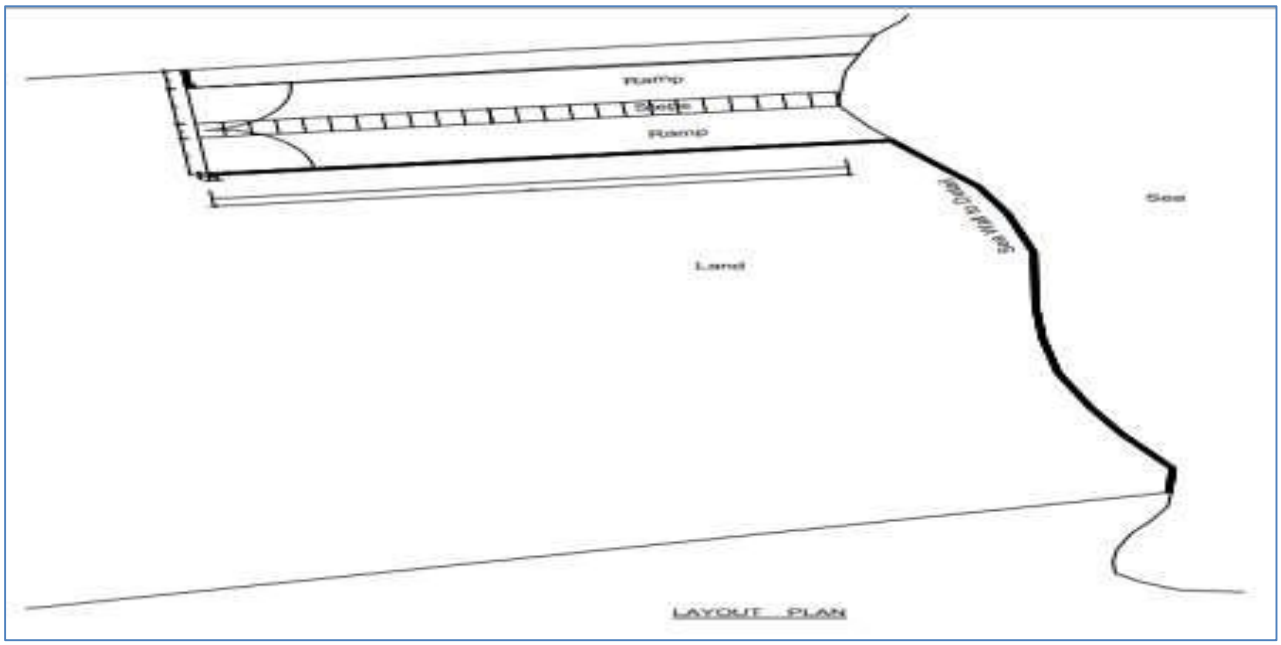


Figure 7: A layout plan for the construction of the eco-friendly seawall and a ramp (Source: Architectural design by Civil Base Consultants, December 2022)

1.5 Project budget

The total estimated cost of the proposed project is KES Five Million Shillings Only (KES 5,000,000). The proponent will therefore pay NEMA the minimum of 10,000 (Ten Thousand Shillings only) since 0.1% of the total project costs fall below the minimum amount payable. The payment is done on the e-citizen platform after receipt of an invoice from NEMA.

1.6 Study approach and methodology

1.6.1 Introduction

The methods adopted for preparing the ESIA study report were guided by the Third Schedule of the Environmental Management and Coordination (Impact Assessment and Audit) Regulations, 2003. The consultants prepared a scoping report and Terms of Reference (TORs) as required under Regulation 11 of the Environmental Management and Coordination (Impact Assessment and Audit) Regulations, 2003 and submitted them to NEMA for consideration for approval. The scoping report and TORs were approved on 5th December 2022 and the consultants began preparation of the ESIA study report.

1.6.2 Data collection

The methods for carrying out the study included site visits and observations, photography, literature review of relevant documents, baseline monitoring of environmental media (air quality, noise levels, water quality) and public consultations through administration of questionnaires and public consultative meeting. A site visit was undertaken on 26th November 2022 for purposes of area reconnaissance, assessing the baseline environmental conditions of the proposed project site and

screening of environmental risks associated with the proposed project as well as the applicable environmental safeguards and standards. Environmental screening criteria was informed by the Second Schedule of the Environmental Management and Coordination (Impact Assessment and Audit) Regulations, 2003. As per this schedule, the issues considered by the experts included ecological impacts, socio-economic issues, landscape changes, land use character and water (Table 1).

Table 1: Summary of the results from the screening exercise.

Criteria	Results
Ecological Considerations	– Coastal stability and protection; the seawall helps in breaking down the wave energy, thus reducing erosion and increasing the beach area – Potential impact on the marine ecosystem – Impact on the sea turtles; beaches provide nesting grounds for sea turtles
Socio-economic considerations	– Beach sand accretion at the property's beach front and adjacent area – Good aesthetic value of the property – Reduced public access to beaches
Landscape impacts	– The landscape of the area will be altered and new views created
Land uses	– The project is not compatible with the land use of the area
Water	– Potential water quality degradation of the nearby marine environment at construction phase

1.6.3 Baseline environmental data

Baseline environmental data was collected on ocean water quality, ambient air quality and noise levels in collaboration with Lahvens Limited. The results will be used to provide a benchmark for implementing the Environmental Monitoring Plan proposed in the ESIA report. The approaches and methods used for sampling and analysis of baseline environmental media are discussed below.

1.6.3.1 Ambient air quality monitoring

Mobile, static and active monitoring was done by use of real time gas detector-pump suction equipment LB-MS4X (Figure 4) which integrates the main ambient gases and meteorological parameters. The gas sensitive semiconductor sensor uses proprietary sensing material, built in automatic Correction (ABC) and interference rejection. This combination results in ppb resolution and a highly linear response. The gas sensitive electrochemical sensors generate Nano-amp currents proportional to the gas concentration. Aeroqual uses low noise electronics to capture these signals resulting in low detection levels. The non-dispersive infrared sensor uses infra-red light, a narrow band-pass filter and photodiode to measure the intensity of light at the gas absorption band. The light intensity is proportional to the gas concentration.

The laser particle counter for Particulate Matter measurements uses optimized signal processing using low noise electronics added algorithms to correct for interferences. An aerosol particle counter works on the principal of either light scattering or light blocking. An aerosol stream is drawn through a chamber with a light source (either Laser Based Light or White Light). When a particle is illuminated by this light beam, it is redirected or absorbed. Light scattered by a single particle in a specific direction in relation to the original direction has a unique signature which relates to the size of the particle. This allows for sizing and counting of individual particles.

1.6.3.2 Baseline noise levels measurements

Noise emission survey (Figure 4) was achieved via initial examination of significant sources of noise. Noise levels were evaluated using a Sound Level Meter Model AWA 5636 IEC 61672 – 1:2013 class 2 with a built-in ῶoctave / octave band filters which does real time 1/1 and 1/3 octave analysis. The sound level meter was mounted on at 2.0m above ground level and at least 3.5m away from any sound reflecting surfaces at a boundary position and measurements taken at timed intervals over 10 minutes and stored in SLM's memory. The sound level meter was placed on the microphone to reduce any wind interference during measurements. The sound level meters, were within its calibration period, at the time of monitoring. In addition, the equivalent noise level (LAeq), the maximum sound pressure level (Lmax) and the minimum sound pressure level (Lmin) during that measurement period were recorded. Factors to consider such as time, duration and predictability of the noise emission, amplitude and frequency of the noise emission, nature of the source, location of noise sensitive receptors, ambient and background noise level, nature and character of the locality, presence of special acoustic characteristics and the incongruity or familiarity of the noise during noise survey and site placement were put into consideration. Furthermore, as each individual measurement was being taken, the nature of the noise climate in the area was assessed and recorded. This comprised an auditory observation by the surveyor, as well as identifying those noise incidents which influenced the sound level meter readings during that measurement period.

1.6.3.3 Water quality sampling and analysis

A sample of ocean water was obtained 100m from the shores of the Indian Ocean along which the proposed project lies. The water sample was analyzed to give an indicative baseline for the ocean water in accordance to the Third Schedule of the Environmental Management and coordination (Water Quality) Regulations, 2006.

1.6.4 Stakeholder mapping

Prior to commencement of the ESIA process, the consultants conducted a stakeholder mapping and analysis to determine the individual, groups and institutions that will be affected by and have an interest in the project in consultation with the proponent, and the County Government. The consultants then prepared a comprehensive list of all the stakeholders in consultation with the proponent and categorized them based on the following:

- Low interest, low influence – those to keep informed
- High interest, low influence – those to involve and consult with
- Low interest, high influence – powerful stakeholders to engage
- High interest, high influence – partners to collaborate with

Nine key stakeholder categories were identified. These are;

1. County and National Government Representation
2. Lead Agencies and community organizations operating directly under them
3. Civil Society
4. Conservation Organizations
5. Local Community and Residents' Associations
6. Opinion leaders including political leaders
7. Faith Based Institutions
8. Special Interest Groups
9. Media

The consultant then identified the key contact persons within the stakeholder categories who will be engaged throughout the ESIA study process. The identification of the key contact persons was done in consultation with the proponent, lead agencies, the County Government of Mombasa, Ministry

of Interior and Coordination of National Government, Residents Associations, Community Groups, Non-Governmental Organizations and Conservation groups. Further, the consultant identified other stakeholders who may not be apparent but needed to be consulted and analyzing the role of each stakeholder in the ESIA study process as well as project implementation. Finally, the consultant determined the tools for engaging with each stakeholder including language of communication to ensure meaningful participation of the stakeholders in the ESIA process. Following the analysis, a public consultative meeting was held on 13th December 2022 at the Project site.

2 ENVIRONMENTAL SETTING OF THE PROPOSED PROJECT SITE

2.1 Introduction

Baseline conditions of the proposed project site were assessed and documented for the purposes of determining the future impacts of the proposed project on the environment and livelihoods of the local community. The baseline survey was done through literature review, site visits and baseline environmental media monitoring in collaboration with Lahvens Limited. This section details on the findings of the survey which will form a basis for impact monitoring plans and improvement of the environmental and social performance of the proposed project during implementation.

2.2 Topography and climatic conditions

Mombasa is a coastal lowland with extensive flat terrain rising gently from the sea level in the East to about 132m above sea level in the mainland. Mombasa is a tropical city which is warm most of the year. 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°C with a minimum of 22.7°C and a maximum of 33.10C. The hottest month is February with a maximum average of 33.1°C while the lowest temperature is in July with a minimum average of 22.7°C. Average humidity at noon is about 65 per cent.

2.3 Winds and wave action

The wind experienced at any given location is highly dependent on local topography and other factors, and instantaneous wind speed and direction vary more widely than hourly averages. The average hourly wind speed in Mombasa experiences significant seasonal variation over the course of the year. The windier part of the year lasts from April 30 to October 6, with average wind speeds of more than 12.0 miles per hour. The windiest month of the year in Mombasa is July, with an average hourly wind speed of 15.6 miles per hour. The calmer time of year lasts from October 6 to April 30. The calmest month of the year is November, with an average hourly wind speed of 8.6 miles per hour. Predominantly, the average hourly wind direction in Mombasa varies throughout the year. The wind is most often from the south, from April to November, with a peak percentage of 100% in July. The wind is most often from the east from November to April with a peak percentage of 64% in January The wind systems influence the impact of the wave attack on the shoreline, the stronger the winds the higher the wave heights causing a relatively greater impact on the shoreline. Weak wind systems are associated with a calm ocean and consequently less wave attack.

2.4 Coastal erosion

Shoreline changes occur due to natural activities as a result of amalgamation of waves, currents, tides and river flow often leading to conflict in the process of coastal /beach erosion. Short-term variations of shoreline positions are primarily seasonal and periodical, whereas long-term variations are generally due to sea level fluctuations or changes in the coastal sedimentary budget. The increasing population and unplanned development/human activities along the coastal area have been reported to majorly contribute to these changes. In addition, various development projects made along the coastal areas have placed great pressure on the shoreline, leading to various coastal hazards like sea erosion, seawater intrusion, coral bleaching and shoreline change. Human activities seem to have aggravated the wave erosion; where human activities are dominant it is observed that there is remarkable shoreline retreat and beach instability. The problem has been noted to be more serious

in the areas that are most attractive for tourism and residential development. Along the Nyali shoreline, properties are being protected from wave attack with walls of sand sacks and vertical walls. These mitigation measures exacerbate the erosion problem if not well set up and maintained. (ICAM 1996).

2.5 Climate change and sea level rise

The National Climate Change Action Plan (NCCAP) 2018-2022 highlights that Kenya's economy is very dependent on climate-sensitive sectors such as tourism, agriculture, water, energy, wildlife and health whose vulnerability is increased by climate change. The Nyali coastal erosion will be exacerbated by Global Warming-induced, sea-level-rise. Although this is presently just over 2.5mm per year, it is expected to rise and will lead to a sea-level increase of 20-60cm (possibly significantly more) in the next 100 years according to the International Panel for Climate Change (IPCC, 2007). This will lead to greater levels of, and more frequent changing patterns of shoreline erosion, coastal flooding, increased salinity of coastal aquifers, and modification of coastal ecosystems such as beaches, coral reefs and mangroves. According to the Bruun Rule (Bruun, 1962), which is a widely applied model for predicting coastal recession due to sea level rise, the rising sea level will cause sand from the near shore zone to move offshore, resulting in beach/cliff erosion. Hence, beaches run the risk of diminishing or even disappearing with possible detrimental effects on the beach amenity, tourism, economy, beachfront development, safety and ecology. A way to mitigate these effects is beach rehabilitation.

Furthermore, rising sea temperatures in the Western Indian Ocean influence the coastal conditions associated with Kenya. Sea temperatures have increased by 0.6 °C between 1950 and 2009, triggering mass coral bleaching and mortality on coral reef systems over the past two decades. This is likely to change the abundance and composition of fish species, with a negative impact on coastal fisheries. The Kenya government has initiated a number of strategies to address climate change through development of the NCCAP 2018 - 2022, ratification of United Nations Framework Convention on Climate Change (UNFCCC) in 2015, the Kyoto Protocol and the Paris agreement. The ICZM Action Plan will therefore mainstream the contribution of the marine sector towards the attainment of the country's Indented Nationally Determined Contributions in line with UNFCCC and the IPCC guidelines for National Greenhouse Gas Inventories and the Ocean and Cryosphere in a Changing Climate among others.

2.6 Baseline environmental data

2.6.1 Ambient air quality measurements

There were notable gaseous concentrations of Sulfur dioxide (SO_2), Nitrogen dioxide (NO_2), ozone (O_3) and Carbon monoxide (CO) within the project site. Notable levels of particulate matter (PM10 and PM2.5) were also detected. However, the gaseous and particulate parameters measured were all within the stipulated standards under the First Schedule of Environmental Management and Coordination (Air Quality) Regulations, 2014 (Table 2). Ambient air quality analysis report is annexed in this report

Table 2: Baseline air quality measurements for the proposed project site (Source: Lahvens Limited, December, 2022).

Survey locations	NO_2 (ppm)	SO_2 (ppm)	O_3 (ppm)	CO (mg/m^3)	TVOC (mg/m^3)	$PM_{2.5}$ ($\mu g/m^3$)	PM_{10} ($\mu g/m^3$)
Perimeter 1	0.044	0.023	0.07	0.11	1.70	29	45
Perimeter 2	0.037	0.0325	0.04	0.13	1.11	22	40

EMCA (Air Quality) Regulations, 2014	0.5	0.191	0.12	10	600	-	100

2.6.2 Ambient noise level measurements

The results of noise level measurements were within the limits stipulated under the Environmental Management and Coordination (Noise and Excessive Vibration Pollution) (Control) Regulations, 2009 (Table 3 &4). Baseline results obtained from the monitoring location shows that the areas are noise insignificant area hence there is no threat to the sensitive receptors around these areas. The baseline noise levels measurements were influenced by wind breeze since the proposed site is close to the ocean. Results annexed in this report

Table 3: Baseline noise level measurements for the proposed project site (Source: Lahvens Limited, December, 2022).

Location	Measured Sound Pressure Level (Noise) (dBA) (1100Hrs-1300Hrs)			EMCA Guidelines (Day time)
	LAeq	Lmin	Lmax	
Perimeter 1 Near the ocean front	49.3	45.9	53.7	55
Perimeter 2 Near the mid-section of the existing house	47.1	38.9	65.6	55

Table 4: Summary of the baseline noise level measurements for the proposed project site (Source: Lahvens Limited, December, 2022).

Location	Measured Sound Pressure Level (Noise) (dBA) (1100Hrs-1300Hrs)	EMCA Guidelines (Day time)
	LAeq	
Perimeter 1 Near the ocean front	49.3	55
Perimeter 2 Near the mid-section of the existing house	47.1	55

2.6.3 Baseline water quality measurements

Water quality and sampling were carried out and as per the results (annexed in this report), the temperature, Hydrogen ions (H+), Dissolved Oxygen (DO) were recorded to be within the typical marine water that supports species abundance and richness. In addition, turbidity occurrence was recorded at 19.8 ± 2.31717 NTU, Biological Oxygen Demand (BOD) at 12.3 mg/l and Chemical Oxygen Demand (COD) at 19.5 mg/l. From the analysis, the water does conform with the Environmental Management and Co-ordination (Water Quality) Regulations, 2006. In conclusion, there was no major variability of the ocean water (physical and chemical parameters) near the study site which hints at inconsequential disparity of marine water inside the port harbor.

3 IDENTIFICATION OF ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

3.1 Introduction

The proposed project will have both socio-economic benefits and attendant negative environmental and social impacts. The purpose of the ESIA process is to therefore systematically assess the value of the benefits against the environmental concerns and provide measures to avoid, prevent or reduce the magnitude of the impacts. The following section provides details on these impacts and proposed mitigation measures to address the identified negative environmental and social impacts. The mitigation measures are based on the underlying principle of EIA that everyone is entitled to a clean and healthy environment and a duty to enhance and safeguard the environment.

3.2 Positive impacts of the proposed development

1. Coastal stability and protection

The construction of the eco-friendly seawall will help in breaking down wave energy, thus reducing erosion and increasing the beach area. A wide beach serves as both an effective energy absorber during periods of elevated water levels and storm waves and also provides a reservoir of sand which can be transported. The seawall will provide a buffer to protect the base of cliffs, land, residential property and other assets against the effects of coastal /beach erosion. Further, it can prevent coastal flooding in the area.

2. Sand accretion at the property's beach front and adjacent beaches

Construction of the eco-friendly seawall is likely to positively impact the proponent's beach front area and adjacent areas through deposition of sediments. This may provide wider benefits including reduced beach and cliff erosion for the entire coastal cell.

3. A research model

The project will provide a model for research and replication in other areas in the coastal zone that are facing challenges of coastal erosion and climate change.

3.3 Anticipated negative impacts of the proposed development

Alongside the positive impacts, the proposed project is expected to have several social and environmental impacts at different phases of the project cycle i.e. the construction, operational and possible decommissioning phases.

3.3.1 Negative impacts at the construction phase of the proposed development

3.3.1.1 Water quality degradation

Construction activities may create loose soils that are susceptible to erosion. This may contribute to sedimentation within the adjacent ocean waters. Additionally, workers on site will generate solid waste including plastic debris and if not properly managed may pose a serious threat to marine biota such fish, coral reefs, sea turtles and benthic habitats.

Recommended mitigation measures

1. Construction activities should be carried out during low tide
2. Ensure proper management of waste water produced during construction activities

3.3.1.2 Water demand and effluent generation

During the construction phase, water will be required for concrete mixing, drinking and sanitation purposes which will lead to increased demand for water. Water will be supplied by water vendors and water bowsers. Seventy percent (70%) of the water used for domestic purpose will generate effluent whereas the rest soaks into ground areas within the project site or drain to the sea. Poor disposal of the wastewater will have the potential to pollute underground aquifers and the sea.

Recommended mitigation measures

1. Sensitize the workforce on the need to conserve the available water resources
2. Use the existing sanitary facilities for the workforce
3. Comply with the provisions of the Environmental Management and Coordination (Water Quality) Regulations, 2006

3.3.1.3 Solid waste generation and management

The construction activities will generate construction debris such as concrete, wood, soil, metal and packaging materials among others. Workers at the site will as well generate domestic waste such as food leftovers, plastics and wrappings among others. These will need to be disposed off appropriately. Poor disposal of solid wastes has negative environmental impacts which would include pollution of the ocean, providing habitat for disease causing pathogens and reducing the aesthetic value of the proponent's environment.

Recommended mitigation measures

1. Procure and strategically place adequate solid waste collection bins with a capacity for segregation within the site
2. Sensitize workers on the process of solid waste collection, segregation and proper disposal
3. Procure a sizeable central solid waste collection bin with chambers to accommodate separated waste
4. Procure the services of a NEMA licensed waste handler to dispose off the solid waste
5. Comply with the provisions of the Environmental Management and Coordination (Waste Management) Regulations, 2006 and The Sustainable Waste Management Act, 2022

3.3.1.4 Occupational safety and health risks

Occupational safety and health issues during this phase will include physical hazards which could cause injuries or loss of life. Workers, property residents and the neighbors are likely to be exposed to safety and health risks such as drowning at high tide, falling objects, injuries caused by unprotected machinery or moving parts, and accidental falls among others.

Recommended mitigation measures

1. Procure and provide adequate and appropriate Personal Protective Equipment (PPE) to workers and visitors to the site and enforce on their use
2. Provide insurance cover to all employees
3. Provide employees with correct tools and equipment for the jobs assigned and trained on their use
4. Provide a fully equipped first aid box
5. Comply with the provisions of the Occupational Safety and Health Act, 2007

3.3.2 Negative impacts at the operational phase of the proposed development

3.3.2.1 Structural failure

Prolonged exposure to saltwater, harsh weather, or age can all cause seawalls to deteriorate. This can lead to crack formation or collapsing, which then gives seawater the opportunity to erode the shore near the structure and cause instability in the foundation.

Recommended mitigation measures

1. Ensure the seawall is inspected annually by a licensed engineer and oceanographer to check its structural integrity

3.3.2.2 Increased shoreline erosion

During operations, the seawall may accelerate erosion in front of the beach front area. When waves hit the wall, they are reflected back towards the ocean. The reflected wave (the backwash) takes beach sand with it. Additionally, seawalls can cause increased erosion in adjacent beach areas that do not have seawalls. This is so called flanking erosion which takes place at end of seawalls. Wave energy can be reflected from a seawall sideways along the shore causing coastal bluffs without protection to erode faster. Furthermore, a study by Kairu and Nyandwi (2000) reported the impact of sea walls as the cause for the increase in reflected wave energy leading to the erosion and flattening of adjoining beach areas.

Recommended mitigation measures

1. The proponent should utilize the slopping technique of 45º angle which allows for replication of the existing zone profile to ensure continuous sand deposition
2. The seawall should have pockets and grooves that will use up energy of the waves instead of reflecting it

3.3.2.3 Change in sediment types

During operations, the seawall may result to accretion of sand at the property's beach front area. However, this may cause change in the type of sediments deposited from course and medium sand to more refined sediments attributed to the reduced wave energy as it crosses from the outer reef and hits the surface of the seawall.

Recommended mitigation measures

1. Undertake sediment budget assessment and slope analysis along the shoreline and nearshore waters
2. Determine the changes in type, nature, source and net amount of sediments deposited

3.3.2.4 Change in associated benthic communities

Change in sediment type may further result to change in the habitat communities from the fiddler crabs (*Uca annulipes*) to the polychaetes (*Octobranchus floriceps*). Previous studies conducted indicate that sediment properties affect the distribution of the benthic communities. Benthic macroinvertebrates are widely used as indicators of ecological condition, because of their variety of responses to human disturbances, such as sedimentation. They also have an important role in food webs and are a major food source for many species of marine life.

Recommended mitigation measure

1. Undertake biodiversity monitoring along the beach corridor to determine the impact of the seawall on the marine biodiversity

3.3.3 Negative impacts at the possible decommissioning phase

A decommissioning phase is possible in the event that the proponent decides to demolish the seawall or following an order by government agencies. In such an event the proponent should prepare and submit a due diligence decommissioning audit report to NEMA for approval at least three (3) months in advance. The following environmental and social concerns will manifest at this phase;

1. Solid generation and management
2. Safety and health risks
3. Coastal / beach erosion

3.3.3.1 Solid waste generation and management

Demolition activities will result in generation of both solid waste and effluent. The main sources of solid waste will be demolition waste from the seawall. The waste will include materials such as

rock boulders. Although demolition waste is generally considered as less harmful to the environment as they are composed of inert materials, there is growing evidence that large quantities of such waste may lead to release of certain hazardous chemicals into the environment. The debris and other solid waste have a potential to pollute the adjacent ocean waters.

Recommended mitigation measures

1. Recover re-usable materials for sale or use in other project sites
2. Contract a licensed construction company to carry out demolitions
3. Contract a NEMA licensed waste handler to handle and dispose the solid waste
4. Comply with the Environmental Management and Coordination (Waste Management) Regulations, 2006

3.3.3.2 Safety and health risks

Safety and health risks during demolition are likely to emanate from accidental falls, drowning at high tide and injuries from machinery use. Noise and air pollution from demolitions works could also pose a safety and health risks to workers and beach users.

Recommended mitigation measures

1. Install signage to warn persons of the ongoing activities
2. Provide adequate and appropriate PPE to workers and enforce their use
3. Ensure the process of demolition of the seawall is supervised by competent personnel
4. Ensure first aid kits are available throughout demolitions
5. Comply with the provisions of the Occupational Safety and Health Act, 2007

3.3.3.3 Coastal / beach erosion

In the event the seawall is decommissioned, the beach front area will be exposed to high wave energy hence running the risk of flooding with possible detrimental effects on the property.

Recommended mitigation measure

1. Explore other options of beach front armoring to mitigate against the impact of coastal erosion such as use of breakwaters

3.3.4 Impact analysis

Potential project impacts are predicted and quantified to the extent possible. The magnitude of impacts on resources such as water and air or receptors such as people, communities, wildlife species and habitats is defined. Magnitude is a function of the following impact characteristics;

1. Type of impact (direct, indirect, induced)
2. Size, scale or intensity of impact
3. Nature of the change compared to baseline conditions (what is affected and how)
4. Geographical extent and distribution (e.g. local, regional, international)
5. Duration and/or frequency (e.g. temporary, short-term, long term, permanent)

Magnitude describes the actual change that is predicted to occur in the resource or receptor. It takes into account all the various impact characteristics in order to determine whether an impact is negligible or significant. Some impacts can result in changes to the environment that may be immeasurable, undetectable or within the range of normal natural variation. Such changes can be regarded as essentially having no impact and are characterized as having a negligible magnitude (Table 7).

1. **Negligible impact (very low) -** Where a resource or receptor would not be affected by a particular activity or the predicted effect is deemed to be imperceptible or is indistinguishable from natural background variations.
2. **Less than significant impact (Low**) - Is a minor impact where a resource or receptor would experience a noticeable effect but the impact magnitude is sufficiently low (with or without mitigation) and /or the resource or receptor is of low sensitivity. In either case, a less than significant impact must be sufficiently below applicable standard threshold limits.
3. **Potentially significant impact (moderate) -** A moderate impact that meets applicable standards but comes near the threshold limit. The emphasis for such moderate impacts is to demonstrate that the impact has been reduced to a level that is as minor as reasonably practicable so that the impact does not exceed standard threshold limits.
4. **Significant impact (high) -** One where an applicable standard threshold limit would or could be exceeded or if a highly valued or very scarce resource would be substantially affected.

Table 5: Risk and impact significant matrix for the proposed asbestos corrugated sheets disposal site.

Environmental impact	Magnitude of impact at construction phase	Magnitude of impact at operational phase	Magnitude of impact at possible decommissioning phase
Water quality degradation	3	0	2
Water demand and effluent generation	3	0	2
Solid waste generation and management	3	0	2
Safety and health risk	3	0	2
Structural failure	0	3	2
Increased shoreline erosion	0	3	3
Change in sediment types	0	3	1
Change in associated benthic communities	2	3	2
Coastal beach/erosion	3	3	3

Magnitude	Impact score
Negligible	0
Low	1
Moderate	2
High	3

3.4 Public consultations and findings

Public and stakeholders' participation in the ESIA process is a legislative requirement under Part 2, Section 69 (1d) of the Kenya Constitution 2010 and Regulation 17 of the Environmental Management and Coordination (Impact Assessment and Audit) Regulations, 2003. The aim of public and stakeholders' consultations was to obtain and document comments, views and concerns that the neighbors and stakeholders have regarding the proposed project. For the proposed project, public and stakeholders' consultations were undertaken using two strategies i.e. administration of questionnaires and consultative meeting and specifically;

1. Administration of questionnaires to the neighbors and stakeholders
2. Stakeholder consultative meeting held on 13th December 2022 at the proposed project site

Brief details of the comments obtained during administration of questionnaires and consultative meeting are discussed below. The filled in questionnaires and proceedings of the meeting are annexed to this report.

3.4.1 Summary of comments obtained during administration of questionnaires

A total of 16 questionnaires were administered between 26th and 27th November 2022 and the main comments are summarized in Table 7 below.

Table 6: Summary of comments obtained from neighbors and stakeholders of the proposed project

No.	Respondents profile			Comments
	Name	Tel contact	ID No:	
1.	A.J Dickson	0722706347	204610	– Public beach is not allowed to ingression – You cannot build past the high-water mark – Concrete wall will cause disturbance to the marine wildlife – Concrete wall is not ecofriendly
2.	Jan Dickison	0727852387		– No one should build anything to disturb the corals – Erode beach ecosystem – Sea wall is not ecofriendly
3.	James Omondi	0713942555		– Protection of private property
4.	Victor Wasonga	0718443302		– Potential impact to marine organisms – Follow all protocols
5.	Edwin Njoroge Gicheru	0700610101	32179854	– Residential security – Impact on marine life
6.	Vincent Murunga	0790644122	29346144	– No comments
7.	Samuel Otieno	0114769266	21060764	– Protect residential shoreline from upland erosion – Use safe materials to build for the sake of marine creatures
8.	Musa Yusuf	0789856109		– Prevent flooding
9.	Rosemary Kinyanjui	0731501088		– Protection of residential building
10.	Patric Nyaga	0702360885	3579296	– Affect marine life – Restriction on beach users – Plant trees along the shoreline instead of erecting a wall
11.	John Murithii	0723122959	22889109	– Project should not interfere with public access to the beach
12.	David Njuki	0700612164		– No comments
13.	Josephine Kamara	0714877745	12717845	– Benefit the proponent alone
14.	Felix Muthiani	0719339653	27991475	– Benefit the proponent
15.	Biasha Yusuf		29526746	– Benefit the proponent
16.	Baraka Katana	0114062628	32535778	– Job opportunities

3.4.2 Stakeholder consultative meeting

The stakeholder consultative meeting was held on 13th December 2022 at the proposed project site premises located on Plot L.R. No. MN/1/13373, Mombasa county. Table 12 summarizes the impacts identified by the local community and their recommended mitigation measures.

The agenda of the meeting was to;

1. Sensitize the neighbors and keys stakeholders on the proposed eco-friendly sea wall and a ramp
2. Document comments and concerns of the neighbors and stakeholders with respect to the construction of a sea wall
3. AOB

The proceedings of the public consultation meeting are annexed in this report.

Figure 8: A section of participants during the stakeholder consultation meeting at proposed project site premises (Source: Stakeholder Consultation meeting, December 2022).

Table 7: Impacts identified by the local community and their recommended mitigation measures.

Impact identified by the neighbours	Recommended mitigation measures proposed by the community
Loss of aesthetic value	– Use coral blocks in place of concrete sea wall
Loss of habitat	- Implement the use of coral rocks - Minimize cutting the indigenous trees around the site
Accelerate erosion of the beach	- Use coral blocks that allows the pressure to absorb sand

3.4.3 Grievances Redress Mechanism

3.4.3.1 Introduction

The affected persons by the proposed project may raise their grievances and dissatisfactions about actual or perceived impacts in order to find a satisfactory solution. These grievances, influenced by their physical, situational and/or social losses, can emerge at the different stages of the project cycle.

Not only should the affected persons be able to raise their grievances and be given an adequate hearing, but also satisfactory solutions should be found that mutually benefit both the affected persons and the project. It is equally important that the affected persons have access to legitimate, reliable, transparent and efficient institutional mechanisms that are responsive to their complaints.

3.4.3.2 Grievances prevention

Grievances cannot be avoided entirely, but much can be done to reduce them to manageable numbers and reduce their impacts. This will be achieved by;

1. Providing sufficient and timely information to communities. Many grievances arise because of misunderstandings; lack of information; or delayed, inconsistent or insufficient information. Accurate and adequate information about a project and its activities, plus an approximate implementation schedule, should be communicated to the communities, especially affected parties, regularly.
2. Conduct meaningful community consultations. The project proponent should continue the process of consultation and dialogue throughout the implementation of the project. Sharing information, reporting on project progress, providing community members with an opportunity to express their concerns, clarifying and responding to their issues, eliciting communities' views, and receiving feedback on interventions will benefit the communities and the project management.
3. Overall good management of the facility will ensure a reduction in potential conflicts with the local community and other stakeholders.

3.4.3.3 Grievances Redress Mechanism Tool

The development will have a prompt and efficient resolution on individual and collective complaint and provision of feedback on any grievances and dissatisfaction from stakeholders during operations. The flow chart below (Figure 8) shows a complaint and proposal consideration mechanism for the development that provides an accessible channel for submission of complaints and feedback to stakeholders.

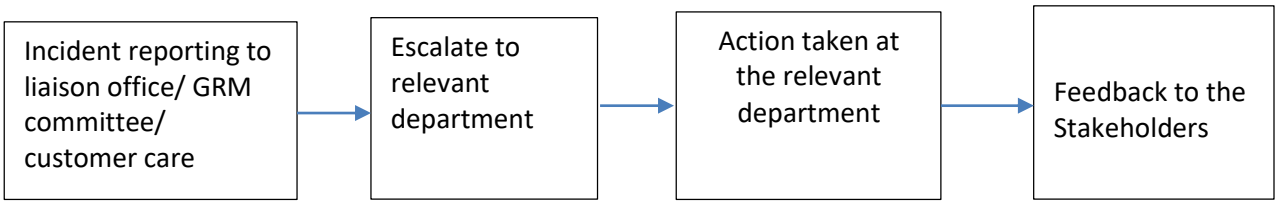


Figure 9: Grievances Redress Mechanism Tool flow chart (Source: Consultant's gallery, 2021).

3.5 Analysis of Project Alternatives

Analyzing project alternatives is important as it allows the proponent to evaluate possible project options that could mitigate the environmental risks identified during the EIA process through prevention, reduction of the severity of an impact or elimination of the risks all together. The analysis will also assist NEMA and lead agencies in decision making by either approving the project as proposed or advising the proponent on the need for a particular alternative such as an alternative site or technological and design changes. In the current proposal, the alternatives identified are discussed in detail below.

3.5.1 The 'No project' alternative

The No project alternative has the advantage of retaining the status quo as the project will not be implemented. Ideally, the predicted negative environmental impacts will not occur and thus is the best-case scenario for mitigation. This alternative is however not viable given that the property's beach font area has been eroding over the years resulting in possible destruction of their beach front

property and loss of land. The 'No project' alternative is therefore not considered viable in the light of the benefits and deprivations of the project.

3.5.2 The "Yes Project" alternative

This option envisages that the proposal will be implemented thus was considered as the most viable. This is because the construction of the eco-friendly seawall will protect the property's beach front area from coastal / beach erosion and also improve the beach aesthetics. In addition, a wide beach serves as both an effective energy absorber during periods of elevated water levels and storm waves.

3.5.3 Alternative technology

There are various methods used to prevent coastal / beach erosion. Some of these methods work effectively by reducing shoreline erosion however, not all of these methods promote conservation and improve aesthetic of the beaches. Some of the most common methods to prevent coastal /beach erosion include construction of groins, beach nourishment and construction of break waters. Groins are perpendicular narrow structures built on straight stretches of the beach to trap sand from the littoral system, thus stabilizing the beach; however, in the process, the erosional stress is transferred to the down drift beaches. Beach nourishment involves obtaining large amount of sand from another location often dredging it from a zone that is miles off shore in a process that could be extremely harmful to marine life. The dredged sand is pumped onshore, a process that is temporary. Breakwaters are artificial offshore structures that act as a wave barrier intercepting long currents to prevent beach erosion.

There are several sea walls constructed from the above methods and includes;

a. Concrete seawall

A concrete sea wall is an artificial structure constructed using mass of concrete to reinforce other large blocks. This type of wall is durable, lasts long, requires minimum maintenance and is great to areas that experience frequent and heavy wave action. The proponent has the concept of this type of wall in the implementation of the proposal. However, this type of wall does not allow pressure to absorb the sand thus resulting to beach erosion and loss of tourism activities.

b. Coral seawall

The coral rocks seawall is built using large coral rocks and boulders held together. The rocks are great for properties experiencing light to moderate wave action. The rocks create a decorative wall creating an extremely pleasing view along the beach. Large cobble and boulder seawalls look similar to the decorative rock walls you might see inland. These are extremely aesthetically pleasing. They are built using large rocks and boulders that are held together with mortar. Large cobble and boulder seawalls are great for properties that see light to moderate wave action.

c. Riprap seawall

Riprap seawall is built by combining large and small boulders and chunks of concrete. The walls are great for preventing erosion and looks like various grasses and plant growing around the rocks. the rocks are great in properties experiencing light to moderate wave action.

Based on the above analysis, the proponent is recommended to maximize the use of coral blocks to enhance scenic view, aesthetic and tourism activities around the area.

4 ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN FOR THE PROPOSED PROJECT

The preceding section identified and analyzed the potential environmental and social impacts of the proposed project and proposed mitigation measures to address the impacts. Under this section, three Environmental and Social Management Plans (ESMPs) are proposed to guide the proponent in implementing the mitigation measures. These are ESMPs for the construction, operational and possible decommissioning phases of the development. Each of the ESMP is organized into five sections comprising of the environmental impact, the recommended mitigation measures, responsibility, timeframe and budget. The strategies for mitigation include preventing the impact from occurring in the first place, minimizing the impact, taking corrective action where impact occurs among others.

4.1 Environmental and Social Management Plan for the construction phase

At the construction phase, the focus on the ESMP is on addressing water quality degradation, water demand and effluent generation, solid waste generation and management as well as safety and health risks.

The timeframe for implementation is considered to be the time it will take for the proponent to complete the construction of the proposed project.

4.2 Environmental and Social Management Plan for the operational phase

The main issues of concern at operational phase of the project are structural failure, increased shoreline erosion, change in sediment types and change in associated benthic communities. The timeframe for implementation is considered to be the time the facility will be operational.

4.3 Environmental and Social Management Plan for the decommissioning phase

The focus of the decommissioning ESMP (Table 8) is on addressing the issues identified by the ESIA study. The main issues of concern at this phase of the project are solid waste generation and management, safety and health risks as well as coastal/beach erosion.

Table 8: Environmental Management plan for the construction, subsequent operation and possible decommissioning phase of the proposed project.

Environmental concerns	Recommended mitigation Measures	Implementing party	Timeframe	Cost (KES)
Construction phase				
Water Quality Degradation	Construction activities should be carried out during low tide	Contractor	During construction	Nil
	Ensure proper management of waste water generated during construction activities	Contractor	During construction	Internal cost
Water demand and effluent generation	Sensitize the workforce on the need to conserve the available water resources	Contractor	During construction	Nil
	Use the existing sanitary facilities for the workforce	Contractor/ Proponent	During construction	Nil
	Comply with the provisions of the Environmental Management and Coordination (Water Quality) Regulations, 2006	Contractor	During construction	Nil
Solid waste generation and management	Procure and strategically place adequate solid waste collection bins with a capacity for segregation within the site	Contractor	Prior to commencement	100,000
	Sensitize workers on the process of solid waste collection, segregation and proper disposal	Contractor	Continuous	Nil
	Procure a sizeable central solid waste collection bin with chambers to accommodate separated waste	Contractor	Prior to commencement	200,000
	Procure the services of a NEMA licensed waste handler to dispose off the solid waste	Contractor	During construction	Tender
	Comply with the provisions of the Environmental Management and Coordination (Waste Management) Regulations, 2006 and The Sustainable Waste Management Act, 2022	Contractor	Continuous	Nil
Occupational safety and health risks	Procure and provide adequate and appropriate Personal Protective Equipment (PPE) and enforce on their use	Contractor	During construction	100,000
	Provide insurance cover to all employees	Contractor	During construction	Internal cost
	Provide employees with correct tools and equipment for the jobs assigned and trained on their use	Contractor	During construction	Nil
	Provide a fully equipped first aid box	Contractor	During construction	10,000

Environmental concerns	Recommended mitigation Measures	Implementing party	Timeframe	Cost (KES)
	Comply with the provisions of the Occupational Safety and Health Act, 2007	Contractor	During construction	Nil
Operational phase				
Structural Failure	Ensure the seawall is inspected annually by a licensed engineer and oceanographer to check its structural integrity	Proponent	Bi-annually	TBD
Increased shoreline erosion	The proponent should utilize the slopping technique of 45º angle which allows for replication of the existing zone profile to ensure continuous sand deposition	Proponent/Contractor	During construction	Nil
	The seawall should have pockets and grooves that will use up energy of the waves instead of reflecting it	Proponent/Contractor	During construction	Nil
Change in sediment types	Undertake sediment budget assessment and slope analysis along the shoreline and nearshore water	Proponent/Marine scientist	Annually	TBD
	Determine the changes in type, nature, source and net amount of sediments deposited	Proponent/Marine scientist	Monthly	TBD
Change in associated benthic communities	Undertake biodiversity monitoring along the beach corridor to determine the impact of the seawall on the marine biodiversity	Proponent/ Marine scientist	Monthly	TBD
Decommissioning phase				
Solid waste generation and management	Recover re-usable materials for sale or use in other project sites	Proponent	During decommissioning	TBD
	Contract a licensed construction company to carry out demolitions	Proponent	During decommissioning	Tender
	Contract a NEMA licensed waste handler to handle and dispose the solid waste	Proponent	During decommissioning	Tender
	Comply with the Environmental Management and Coordination (Waste Management) Regulations, 2006	Proponent	During decommissioning	Nil
Safety and health risks	Install signage to warn persons of the ongoing activities	Proponent	Before decommissioning	50,000
	Provide adequate and appropriate PPE to workers and enforce their use	Proponent	During decommissioning	150,000
	Ensure the process of demolition of the seawall is supervised by competent personnel	Proponent	During decommissioning	Nil

Environmental concerns	Recommended mitigation Measures	Implementing party	Timeframe	Cost (KES)
	Ensure first aid kits are available throughout demolitions	Proponent	During decommissioning	10,000
	Comply with the provisions of the Occupational Safety and Health Act, 2007	Proponent	During decommissioning	Nil
Coastal/beach erosion	Explore other options of beach front armoring to mitigate against the impact of coastal erosion such as use of breakwaters	Proponent	After decommissioning	Nil

5 ENVIRONMENTAL MONITORING PLANS

5.1 Introduction

Effective implementation of the Environmental and Social Management Plans requires the development and implementation of a suite of monitoring plans for the environmental media and socio-economic issues identified by the study. The objective of the monitoring plans is to enhance the environmental performance of the proposed project by providing data and information on compliance with legislative standards, conservation and preservation of the environment and determining the levels of deviation from the values obtained during the baseline monitoring. This in turn informs the corrective measures if any that need to be implemented to comply with the legislative standards and environmental restoration. For the proposed project, seven monitoring plans are proposed. These are;

1. Sediment budget monitoring plan
2. Biodiversity monitoring plan
3. Structural health monitoring plan

5.2 Sediment budget monitoring plan

5.2.1 Introduction

The construction of the eco-friendly seawall and a ramp may result to sediment accretion along the beach corridor thus a viable alternative method to prevent coastal / beach erosion. The sediments deposited may change from coarse and medium sand to more refined sediments. Further, the adjacent beach area may benefit from sediment deposition. Thus the proponent should put in place a consistent sediment budget monitoring plan to determine the type, source and net deposition of sediment along the beach corridor and adjacent beach to assess the impacts and inform on mitigation measures.

5.2.2 Monitoring location

Sediment budget monitoring should be conducted along the property's beach corridor and adjacent beach areas.

5.2.3 Monitoring parameters

The monitoring parameters should include the type, nature, source and net amount of sediments deposited.

5.2.4 Monitoring method

The monitoring method will involve data collection on erosion and sediment deposition/accretion along the property's beach corridor and adjacent beaches. This will involve Focus Group Discussions and Key informant interviews with beach users, notably the 'beach operators' using one-on-one questionnaire interviews with structured check-lists. A purposive sampling approach will be used to select the sampling sites followed by site visits to ground-truth and establish reference benchmarks along the entire corridor. During these surveys, onsite information using GPS points will be taken and topographic maps developed from both LIDAR data and Google Earth Pro® data using ArCGIS software. The GPS points will be used to define current shorelines following the High Water Line (HWL) shoreline indicator, comprising of a debris line, wet/dry line and change from low to high along the shorelines to delineate shoreline change. Beach profiles will be monitored using the transect method from which the levelling profiles will be recorded and analyzed.

5.2.5 Monitoring frequency
The monitoring frequency should be monthly in collaboration with a team of marine scientists.

5.3 Biodiversity monitoring plan
5.3.1 Introduction
The accretion and deposition of more refined sediments along the beach corridor may lead to change of benthic communities from *Uca* species to Polychaetas. The objective of the biodiversity monitoring plan is to track changes in species diversity and abundance so as to inform mitigation measures and environmental management decisions by the proponent.

5.3.2 Monitoring location
Biodiversity monitoring should be carried out along the property's beach corridor and adjacent beach areas.

5.3.3 Monitoring parameters
The monitoring parameters should include species diversity and abundance for benthic communities.

5.3.4 Monitoring methods
The monitoring method should include conducting 1m x 1m quadrats on either side of the 30m transects along the property's beach corridor and two similar 1m x 1m quadrats conducted on the adjacent beach area.

5.3.5 Monitoring frequency
The monitoring frequency should be conducted monthly in collaboration with a team of marine scientists.

5.4 Structural health monitoring plan
5.4.1 Introduction
In case of an extreme wave event, the seawall may fail as it may not withstand high wave energy. The structural health monitoring plan will involve the observation of the seawall over time using periodically sampled response measurements, the extraction of damage-sensitive features and the statistical analysis of these features to determine the current health of the system. It provides information on the integrity of the structure. Thus this plays a key role in the property safety in regards to both long-term damage accumulation and post extreme event scenarios.

6 GOVERNANCE FRAMEWORKS

6.1 Introduction

The Third Schedule of EIA/EA Regulations requires that environmental guidelines and standards which include Kenya government policies and strategies, national legislation and the institutional arrangements to render them should be incorporated in an ESIA report. The legal and institutional frameworks provide important safeguards for protection and conservation of fragile environments and vulnerable communities and enhance the implementation of the Environmental and Social Management Plans. Under this section, the ESIA will therefore review the applicable sets of laws, and institutions which environmental compliance requirements for the proposed eco-friendly seawall and a ramp.

6.2 Policy Framework

6.2.1 National Environment Policy, 2013

The National Policy aims to provide a framework for an integrated approach to sustainable management of Kenya's environment and natural resources. In particular, it proposes to strengthen:

- Legal and institutional framework for good governance
- Integrate environmental management with economic growth, poverty reduction and improving livelihoods
- Research and capacity development
- Promote new environment management tools
- Promote collaboration and cooperation and partnerships in environment management
- Promote domestication, co-ordination and maximization of benefit from Strategic Multilateral Environment Agreements

Chapter 6 of the policy elaborates on environmental quality and health and the need to ensure a clean and health environment for all.

6.2.2 Integrated Coastal Zone Management Policy, 2017

The National Environment Policy statements tasks NEMA to develop and implement a harmonised ICZM Policy and Integrated Ocean Management Policy, Strategy and Action Plan. This policy statement has since been developed and is the process of being implemented in line with Sec. 55 of the Environmental Management and Coordination Act Cap. 387 of the Laws of Kenya. Considerable progress in ICZM implementation in Kenya have been made recently with the release of the Second State of the Coast report in 2017, highlighting the status, trends, threats and impacts to Kenya's coastal and marine environment; and the formulation of the ICZM Policy which addresses the conservation and protection the various coastal ecosystems and outlines institutional arrangements for the management of coastal and marine resources. The overall objective of the ICZM Policy is to guide the management and utilisation of the coastal and marine environment and its resources to ensure sustainable livelihoods and development through seven strategic areas which have been identified and prioritised for action in the ICZM Policy. These strategic areas include conservation of the Coastal and Marine Environment – conserve the coastal and marine resources and environment for sustainable development. Based on the strategic areas identified and prioritised for action in the ICZM Policy, a National Plan of Action for the coastal and marine environment of Kenya, 2019 - 2023 has also been developed to promote sustainable development in the coastal zone. Its main objectives include cconservation and restoration of critical habitats and biodiversity, sustainable utilization of coastal and marine resources, prevention and control of pollution in the coastal and marine environment, protection and mitigation of shoreline change and conservation and restoration of cultural and heritage sites. A strategy for the shoreline management planning process has also already been developed (GOK, 2010)

6.2.3 The Shoreline Management Strategy for Kenya, 2010

NEMA developed a shoreline management plan consistent with the Environment and ICZM policies. The strategy firstly identifies the key shoreline management issues in Kenya on a systematic basis using sediment cells, recommends shoreline management policies and objectives in response to these observed issues and finally outlines strategies to achieve these policies and objectives. A total of 29 sediment cells have been identified in the strategy. The project area is listed under sediment cell 18 (Ras-Iwetine to Nyali) (Table 9).

Table 9:An extract of Sediment Cell 18 where one of the project site is listed under the Shoreline Management Strategy for Kenya including the conservation objectives and strategies (Source: Shoreline Management Strategy for Kenya, 2010)

Cell	Objectives	Strategies
Cell 18 Ras Iwetine to Nyali	Conserve Mombasa Marine Reserve area	Promote best tourism practices in coral reef areas Promote use of appropriate fishing gear Control and reduce pollution through enforcement of laws on pollution prevention and control
	Promote tourism.	Protect property from shoreline erosion Ensure planned and sustainable tourism development, including infrastructure and associated facilities, sanitation, etc. Ensure security and safety on the beaches.
	Maintain fish landing facilities	Improve infrastructure Planning to ensure against encroachment or illegal allocation of fish landing sites
	Ensure public access to beaches.	Map and gazette beach access points Improve infrastructure, including beach access points. Provide physical development plans to ensure against encroachment of beach access points Ensure security and safety on the beaches. Maintain 60m setback

6.2.4 The National Land Policy, 2009

The National Land Policy guides the country towards efficient, sustainable and equitable use of land for prosperity and posterity. The Mission of the Policy aims at: promoting positive land reforms for the improvement of the livelihoods of Kenyans through the establishment of accountable and transparent laws, institutions and systems dealing with land. The overall objective of the Policy is to secure rights over land and provide for sustainable growth, investment and the reduction of poverty in line with the Government's overall development objectives. Specifically the policy offers a framework of policies and laws designed to ensure the maintenance of a system of land administration and management that will provide: a) All citizens with the opportunity to access and beneficially occupy and use land; b) Economically viable, socially equitable and environmentally sustainable allocation and use of land; c) Efficient, effective and economical operation of land markets; d) Efficient and effective utilization of land and land-based resources; and e) Efficient and transparent land dispute resolution mechanisms. Sustainable land use practices are key to the provision of food security and attainment of food self-sufficiency.

6.2.5 The National Health Policy 2014 - 2030

The goal of the Policy is to attain the highest possible standard of health in a responsive manner. The health sector aims to achieve this goal by supporting equitable, affordable, and high-quality health and related services at the highest attainable standards for all Kenyans. This Policy has six objectives which include; to eliminate communicable conditions, to halt and reverse the rising burden of non-communicable conditions and mental disorders, to reduce the burden of violence and injuries, to provide essential healthcare, to minimize exposure to health risk factors and to strengthen collaboration with private and other sectors that have an impact on health. This policy takes into account the functional responsibilities between the two levels of government (county and national) with their respective accountability, reporting and management lines. It proposes a comprehensive and innovative approach to harness and synergise health services delivery at all levels.

6.3 Legislative Framework

6.3.1 The Constitution of Kenya, 2010

The Constitution of Kenya 2010 is the supreme law of the land. Under Chapter IV, article 42 provides for the right to a clean and healthy environment for all. Further, Chapter V of the Constitution deals with Land and Environment. Specifically, Part 2 elaborates on the obligations of the proponent in respect to protection of the environment and enforcement of environmental rights.

Relevance to the proposed project

- The proponent is entitled to a fair administrative decision-making process from NEMA and other State organs.
- The proponent must ensure that the development is carried out in an ecologically, economically and socially sustainable manner.
- The proponent should ensure that construction and operations of the facility do not infringe on the right to a clean and healthy environment for all.

6.3.2 The Environmental Management and Co-ordination Act (EMCA) Cap. 387 of the Laws of Kenya

The Act is the framework environmental law and aims to improve the legal and administrative co-ordination of the diverse sectoral initiatives in the field of environment so as to enhance the national capacity for its effective management. The Act harmonizes the sector specific legislations touching on the environment in a manner designed to ensure greater protection of the environment in line with the National Environment Policy, 2013.

Relevance to the proposed project

- Section 58 of the Act requires proponents of a development likely to have deleterious effects on the environment to prepare and submit an ESIA report to NEMA for consideration for decision making. This study report is prepared to comply with the provisions of this section.

6.3.2.1 Regulations under the EMCA Cap. 387 of the Laws of Kenya

To operationalize EMCA, several Regulations have been gazetted since its enactment in 1999 and its amendment in 2015. These relevant ones are;

1. **Environmental Management and Coordination (Impact Assessment and Audit) Regulations, 2003**
   It describes how experts should conduct the ESIA process including guidelines and standards to be met by reports. The regulations were reviewed in 2016 to align them to the Kenya Constitution 2010. They were also recently amended (2019) to address challenges that have been reported since they were gazetted. This report complies with the provisions of these Regulations.

2. **Environmental Management and Coordination (Water Quality) Regulations, 2006**
   These Regulations address the challenges of pollution of water resources and conservation. It consists of VI parts and eleven schedules dealing with protection of sources of water for domestic use to miscellaneous provisions. For the proposed disposal site, the proponent should implement measures to prevent water pollution from construction of the asbestos burial pits and the disposal activities.

3. **Environmental Management and Coordination (Waste Management) Regulations, 2006**
   The Regulations focus on the management of solid waste, industrial waste, hazardous waste, pesticides, toxic substances and radioactive substances. In compliance with these Regulations, the proponent should ensure proper solid waste disposal throughout the project cycle and procure the services of a NEMA licensed contractor for solid waste management.

4. **Environmental Management and Coordination (Noise and Excessive Vibration Pollution) (Control) Regulations, 2009**
   These Regulations were gazetted to manage noise levels to levels that do not cause a disturbance to the public. The operations at the sites are likely to generate noise above the acceptable limits within the neighborhood. Noise level measurements were obtained on December 2022 to provide a benchmark for continued monitoring. Appropriate PPE should be provided for employees engaged in activities that may produce noise above the acceptable limits within the facility.

5. Environmental Management and Coordination (Air Quality) Regulations, 2014
   These regulations were aimed at controlling, preventing and abating air pollution to ensure clean and healthy ambient air. Quality measurements were obtained on December 2022 to provide a benchmark for continued monitoring. The proponent should provide workers with adequate and appropriate PPE, train them on correct use and enforce their use.

6.3.3 The Occupational Safety and Health Act, 2007

The OSHA, 2007 commenced on 26th October 2007. It is an Act of Parliament to provide for the safety, health and welfare of workers and all persons lawfully present at workplaces. Although the OSHA, 2007 repealed the Factories and Other Places of Work Act Cap. 514 of the Laws of Kenya, it inherited all the subsidiary legislation issued under Cap. 514. Examples of subsidiary legislation inherited include:

- Docks Rules L.N. 306 of 1962
- Eyes Protection Rules L.N. 44 of 1978
- Building Operations and Works of Engineering Construction Rules L.N. 40 of 1984
- Electric Power Special Rules L.N. 340 of 1979
- First Aid Rules L.N. 87 0f 1964
- Cellulose Solutions Rule L.N. 87 of 1964
- Health and Safety Committee Rules L.N. 31 of 2004
- Medical Examination Rules L.N. 24 of 2005
- Noise Prevention and Control Rules L.N. 25 0f 2005
- Fire Risk Reduction Rules L.N. 59 0f 2007
- Hazardous Substances Rules L.N. 60 of 2007

Relevance to the proposed project

– Under OSHA, the proponent should provide the workers with adequate and appropriate PPE and enforce their use.

6.3.4 Public Health Act, 2012

It is an Act of Parliament that makes provision for securing and maintaining health. It outlines the responsibilities for the County Government to maintain a safe and clean environment by taking practicable measures for preventing the occurrence of any outbreak, or prevalence of any infections, communicable or preventable diseases or conditions to safeguard and promote the public health and to exercise the powers and perform the duties in respect of the public health conferred or imposed on it by this Act or by any other law. Section 3 gives provisions for use of poisonous substances. It refers to regulations for protection of persons against risk of poisoning, imposing restrictions or conditions on the importation, sale, disposal, storage, transportation or use of poisonous substances.

Relevance to the proposed project

– The proponent should ensure compliance with the Act by providing clean, healthy and safe environment during construction phase

6.3.5 The Physical and Land Use Planning Act, 2019

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

Relevance to the proposed project

- The proponent should obtain approvals of the plans for construction of the eco-friendly seawall and a ramp from the County Government of Mombasa

6.3.6 The Water Act, 2016

The Constitution acknowledges access to clean and safe water as a basic human right and assigns the responsibility for water supply and sanitation service provision to the 47 established counties. The purpose of the 2016 Water Act is to align the water sector with the Constitution's primary objective of devolution. The Act establishes several organs to ensure development and sustainable use of water resources. These include the Water Resources Authority (WRA), the Water Sector Trust Fund (WSTF), Water Resources Users Associations (WRUAs), Water Services Providers (WSPs) and Water Works Development Agencies among others.

Relevance to the proposed project

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

6.3.7 The Wildlife (Conservation and Management) Act, 2009

The Wildlife Act was first adopted in 1976 with a series of eight subsequent amendments and revisions the latest being 2009. This reflects on the search for ideal arrangements for the protection, conservation and management of Wildlife in Kenya. The purpose of the Act is to consolidate and amend the law relating to the protection, conservation and management of wildlife in Kenya; and for purposes connected there with and incidental thereto.

Relevance to the proposed project

- The proposed project site fringes the shores of the Indian Ocean within which the Mombasa Marine National Park and Reserve (Cell 18) lies. Thus the proponent has an obligation to promote the conservation of wildlife species within and around the area. This will be done through reporting any stranding to Kenya Wildlife Service.

6.3.8 The County Government Act, 2012

To ensure implementation of the provisions of the new constitution, the County Governments are empowered to make by-laws in respect of all such matters as are necessary or desirable for the maintenance of health, safety and well-being of the general public.

Relevance to the proposed project

- The Act gives right to access private property at all times by the County Government officers and servants for inspection purposes.

6.3.9 Institutional arrangements

To implement the above legal framework, the government has established a number of institutions with varying mandates of implementation as shown in Table 10

Table 10: Institutions and their legislative mandate as it applies to the proposed project

Institution	Legislative mandate
National Environment Management Authority	To implement the Environmental Management and Coordination Act and Associated Regulations and the Climate Change Act, 2016
County Government of Mombasa	To implement the County Government Act, 2012, its by-laws the Physical and Land Use Planning Act, 2019 and the Occupiers Liability Act, 2012
Kenya Wildlife Service	To implement the Wildlife Conservation and Management Act, 2013
Ministry of Lands	To implement the Physical and Land Use Planning Act, 2019
Directorate of Occupational Safety and Health Services	To implement the Occupational Safety and Health Act, 2007
Water Resources Authority	To implement the Water Act, 2016

7 CONCLUSIONS AND RECOMMENDATIONS

7.1 Conclusions

In conclusion, the proposed project is considered important and beneficial particularly to the proponent as it will ensure fortification of the residential property. The key concerns that will result from the implementation of the proposed project include water quality degradation, change in sediment types, increased shoreline erosion, and change in associated benthic communities among others. The ESIA study proposes a suite of comprehensive Environmental and Social Management and Monitoring Plans to address the anticipated negative impacts during the entire project cycle and improve the environmental performance of the proposed project.

7.2 Recommendations

The main recommendation of the ESIA is the need for concerted implementation of the Environmental Management and Monitoring Plans by the proponent. The specific key ones include;

1. The proponent should utilize the slopping technique of 45º angle which allows for replication of the existing zone profile to ensure continuous sand deposition
2. Construction activities should be carried out during low tide
3. Ensure proper management of waste water produced during construction activities
4. Sensitize workers on the process of solid waste collection, segregation and proper disposal
5. The seawall should have pockets and grooves that will use up energy of the waves instead of reflecting it
6. Undertake biodiversity monitoring along the beach corridor to determine the impact of the seawall on the marine biodiversity
7. Ensure the seawall is inspected annually by a licensed engineer and oceanographer to check its structural integrity

On the basis of a commitment by the proponent to implement the proposed mitigation measures and the Environmental Management Plan, we recommend the issuance of an EIA License as per the Environmental Management and Coordination Act Cap. 387 of the Laws of Kenya and Environmental Management and Coordination (Impact Assessment and Audit) Regulations, 2003.

8 REFERENCES

1. Kairu, K., & Nyandwi, N. (2000). *Guidelines for the study of shoreline change in the western Indian Ocean Region*. Intergovernmental Oceanographic Commission (IOC) of UNESCO.
2. Bruun, I. (1962). *Climatological Summaries for Norway: the Air Temperature in Norway 1931-60*. Norsk meteorlogisk Institutt.
3. Mwakumanya, M. A., & Tole, M. P. (2003). Coastal Erosion at Mombasa Beaches Hydrodynamic and Morphological Interactions.
4. Government of Kenya Policies
   - National Environment Policy, 2013
   - National Health Policy, 2014 – 2030
   - National Land Policy, 2009
   - Integrated Coastal Zone Management Policy, 2017
   - The Shoreline Management Strategy of Kenya, 2010
5. Republic of Kenya Statutes:
   - The Constitution of Kenya, 2010
   - Environmental Management and Coordination Act Cap 387 of the Laws of Kenya
   - Environmental Management and Coordination (Impact Assessment and Audit) Regulations, 2003
   - Environmental Management and Coordination (Water Quality) Regulations, 2006
   - Environmental Management and Coordination (Waste Management) Regulations, 2006
   - Environmental Management and Coordination (Air Quality) Regulations, 2014
   - Environmental Management and Coordination (Noise and Excessive Vibration Pollution) (Control) Regulation, 2009
   - The Occupational Safety and Health Act, 2007
   - The Public Health Act, 2012
   - The Physical and Land Use Planning Act, 2019
   - The Water Act, 2016
   - The County Government Act, 2012
6. Solomon, S. (2007, December). IPCC (2007): Climate change the physical science basis. In *Agu fall meeting abstracts* (Vol. 2007, pp. U43D-01).

9 LIST OF ANNEXTURES

1. Copy of Certificate of Incorporation
2. Copy of PIN Certificate
3. Copy of landownership documents for the proposed project site
4. Copy of approval of the Scoping report and Terms of Reference
5. Copies of the baseline ambient air quality, noise level measurements, water quality and soil tests
6. Letters of invitation and evidence of receipt by the stakeholders and community for the Consultative Meetings
7. Copy of the stakeholders' consultative meeting programme
8. Proceedings of the stakeholders' consultative meeting
9. Copy of attendance list
10. Copies of the public consultation questionnaires
11. Copy of the NEMA practicing license for the Firm, Envasses Environmental Consultants Limited
12. Copy of the NEMA practicing license for Lead Expert, Mr. Simon Nzuki
13. Copy of NEMA e-citizen payment receipt

No. 34242

CERTIFICATE OF INCORPORATION

I hereby Certify, that—

BALBINUS INVESTMENTS LIMITED...............................

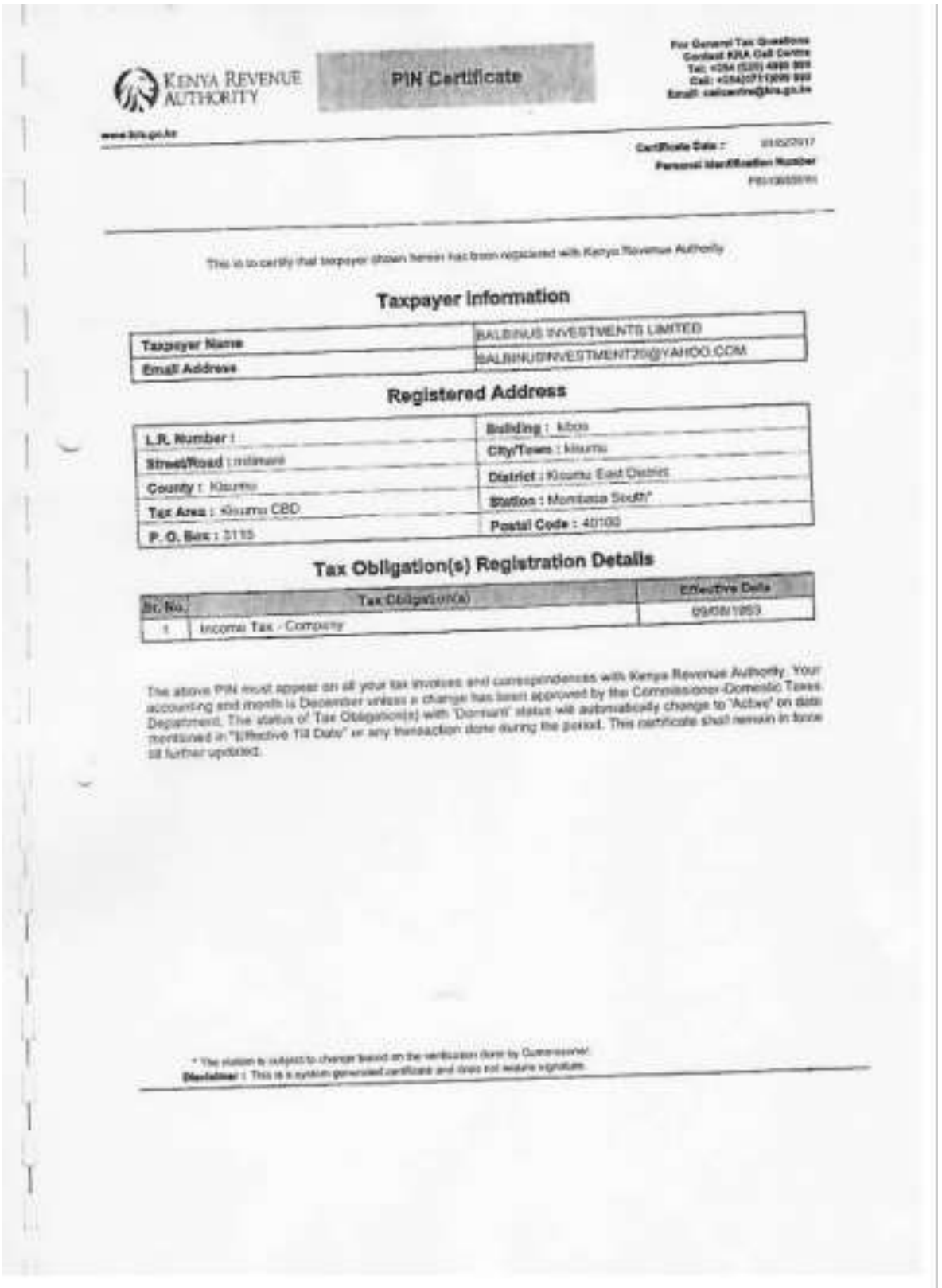
is this day incorporated under the Companies Act (Cap. 486) and that the Company is LIMITED.

Given under my hand at Nairobi this TWENTY FIRST day of JUNE One Thousand Nine Hundred and NINETY THREE

I, [illegible], Advocate of the High Court of Kenya do hereby certify that this document is a true photocopy of the original which I have personally seen.

SNR. Dy. Registrar of Companies

GPK 2121—[illegible]



KENYA REVENUE AUTHORITY

PIN Certificate

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

www.kra.go.ke

Certificate Date : 01/02/2017

Personal Identification Number
P051[illegible]

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

Taxpayer Information

Taxpayer Name	BALBINUS INVESTMENTS LIMITED
Email Address	BALBINUSINVESTMENT20@YAHOO.COM

Registered Address

L.R. Number :	Building : kibos
Street/Road : mitaware	City/Town : kisumu
County : Kisumu	District : Kisumu East District
Tax Area : Kisumu CBD	Station : Mombasa South*
P. O. Box : 3115	Postal Code : 40100

Tax Obligation(s) Registration Details

Sr. No.	Tax Obligation(s)	Effective Date
1	Income Tax - Company	09/08/1993

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

* The station is subject to change based on the verification done by Commissioner.

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

REPUBLIC OF KENYA

THE REGISTRATION OF TITLES ACT
(Chapter 281)

CERTIFICATE OF TITLE

Title Number C.R. [illegible]

Term: 99 Years from 1. 6. 1955

Annual Rent Shillings [illegible]/- P.A. [illegible]

I HEREBY CERTIFY that [illegible] LIMITED a limited liability company incorporated in the Republic of Kenya

of Post Office Box Number [illegible], MOMBASA

in the Republic of Kenya pursuant to a [illegible] registered as Number C.R. [illegible]

from the Government of the Republic of Kenya for the term of Ninety-Nine (99) years from the First day of June One thousand nine hundred and Fifty-five of ALL that piece of land situate Mombasa Municipality in the Mombasa District containing by measurement [illegible] Hectares

Subdivision [illegible] Number [illegible]

(Original Number [illegible]) of Section [illegible]

as delineated on Land Survey Plan Number [illegible]

annexed hereto.

Subject however to the revisable annual rent of Shillings Forty [illegible] thousand [illegible] hundred and to the Act Special Conditions Encumbrances and other matters specified in the Memorandum hereunder written.

In Witness whereof I have hereunto set my hand and seal this Twenty-eighth day of February Two thousand and Five.

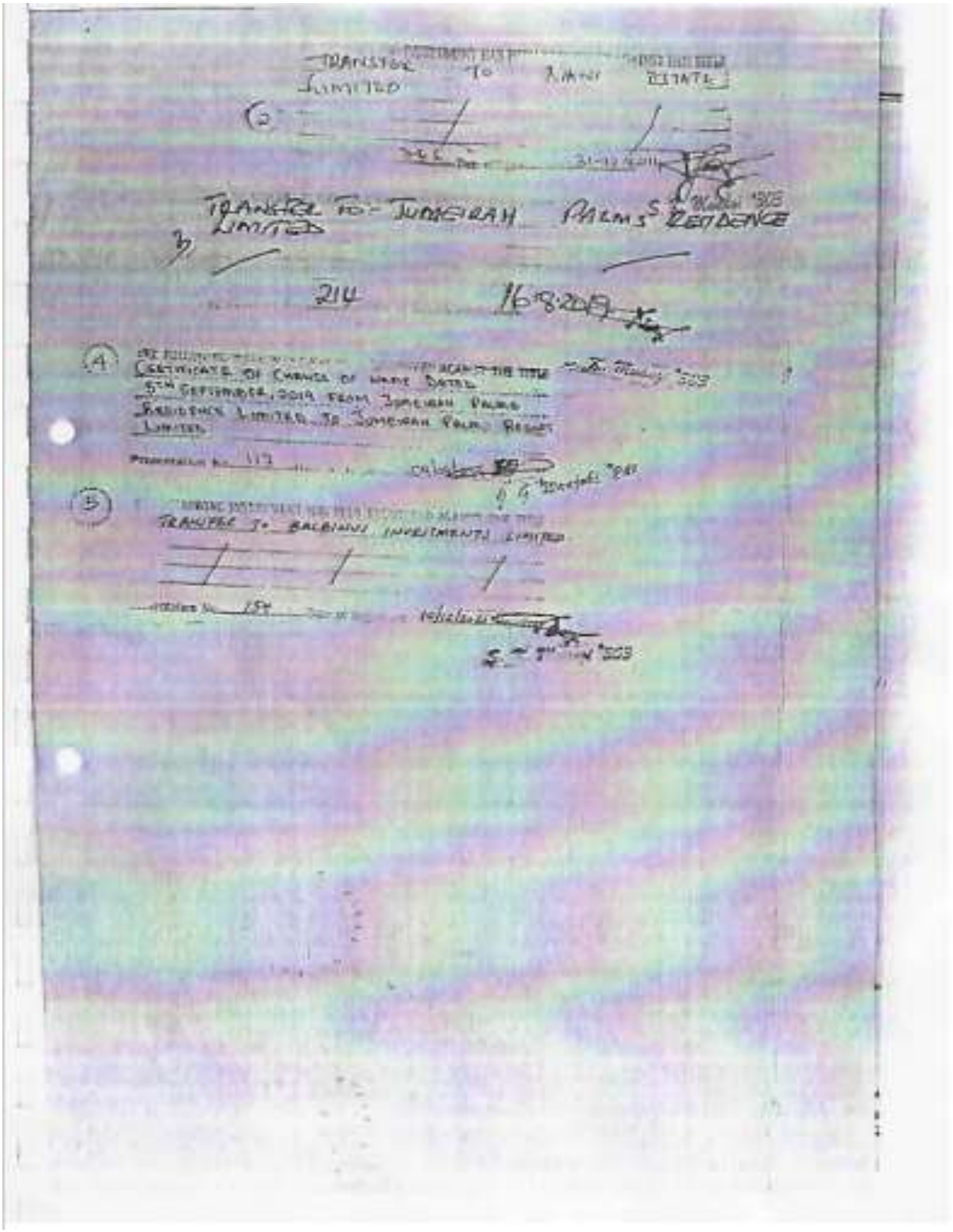
[signature]
Registrar of Titles

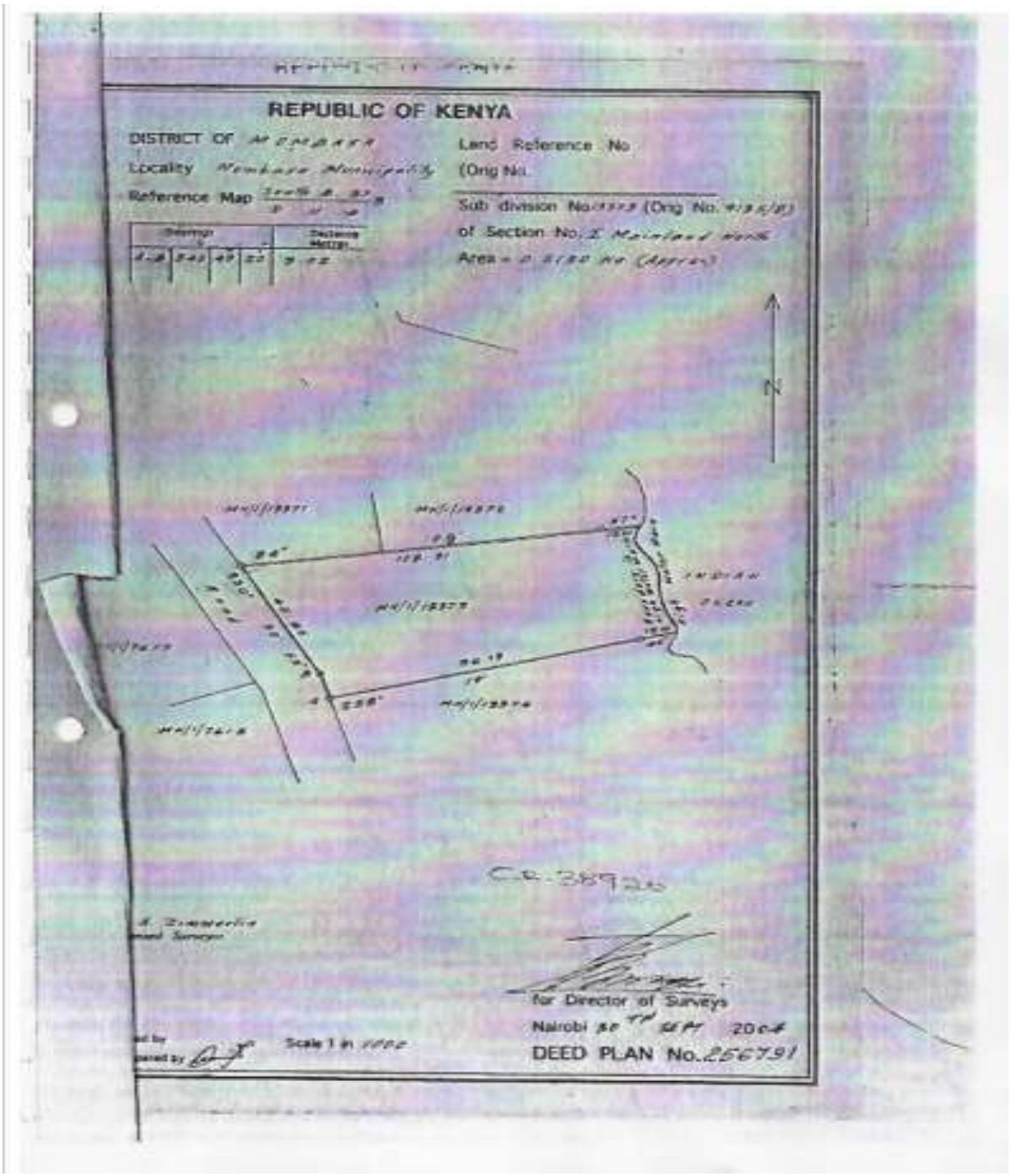
MEMORANDUM

(1) The Government Lands Act (Chapter 280).
(2) The Special Conditions contained in a Grant registered as Number C.R. [illegible]
(3) The Land Titles Act (Cap.282) Excepting part III thereof.

[illegible]

[illegible] MOMBASA [illegible]
REGISTRATION OF TITLES ACT
[illegible] CR. 289 2011
28th FEBRUARY 2005
2.30 p.m.
[signature]
Registrar of Titles


TRANSFER
LIMITED
TO
ESTATE
(2)
TRANSFER TO JUMEIRAH PALMS RESIDENCE
LIMITED
3)
214
16/8/2019
(4)
CERTIFICATE OF CHANGE OF NAME DATED
5TH SEPTEMBER, 2019 FROM JUMEIRAH PALMS
RESIDENCES LIMITED TO JUMEIRAH PALMS RESORT
LIMITED
(5)
TRANSFER TO BALBINUS INVESTMENTS LIMITED


REPUBLIC OF KENYA
DEED PLAN No.256791

nema

NATIONAL ENVIRONMENT MANAGEMENT AUTHORITY

Mobile Lines: 0724-253 398, 0723-363 010, 0735-013 046
Telkom Wireless: 020-2103370, 020-2183718
Incalnet Lines: 0780-101100, 0741-101100

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

NEMA/TOR/5/2/512 **5th December, 2022**

Director
Balbinus Investments Limited
P.O Box 3115 - 40100
MOMBASA

RE: TERMS OF REFERENCE (TOR) FOR ENVIROMENTAL IMPACT ASSESSMENT FOR THE PROPOSED ECO – FRIENDLY SEA WALL AND A RAMP ON PLOT L.R. NO. MN/1/13373, MOMBASA COUNTY

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

Pursuant to the Environmental Management and Coordination Act, 1999, the Environmental (Impact Assessment and Audit) Regulations 2003 and Legal notice 31 & 32 of 2019, your terms of reference for the Environmental Impact Assessment (EIA) for the **PROPOSED ECO – FRIENDLY SEA WALL AND A RAMP ON PLOT L.R. NO. MN/1/13373, MOMBASA COUNTY** has been approved.

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

JOSEPH MAKAU
For: DIRECTOR GENERAL

Our Environment, Our Life, Our Responsibility

ISO 9001:2015 Certified

ENVASSES ENVIRONMENTAL CONSULTANTS LIMITED

Office: Rali House, P.O. Box 2013-80100, Mombasa.
Email: info@envasses.org Telephone: +254722347155

OUR REF: ENVASSES/BIL/2022/12

1. The Chief, Nyali,
   Mombasa, Kenya.

2. The County Director of Environment,
   National Environment Management Authority,
   P.O. Box 84700-80100,
   Mombasa, Kenya.

   COUNTY DIRECTOR OF ENVIRONMENT
   NEMA - RECEIVED
   P. O. Box 84700 - 80100
   MOMBASA

3. The Warden,
   Mombasa Marine Park and Reserve,
   P.O. Box 82144-80100,
   Mombasa, Kenya.

4. The Chairman,
   Nyali Beach Management Unit,
   Mombasa, Kenya.

5. The County Government of Mombasa,
   Department of Environment, Waste Management and Energy
   P.O. Box 81599-80100,
   Mombasa, Kenya.

   RECEIVED
   07 DEC 2022

6. The County Government of Mombasa,
   Department of Lands, Urban Planning and Housing,
   P.O. Box 81599-80100,
   Mombasa, Kenya.

   COAST DEVELOPMENT AUTHORITY
   07 DEC 2022
   RECEIVED

7. Coast Development Authority,
   P. O. Box 1322-80100,
   Mombasa, Kenya.

8. The County Director of Fisheries Mombasa,
   P.O. Box 81599-80100,
   Mombasa, Kenya.

   COUNTY DIRECTOR OF FISHERIES
   08 DEC 2022

9. Nyali Business and Residents Association,
   P.O. Box 95670-80106,
   Mombasa, Kenya.

10. New Nyali Residents Association,
P. O. Box 95583-80106,
Mombasa, Kenya.

11. North Coast Residents and Ratepayers Association,
P.O. Box 95659-80100,
Mombasa, Kenye.

12. Baobab Holiday Resort,
P.O.Box 99527,
Mombasa, Kenya.

13. Baobab Apartments,
Mombasa, Kenya.

14. Baobab Estate,
Mombasa, Kenya.

15. Hemen Apartments, N.M.J. [illegible] ESTATE [illegible]
Mombasa, Kenya. MANAGER 07/12/2022

16. Kingstone Beach Lounge,
Baobab Rd,
Mombasa, Kenya.

Dear Sir/Madam,

RE: INVITATION TO A STAKEHOLDER CONSULTATIVE MEETING FOR THE PROPOSED CONSTRUCTION OF AN ECO-FRIENDLY SEAWALL AND A RAMP ON PLOT L.R. NO. MN /I / 13373, MOMBASA COUNTY.

The above subject refers.

We have been contracted by Balbinus Investments Limited to prepare an Environmental Impact Assessment (ESIA) Study Report for the proposed construction of an eco-friendly seawall and a ramp for their property on Plot L.R. No. MN /I / 13373, Mombasa County.

The ESIA study is prepared pursuant to Section 58 of the Environmental Management and Coordination Act Cap 387 of the Laws of Kenya. Under the Act, particularly in Regulation 17 of the Environmental Impact Assessment and Audit (EIA/EA) Regulations, 2003, the potentially project affected persons are required to participate in the EIA process.

The purpose of this letter is therefore to invite you to a stakeholder consultative meeting on 13th December 2022 starting at 10:00 am at the project site. Please find attached the project location map and your guide to the site for the meeting.

We look forward to your participation in the meeting.

Yours Sincerely,

Mr. Simon Nzuki
Chief Executive Officer
Envasses Environmental Consultants Limited

ENVASSES ENVIRONMENTAL CONSULTANTS LIMITED

Office: Rafi House, P.O. Box 2013-80100, Mombasa.
Email: info@envasses.org Telephone: +254722347155

OUR REF: ENVASSES/BIL/2022/12

1. The Chief, Nyali,
   Mombasa, Kenya.
2. The County Director of Environment,
   National Environment Management Authority,
   P.O. Box 84700-80100,
   Mombasa, Kenya.
3. The Warden,
   Mombasa Marine Park and Reserve,
   P.O. Box 82144-80100,
   Mombasa, Kenya.
4. The Chairman,
   Nyali Beach Management Unit,
   Mombasa, Kenya.
5. The County Government of Mombasa,
   Department of Environment, Waste Management and Energy,
   P.O. Box 81599-80100,
   Mombasa, Kenya.
6. The County Government of Mombasa,
   Department of Lands, Urban Planning and Housing,
   P.O. Box 81599-80100,
   Mombasa, Kenya.
7. Coast Development Authority,
   P. O. Box 1322-80100,
   Mombasa, Kenya.
8. The County Director of Fisheries Mombasa,
   P.O. Box 81599-80100,
   Mombasa, Kenya.
9. Nyali Business and Residents Association,
   P.O. Box 95670-80106,
   Mombasa, Kenya.

KENYA WILDLIFE SERVICE
RECEIVED
08 DEC 2022
MOMBASA MAKINI

Sollar.

Mombasa Marine park

10. New Nyali Residents Association.
P.O. Box 95583-80106.
Mombasa, Kenya.

11. North Coast Residents and Ratepayers Association.
P.O. Box 95659-80800.
Mombasa, Kenya.

12. Baobab Holiday Resort.
P.O.Box 99527.
Mombasa, Kenya.

13. Baobab Apartments.
Mombasa, Kenya.

14. Baobab Estate.
Mombasa, Kenya.

15. Mayure Apartments.
Mombasa, Kenya.

16. Kingstone Beach Lounge.
Baobab Rd.
Mombasa, Kenya.

Dear Sir/Madam,

RE: INVITATION TO A STAKEHOLDER CONSULTATIVE MEETING FOR THE PROPOSED CONSTRUCTION OF AN ECO-FRIENDLY SEAWALL AND A RAMP ON PLOT L.R. NO. MN /I / 13373, MOMBASA COUNTY.

The above subject refers.

We have been contracted by Balbinus Investments Limited to prepare an Environmental Impact Assessment (ESIA) Study Report for the proposed construction of an eco-friendly seawall and a ramp for their property on Plot L.R. No. MN /I / 13373, Mombasa County.

The ESIA study is prepared pursuant to Section 58 of the Environmental Management and Coordination Act Cap 387 of the Laws of Kenya. Under the Act, particularly in Regulation 17 of the Environmental Impact Assessment and Audit (EIA/EA) Regulations, 2003, the potentially project affected persons are required to participate in the ESIA process.

The purpose of this letter is therefore to invite you to a stakeholder consultative meeting on 13th December 2022 starting at 10:00 am at the project site. Please find attached the project location map and your guide to the site for the meeting.

We look forward to your participation in the meeting.

Yours Sincerely,

Mr. Simon Nzuki
Chief Executive Officer
Envasses Environmental Consultants Limited

Environmental and Social Impact Assessment (ESIA) Study Report for the Proposed Eco-friendly Sea Wall and a Ramp On Plot L.R. No. MN /I / 13373, Mombasa County.

Stakeholder and Community Consultative Meeting held at the Project site on 13th December, 2022.

Programme

Time	Agenda item	Presenter/responsibility
09:30 am	Arrival and registration	Envasses Environmental Consultants Limited
10:00 am	Prayer and introductions	Area Chief- Nyali
10:10 am	Overview of the peopposed project	Envasses Environmental Consultants Limited/Proponent
11:00 am	Questions, comments and reactions on presentation	Plenary
11:45 am	Way forward	Envasses Environmental Consultants Limited
12:00 noon	AOB	Envasses Environmental Consultants Limited
12:05 pm	Prayer/ Closure of meeting	Envasses Environmental Consultants Limited
12:10 pm	Departure	

Environmental and Social Impact Assessment Study Report for the Proposed Eco-friendly Sea Wall and a Ramp on Plot L.R. No. MN/I/13373, Mombasa County.

Task: Proceedings of the public consultative meeting held on 13th December 2022 at the Proposed project premises.

Prepared by:

Envasses Environmental Consultants Limited.
P.O. Box 2013-80100,
Mombasa, Kenya.
Tel: +254 722 347 155
Email: info@envasses.org

Proponent

Balbinus Investments Limited.
P.O. Box 3115-40100,
Mombasa, Kenya.

1. Introduction

Balbinus Investments Limited, are proposing to contruct a sea wall that will run along the shoreline of their residential property and a ramp to access the beach front area. The proposed project will feature a sea wall constructed using mass concrete as a base and ecofriendly materials for walling at an alignment of 45° following the shoreline configuration. Pursuant to Section 58 of the Environmental Management and Coordination Act Cap 387 of the Laws of Kenya, the proponent has contracted Envasses Environmental Consultants Limited to prepare an Environmental and Social Impact Assessment (ESIA) Study Report for the proposed project. Accordingly, the consultants in collaboration with Balbinus Investments Limited and the local administration organized a stakeholder engagement meeting at the project site to sensitize them on the proposed project and seek their comments on the proposal consistent with EMCA requirements on 13th December 2022 (Figure 1).

The meeting was called to order by Mr. Thomas Ruwa, the area Assistant Chief-Nyali at 10.10 am and opened with a word of prayer by Ms. Fridah Khamalishi. After the prayers, the area Assistant Chief welcomed the stakeholders and proceeded to introductions.

Figure 1: The Assistant Chief-Nyali addressing a section of participants who attended the stakeholder consultative meeting at proposed project premises (Source: Consultative meeting, December 2022)

2. Overview of the proposed project

Ms. Fridah Khamalishi thanked the stakeholders for attending the meeting and proceeded to give an overview of the proposed project. She further, cited the legal basis of the meeting as per Section 58 of the Environmental Management and Coordination Act Cap. 387 of the Laws of Kenya and the Environmental Management and Coordination (Impact Assessment and Audit) Regulations, 2003 where public participation in the ESIA process is a mandatory requirement. She then invited the participants to give their views, concerns and comments regarding the proposed project.

3. Plenary session

Mr. Paolo Francescon, neighbor to the proposed site, had an objection to the use of mass concrete in the construction of the seawall and suggested that the proponent should use coral rocks since the rock profile in the area is structurally sound. He suggested that the proponent should utilize the services of an engineer experienced in the construction of eco-friendly sea walls. He suggested names and contacts of the engineer and architect who the proponent could contact i.e., Eng. Mwinyi and Arch. Suleiman respectively. He further with support from other participants' mentioned examples of successful coral walls constructed in Diani, North Kilifi and ongoing neighborhood construction located on the fourth plot from the project site.

Ms. Jan Dickinson, neighbor to the proposed site, similarly objected to the construction of a mass concrete wall and recommended use of coral block instead. She stated that the concrete sea wall will cause changes in habitat communities such as loss of fish and other marine fauna habitats. She further stated that when strong waves struck the wall, most of sand is washed away thereby resulting to increased beach erosion. She additionally provided evidence of the how previous constructed concrete mass sea walls have deteriorated the beach along the neighboring beach. From the evidence, it was observed that the beautification of the beach is lost (Figure 2) and she added that there are 5 other neighbors (not in attendance of the meeting) objecting the use of concrete sea wall.

Figure 2: Overview of the impacts of concrete sea walls before and after construction (Source: Ms. Jack Dickinson, December 2022)

Mr. Hubert Seifert, NNRA Chairman and Mr. Shival Mohammed, the neighbor to the project site, stated that the use of coral walls is economical compared to the use of concrete. They suggested that the proponent should consider the changes in the design and technology of the proposal to enhance the ecological services along the beach.

Ms. Shakilla Mamujee, neighbor to the project site, had an objection to the proposal stating that the concrete sea walls will affect habitats for fish and birds and will also corrode the beach. She further added that the proponent should minimize and stop the cutting of indigenous trees on site to maintain the natural beauty and ecological services provided by the trees. Ms. Dickinson mentioned that the proponent in collaboration with the consultant should communicate on the progress of the proposal.

Mr. Johnson Mating'i, from the County Government of Mombasa Department of Climate Change, stated that there's sea level rise along the Coastline and the impacts should be put into consideration during project implementation. He further added that the proponent should consider redesigning the proposal to improve the aesthetic and tourism activities. He added that the integration of coral and concrete walls might result into an effective erosion control.

4. AOB

The participants requested that a second meeting to be held in the middle of January, 2023 at 5:00pm to review the proceedings of the meeting and also facilitate participation of other neighbors. The participants further stated that the property owner and the contracted engineer must be in attendance of the meeting.

5. Way forward

Ms. Khamalishi stated that the views and issues raised by the stakeholders will be incorporated in the ESIA Study Report. Additionally, she mentioned that the suggested second meeting will be considered and communicated to the stakeholders.

6. Closure of the meeting

There being no other business, the meeting ended at 11.05am with a word of prayer from Ms. Fridah Khamalishi.

Signed: _____ Date: 13TH DECEMBER 2022

Ms. Joy Alice,
Envasses Environmental Consultants Limited
Meeting Secretary

ENVASSES ENVIRONMENTAL CONSULTANTS LIMITED
P.O. Box 2013 - 80100, MOMBASA
Tel: 0722 347 150
Email: info@envasses.co.ke

Signed: _____ Date: _____

Mr. Thomas Ruwa
Area Assistant Chief -Nyali

ASST. CHIEF
ZIWA LA NGOMBE SUB-LOCATION
MAWENI LOCATION
Date: 17/12/2022

ENVASSES ENVIRONMENTAL CONSULTANTS LIMITED
Head Office: Ralli House, P.O. Box 2013-80100, MOMBASA
Branch office: Vision Plaza, P.O. Box 42259-00100, NAIROBI
Email: info@envasses.org; Telephone: +254 722 347 155

Environmental and Social Impact Assessment (ESIA) Study Report for the Proposed Eco-friendly Sea Wall and a Ramp On Plot L.R. No. MN /I / 13373, Mombasa County.

Public Consultative Meeting held at Project Site Premises Plot L.R. No. MN /I / 13373 on 13th December 2022.

Attendance List

NO.	NAME	AFFILIATION	TELEPHONE NO/EMAIL	SIGNATURE
1.	ANTHONY DICKINSON	Neighbour.	0723 706547	[illegible]
2.	Pablo Brambilla	11	0722 410221	[illegible]
3.	HARSHAD PAUN	Resident/Manager Main Mwambani	0739 556999	[illegible]
4.	JAN DICKINSON	neighbour	0727 852 357	[illegible]
5.	Shival Mohamed	neighbour	0757 840 077	[illegible]
6.				

NO.	NAME	AFFILIATION	TELEPHONE NO/EMAIL	SIGNATURE
7.	Shakila Mamujee	Neighbour	shakila.mamujee@gmail.com	
8.	Dominic [illegible]	Manager	0726 728920	
9.	Gabriel Gombo			
10.		Admin New Nyali	0719581963	
11.	Thomas Ruwa	Asst. Chief	0712-399374	
12.	Hubert Seifert	NYZA Chairman	0724[illegible]	
13.	Johnson Mating'i	CGM-[illegible]	0708675906	
14.	Memon Estate	Neighbour		
15.	[illegible] Wanjiku	Envasses	0700242807	
16.	Joy Alice [illegible]	Envasses	070[illegible]6327	
17.	[illegible]	Envasses	0704062064	
18.				
19.				
20.				
21.				
22.				
23.				
24.				

ENVASSES ENVIRONMENTAL CONSULTANTS LIMITED
Head Office: Raffi House, P.O. Box 2013-80100, MOMBASA
Branch office: Vision Plaza, P.O. Box 42259-00100, NAIROBI
Email: info@envasses.org, Telephone: +254 722 347 155

7th December, 2022

Our Ref: ESIA/BIL/2022/12

PUBLIC CONSULTATIONS QUESTIONNAIRE

TO WHOM IT MAY CONCERN,

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA) STUDY REPORT FOR THE PROPOSED ECO-FRIENDLY SEAWALL AND A RAMP ON PLOT L.R. NO. MN /I / 13373, MOMBASA COUNTY.

We have been contracted by Balbinus Investments Limited to prepare an Environmental and Social Impact Assessment (ESIA) Study Report for the proposed eco-friendly seawall and a ramp on Plot L.R. NO. MN /I / 13373, Mombasa County. The proposed development aims to mitigate the proponent's residential facility against coastal / beach erosion through construction of an eco-friendly seawall and a ramp along the beach front area. The seawall will be built using mass concrete and will follow on the configuration and rise of the shoreline pattern. Additionally, the wall will be built at an alignment of 45° stretching across a total length of 33m. A 6m long ramp with additional steps in the middle will also be constructed and used to access the property's beach front area.

The ESIA is carried out pursuant to Section 58 of the Environmental Management and Coordination Act Cap 387 of the Laws of Kenya and the Environmental Management and Coordination (Impact Assessment and Audit) Regulations of 2003. The results of the ESIA will be used for the management of the proposed development to reduce potential environmental, safety and health risks to the environment and the general public.

As part of data and information collection during the ESIA process, we have prepared a questionnaire targeting the neighbors to the proposed project site. The purpose of this letter is therefore to request for your partidpation in the ESIA process by responding to the attached questionnaire. Please note that your response to the questionnaire is expected within 7 days after receipt.

ENVASSES ENVIRONMENTAL CONSULTANTS LIMITED
07 DEC 2022
P.O. Box 2013 - 80100, MOMBASA
Tel: 0722 347 155
Email: info@envasses.org

Yours sincerely,

Mr. Simon Nzuki
Chief Executive Officer and Lead Consultant

About the questionnaire

This questionnaire has four parts. Part I and II provide details of the interviewer and the respondent's profile. Part III seeks baseline information from the stakeholders who are likely to be affected by the proposed project. Kindly fill part II-IV and seek clarifications where necessary from the interviewer or from the lead consultant on 0722 347 155 or email: info@envasses.org

Part I: Interviewer profile	
Name of interviewer	[illegible]
Position/Title	Environmental Assistant.
Date	4th 1/1/2022
Signature	

Part II: Respondent's profile	
Name of respondent	James Omondi.
Gender (Male, Female, N/A for companies)	Male
Position of respondent (For companies)	
Occupation/type of business	
Approximate distance from site	300m
Period of residency in the area (<5, >5years)	75 years.
Telephone contact	0713942555.
ID No. or Registration No. for businesses	—
Signature	

Page 3

Part III: Knowledge of the proposed site and existing environmental concerns	
a) Do you know the proposed project site?	Yes ☑ No ☐ (If no, interviewer to show respondent the project site)
b) If Yes, do you have any specific environmental or social concerns regarding the project site historically?	(List them) N/A
PART IV: Objections and Impacts of the project on stakeholders	
a) Do you have any objections to the proposed project?	Yes ☐ No ☑ If Yes, give reason(s)
b) Are there positive impacts that you anticipate from the proposed project? Protection of residential property	Yes ☑ No ☐ If Yes, list them

Page 4

Part V: Environmental and social impacts of the proposed project	
a) Are there negative environmental and social impacts that you anticipate from the proposed project?	Yes ☐ No ☑ If yes, list them and the corresponding mitigation measures in the columns below
List of negative Environmental and Social impacts of the proposed project	Proposed mitigation measures
N/A	N/A
b) Any other comments? (List them) N/A.	

ENVASSES ENVIRONMENTAL CONSULTANTS LIMITED
Head Office: Ralli House, P.O. Box 2013-80100, MOMBASA
Branch office: Vision Plaza, P.O. Box 42259-00100, NAIROBI
Email: info@envasses.org; Telephone: +254 722 347 155

7th December, 2022

Our Ref: ESIA/BIL/2022/12

PUBLIC CONSULTATIONS QUESTIONNAIRE

TO WHOM IT MAY CONCERN,

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA) STUDY REPORT FOR THE PROPOSED ECO-FRIENDLY SEAWALL AND A RAMP ON PLOT L.R. NO. MN /I / 13373, MOMBASA COUNTY.

We have been contracted by Balbinus Investments Limited to prepare an Environmental and Social Impact Assessment (ESIA) Study Report for the proposed eco-friendly seawall and a ramp on Plot L.R. NO. MN /I / 13373, Mombasa County. The proposed development aims to mitigate the proponent's residential facility against coastal / beach erosion through construction of an eco-friendly seawall and a ramp along the beach front area. The seawall will be built using mass concrete and will follow on the configuration and rise of the shoreline pattern. Additionally, the wall will be built at an alignment of 45° stretching across a total length of 33m. A 6m long ramp with additional steps in the middle will also be constructed and used to access the property's beach front area.

The ESIA is carried out pursuant to Section 58 of the Environmental Management and Coordination Act Cap 387 of the Laws of Kenya and the Environmental Management and Coordination (Impact Assessment and Audit) Regulations of 2003. The results of the ESIA will be used for the management of the proposed development to reduce potential environmental, safety and health risks to the environment and the general public.

As part of data and information collection during the ESIA process, we have prepared a questionnaire targeting the neighbors to the proposed project site. The purpose of this letter is therefore to request for your participation in the ESIA process by responding to the attached questionnaire. Please note that your response to the questionnaire is expected within 7 days after receipt.

ENVASSES ENVIRONMENTAL CONSULTANTS LIMITED
07 DEC 2022
P. O. Box 2013 - 80100, MOMBASA
Tel: 0722 347 155
Email: info@envasses.org

Yours sincerely,

Mr. Simon Nzuki
Chief Executive Officer and Lead Consultant

About the questionnaire

This questionnaire has four parts. Part I and II provide details of the interviewer and the respondent's profile. Part III seeks baseline information from the stakeholders who are likely to be affected by the proposed project. Kindly fill part II-IV and seek clarifications where necessary from the interviewer or from the lead consultant on 0722 347 155 or email: info@envasses.org.

Part I: Interviewer profile	
Name of interviewer	Swaleha Wanjiku
Position/Title	Environmental Assistant
Date	7th 12/2022
Signature	

Part II: Respondent's profile	
Name of respondent	Victor Waienga
Gender (Male, Female, N/A for companies)	Male
Position of respondent (For companies)	
Occupation/type of business	
Approximate distance from site	> 300m
Period of residency in the area (<5, >5years)	> 5 years
Telephone contact	0716443302
ID No. or Registration No. for businesses	26518054
Signature	

Page 3

Part III: Knowledge of the proposed site and existing environmental concerns	
a) Do you know the proposed project site?	Yes ☑ No ☐ (If no, interviewer to show respondent the project site)
b) If Yes, do you have any specific environmental or social concerns regarding the project site historically?	(List them) N/A
PART IV: Objection and impacts of the project on stakeholders	
a) Do you have any objections to the proposed project?	Yes ☐ No ☑ If Yes, give reason(s)
b) Are there positive impacts that you anticipate from the proposed project?	Yes ☑ No ☐ If Yes, list them

Page 4

Part V: Environmental and social impacts of the proposed project	
a) Are there negative environmental and social impacts that you anticipate from the proposed project?	Yes ☑ No ☐ If yes, list them and the corresponding mitigation measures in the columns below
List of negative Environmental and Social Impacts of the proposed project	Proposed mitigation measures
Potential Impact to marine organisms.	follow all protocols.
b) Any other comments? (List them) Project should observe all government protocols.	

ENVASSES ENVIRONMENTAL CONSULTANTS LIMITED
Head Office: Rafi House, P.O. Box 2013-80100, MOMBASA
Branch office: Vision Plaza, P.O. Box 42259-00100, NAIROBI
Email: info@envasses.org; Telephone: +254 722 347 155

7th December, 2022

Our Ref: ESIA/BIL/2022/12

PUBLIC CONSULTATIONS QUESTIONNAIRE

TO WHOM IT MAY CONCERN,

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA) STUDY REPORT FOR THE PROPOSED ECO-FRIENDLY SEAWALL AND A RAMP ON PLOT L.R. NO. MN /I / 13373, MOMBASA COUNTY.

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The ESIA is carried out pursuant to Section 58 of the Environmental Management and Coordination Act Cap 387 of the Laws of Kenya and the Environmental Management and Coordination (Impact Assessment and Audit) Regulations of 2003. The results of the ESIA will be used for the management of the proposed development to reduce potential environmental, safety and health risks to the environment and the general public.

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ENVASSES ENVIRONMENTAL CONSULTANTS LIMITED
07 DEC 2022
P. O. Box 2013 - 80100, MOMBASA
Tel: 0722 347 155
Email: info@envasses.org

Yours sincerely,

Mr. Simon Nzuki
Chief Executive Officer and Lead Consultant

About the questionnaire

This questionnaire has four parts. Part I and II provide details of the interviewer and the respondent's profile. Part III seeks baseline information from the stakeholders who are likely to be affected by the proposed project. Kindly fill part II-IV and seek clarifications where necessary from the interviewer or from the lead consultant on 0722 347 155 or email: info@envasses.org.

Part 1: Interviewer profile	
Name of interviewer	[illegible]
Position/Title	[illegible]
Date	14/12/2022
Signature	

Part II: Respondent's profile	
Name of respondent	[illegible]
Gender (Male, Female, N/A for companies)	Male
Position of respondent (For companies)	[illegible] FRO
Occupation/type of business	
Approximate distance from site	12 km
Period of residency in the area (<5, >5years)	7 years
Telephone contact	0780610101
ID No. or Registration No. for businesses	32174854
Signature	

Part III: Knowledge of the proposed site and existing environmental concerns	
a) Do you know the proposed project site?	Yes ☑ No ☐ (If no, interviewer to show respondent the project site)
b) If Yes, do you have any specific environmental or social concerns regarding the project site historically?	(List them) NA
PART IV: Objections and impacts of the project on stakeholders	
a) Do you have any objections to the proposed project?	Yes ☐ No ☑ If Yes, give reason(s)
b) Are there positive impacts that you anticipate from the proposed project?	Yes ☑ No ☐ If Yes, list them Residential Security

Page 4

Part V: Environmental and social impacts of the proposed project	
a) Are there negative environmental and social impacts that you anticipate from the proposed project?	Yes ☑ No ☐ If yes, list them and the corresponding mitigation measures in the column below
List of negative Environmental and Social impacts of the proposed project	Proposed mitigation measures
Impact on Marine	
b) Any other comments? (List them) N/A	

ENVASSES ENVIRONMENTAL CONSULTANTS LIMITED
Head Office: Rali House, P.O. Box 2013-80100, MOMBASA
Branch office: Vision Plaza, P.O. Box 42259-00100, NAIROBI
Email: info@envasses.org; Telephone: +254 722 347 155

7th December, 2022

Our Ref: ESIA/BIL/2022/12

PUBLIC CONSULTATIONS QUESTIONNAIRE

TO WHOM IT MAY CONCERN,

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA) STUDY REPORT FOR THE PROPOSED ECO-FRIENDLY SEAWALL AND A RAMP ON PLOT L.R. NO. MN /I / 13373, MOMBASA COUNTY.

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As part of data and information collection during the ESIA process, we have prepared a questionnaire targeting the neighbors to the proposed project site. The purpose of this letter is therefore to request for your participation in the ESIA process by responding to the attached questionnaire. Please note that your response to the questionnaire is expected within 7 days after receipt.

ENVASSES ENVIRONMENTAL CONSULTANTS LIMITED
07 DEC 2022
P. O. Box 2013 - 80100, MOMBASA
Tel: 0722 347 155
Email: info@envasses.org

Yours sincerely,

Mr. Simon Nzuki
Chief Executive Officer and Lead Consultant

About the questionnaire

This questionnaire has four parts. Part I and II provide details of the interviewer and the respondent's profile. Part III seeks baseline information from the stakeholders who are likely to be affected by the proposed project. Kindly fill part II-IV and seek clarifications where necessary from the interviewer or from the lead consultant on 0722 347 155 or email: info@envasses.org.

Part I: Interviewer profile	
Name of interviewer NOT SEEN !!!	SWAITHA WANJIKU
Position/Title	ENVIRONMENTAL ASSISTANT
Date	7th / Dec / 2022
Signature	

Part II: Respondent's profile	
Name of respondent	A J DICKINSON
Gender (Male, Female, N/A for companies)	MALE
Position of respondent (For companies)	MANAGING DIRECTOR
Occupation/type of business	Civil Engineer/Construction
Approximate distance from site	3 metres
Period of residency in the area (<5, >5year)	10 years
Telephone contact	0722 706 347
ID No. or Registration No. for businesses	204610
Signature	

Page 3

Part III: Knowledge of the proposed site and existing environmental concerns	
a) Do you know the proposed project site?	Yes ☑ No ☐ (If no, interviewer to show respondent the project site)
b) If Yes, do you have any specific environmental or social concerns regarding the project site historically?	(List them) A 'eco friendly' concrete wall is NOT eco Friendly and have proves to prove it. Erosion in the past 10yrs has devalued at zero! You cant build on public land. Concrete is 100% responsible for erosion and loss of sand
PART IV: Objections and impacts of the project on stakeholders	
a) Do you have any objections to the proposed project?	Yes ☑ No ☐ If Yes, give reason(s) None here has boats due to zero tides going way way out. It would be an environmental disaster.
b) Are there positive impacts that you anticipate from the proposed project?	Yes ☐ No ☑ If Yes, list them NONE

Page 4

Part V: Environmental and social impacts of the proposed project	
a) Are there negative environmental and social impacts that you anticipate from the proposed project?	Yes ☑ No ☐ If yes, list them and the corresponding mitigation measures in the columns below
List of negative Environmental and Social impacts of the proposed project	Proposed mitigation measures
To many negative impacts to mentim here. Please read previous page For just a Few. We have damning photos to prove our comments!	You can not build anything past high water line. Public beach not allowed to ingress on it!
b) Any other comments? (List them) People live on the beach to enjoy the stunning peaceful views. It is resedential area reknown for marine and wildlife. IF the owner wants concrete walls and ramps he can't be a lover of the plot and area he has bought into.	

ENVASSES ENVIRONMENTAL CONSULTANTS LIMITED
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Branch office: Vivinn Plaza, P.O. Box 42259-00100, NAIROBI
Email: info@envasses.org Telephone: +254 722 347 155

7th December, 2022

Our Ref: ESIA/BIL/2022/12

PUBLIC CONSULTATIONS QUESTIONNAIRE

TO WHOM IT MAY CONCERN,

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA) STUDY REPORT FOR THE PROPOSED ECO-FRIENDLY SEAWALL AND A RAMP ON PLOT L.R. NO. MN /I / 13373, MOMBASA COUNTY.

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07 DEC 2022
P.O. Box 2013 - 80100, MOMBASA
Tel: 0722 347 155
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Yours sincerely,

Mr. Simon Nzuki
Chief Executive Officer and Lead Consultant

About the questionnaire

This questionnaire has four parts. Part I and II provide details of the interviewer and the respondent's profile. Part III seeks baseline information from the stakeholders who are likely to be affected by the proposed project. Kindly fill part II-IV and seek clarifications where necessary from the interviewer or from the lead consultant on 0722 347 155 or email: info@envasses.org.

Part I: Interviewer profile	
Name of interviewer	SWALEHA WANJIKU
Position/Title	Environmental Assistant
Date	7th/12/2022
Signature	[signature]

Part II: Respondent's profile	
Name of respondent	MUSA YUSUF
Gender (Male, Female, N/A for companies)	MALE
Position of respondent (For companies)	
Occupation/type of business	
Approximate distance from site	100M
Period of residency in the area (<5, >5years)	3months
Telephone contact	0787 856107
ID No. or Registration No. for businesses	
Signature	[signature]

Page 3

Part III: Knowledge of the proposed site and existing environmental concerns	
a) Do you know the proposed project site?	Yes ☒ No ☐ (If no, interviewer to show respondent the project site)
b) If Yes, do you have any specific environmental or social concerns regarding the project site historically?	(List them) N/A
PART IV: Objections and impacts of the project on stakeholders	
a) Do you have any objections to the proposed project?	Yes ☐ No ☒ If Yes, give reason(s)
b) Are there positive impacts that you anticipate from the proposed project?	Yes ☑ No ☐ If Yes, list them

Prevents flooding.

Part V: Environmental and social impacts of the proposed project	
a) Are there negative environmental and social impacts that you anticipate from the proposed project?	Yes ☐ No ☒ If yes, list them and the corresponding mitigation measures in the columns below
List of negative Environmental and Social impacts of the proposed project	Proposed mitigation measures
b) Any other comments? (List them) N/A	

ENVASSES ENVIRONMENTAL CONSULTANTS LIMITED
Head Office: Rafi House, P.O. Box 2013-80100, MOMBASA
Branch office: Vision Plaza, P.O. Box 42259-00100, NAIROBI
Email: info@envasses.org; Telephone: +254 722 347 155

7th December, 2022

Our Ref: ESIA/BIL/2022/12

PUBLIC CONSULTATIONS QUESTIONNAIRE

TO WHOM IT MAY CONCERN,

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA) STUDY REPORT FOR THE PROPOSED ECO-FRIENDLY SEAWALL AND A RAMP ON PLOT L.R. NO. MN /I / 13373, MOMBASA COUNTY.

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The ESIA is carried out pursuant to Section 58 of the Environmental Management and Coordination Act Cap 387 of the Laws of Kenya and the Environmental Management and Coordination (Impact Assessment and Audit) Regulations of 2003. The results of the ESIA will be used for the management of the proposed development to reduce potential environmental, safety and health risks to the environment and the general public.

As part of data and information collection during the ESIA process, we have prepared a questionnaire targeting the neighbors to the proposed project site. The purpose of this letter is therefore to request for your participation in the ESIA process by responding to the attached questionnaire. Please note that your response to the questionnaire is expected within 7 days after receipt.

ENVASSES ENVIRONMENTAL CONSULTANTS LIMITED
07 DEC 2022
P.O. Box 2013 - 80100, MOMBASA
Tel: 0722 347 155
Email: info@envasses.org

Yours sincerely,

Mr. Simon Nzuki
Chief Executive Officer and Lead Consultant

About the questionnaire
This questionnaire has four parts. Part I and II provide details of the interviewer and the respondent's profile. Part III seeks baseline information from the stakeholders who are likely to be affected by the proposed project. Kindly fill part II-IV and seek clarifications where necessary from the interviewer or from the lead consultant on 0722 347 155 or email: info@envasses.org.

Part I: Interviewer profile	
Name of interviewer	Jacinta Nthenya
Position/Title	Environmental Assistant
Date	6th December 2022
Signature	

Part II: Respondent's profile	
Name of respondent	Patric Nyaga
Gender (Male, Female, N/A for companies)	Male
Position of respondent (For companies)	
Occupation/type of business	Artisan
Approximate distance from site	100m
Period of residency in the area (<5, >5years)	75years
Telephone contact	0702360885
ID No. or Registration No. for businesses	3579296
Signature	

Part III: Knowledge of the proposed site and existing environmental concerns	
a) Do you know the proposed project site?	Yes ☑ No ☐ (If no, interviewer to show respondent the project site)
b) If Yes, do you have any specific environmental or social concerns regarding the project site historically?	(List them) N/A
PART IV: Objections and impacts of the project on stakeholders	
a) Do you have any objections to the proposed project?	Yes ☑ No ☐ If Yes, give reason(s) Effect marine life. Restriction to beach users.
b) Are there positive impacts that you anticipate from the proposed project?	Yes ☐ No ☑ If Yes, list them

Page 4

Part V: Environmental and social impacts of the proposed project	
a) Are there negative environmental and social impacts that you anticipate from the proposed project?	Yes ☑ No ☐ If yes, list them and the corresponding mitigation measures in the columns below
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Effect on marine life. Effect on beach views.	Plant trees within the shoreline instead of erecting a wall.
b) Any other comments? (List them) Project is not viable.	

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07 DEC 2022
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Tel: 0722 347 155
Email: info@envasses.org

Yours sincerely,

Mr. Simon Nzuki
Chief Executive Officer and Lead Consultant

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Part I: Interviewer profile	
Name of interviewer	SHARIFFA WANJIKU.
Position/Title	ENVIRONMENTALIST ACCOUNTING
Date	7/12/2022
Signature	

Part II: Respondent's profile	
Name of respondent	Vincent Murunga
Gender (Male, Female, N/A for companies)	Male
Position of respondent (For companies)	
Occupation/type of business	
Approximate distance from site	7 500m
Period of residency in the area (<5, >5years)	25 years
Telephone contact	0790 044 122
ID No. or Registration No. for businesses	29346144.
Signature	

Page 3

Part III: Knowledge of the proposed site and existing environmental concerns	
a) Do you know the proposed project site?	Yes ☑ No ☐ (If no, interviewer to show respondent the project site)
b) If Yes, do you have any specific environmental or social concerns regarding the project site historically?	(List them) N/A
PART IV: Objections and impacts of the project on stakeholders	
a) Do you have any objections to the proposed project?	Yes ☐ No ☑ If Yes, give reason(s)
b) Are there positive impacts that you anticipate from the proposed project?	Yes ☐ No ☐ If Yes, list them

Page 4

Part V: Environmental and social impacts of the proposed project	
a) Are there negative environmental and social impacts that you anticipate from the proposed project?	Yes ☐ No ☑ If yes, list them and the corresponding mitigation measures in the columns below
List of negative Environmental and Social impacts of the proposed project	Proposed mitigation measures
N/A	N/A
b) Any other comments? (List them) N/A	

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07 DEC 2022
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Yours sincerely,

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Chief Executive Officer and Lead Consultant

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Part I: Interviewer profile	
Name of interviewer	Jecinta Nthenya
Position/Title	Environmental Assistant
Date	8th December 2022
Signature	JN

Part II: Respondent's profile	
Name of respondent	John Mwaniki
Gender (Male, Female, N/A for companies)	Male
Position of respondent (For companies)	
Occupation/type of business	Artisan
Approximate distance from site	100m
Period of residency in the area (<5, >5years)	>5years
Telephone contact	0723122959
ID No. or Registration No. for businesses	22889109
Signature	

Part III: Knowledge of the proposed site and existing environmental concerns	
a) Do you know the proposed project site?	Yes ☑ No ☐ (If no, interviewer to show respondent the project site)
b) If Yes, do you have any specific environmental or social concerns regarding the project site historically?	(List them) N/A.
PART IV: Objections and impacts of the project on stakeholders	
a) Do you have any objections to the proposed project?	Yes ☐ No ☑ If Yes, give reason(s)
b) Are there positive impacts that you anticipate from the proposed project? Benefit to the proponent.	Yes ☑ No ☐ If Yes, list them

Page 4

Part V: Environmental and social impacts of the proposed project	
a) Are there negative environmental and social impacts that you anticipate from the proposed project?	Yes ☐ No ☑ If yes, list them and the corresponding mitigation measures in the columns below
List of negative Environmental and Social impacts of the proposed project	Proposed mitigation measures
N/A	N/A
b) Any other comments? (List them) The project should not interfere with public access to the beach.	

ENVASSES ENVIRONMENTAL CONSULTANTS LIMITED
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7th December, 2022

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ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA) STUDY REPORT FOR THE PROPOSED ECO-FRIENDLY SEAWALL AND A RAMP ON PLOT L.R. NO. MN /1 / 13373, MOMBASA COUNTY.

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07 DEC 2022
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Yours sincerely,

Mr. Simon Nzuki
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About the questionnaire

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Part I: Interviewer profile	
Name of interviewer	Jacinta Nthenya
Position/Title	Environmental Assistant
Date	8th December 2022
Signature	

Part II: Respondent's profile	
Name of respondent	Felix Muthiani
Gender (Male, Female, N/A for companies)	Male
Position of respondent (For companies)	
Occupation/type of business	Neighbour
Approximate distance from site	100m
Period of residency in the area (<5, >5years)	5yrs
Telephone contact	0719237653
ID No. or Registration No. for businesses	27991475
Signature	

Part III: Knowledge of the proposed site and existing environmental concerns	
a) Do you know the proposed project site?	Yes ☑ No ☐ (If no, interviewer to show respondent the project site)
b) If Yes, do you have any specific environmental or social concerns regarding the project site historically?	(List them) N/A
PART IV: Objections and Impacts of the project on stakeholders	
a) Do you have any objections to the proposed project?	Yes ☐ No ☑ If Yes, give reason(s)
b) Are there positive impacts that you anticipate from the proposed project? The project will only benefit the proponent	Yes ☑ No ☐ If Yes, list them

Page 4

Part V: Environmental and social impacts of the proposed project	
a) Are there negative environmental and social impacts that you anticipate from the proposed project?	Yes ☐ No ☑ If yes, list them and the corresponding mitigation measures in the columns below
List of negative Environmental and Social Impacts of the proposed project	Proposed mitigation measures
N/A	N/A
b) Any other comments? (List them) N/A	

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07 DEC 2022
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Yours sincerely,

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Part I: Interviewer profile	
Name of interviewer	Jacinta Nthenya
Position/Title	Environmental Assistant
Date	8th December 2022
Signature	

Part II: Respondent's profile	
Name of respondent	Biasha Yusuf
Gender (Male, Female, N/A for companies)	Female
Position of respondent (For companies)	
Occupation/type of business	Hotel operator
Approximate distance from site	100m
Period of residency in the area (<5, >5years)	<5years
Telephone contact	-
ID No. or Registration No. for businesses	29526746
Signature	

Page 3

Part III: Knowledge of the proposed site and existing environmental concerns	
a) Do you know the proposed project site?	Yes ☑ No ☐ (If no, interviewer to show respondent the project site)
b) If Yes, do you have any specific environmental or social concerns regarding the project site historically?	(List them) N/A
PART IV: Objections and impacts of the project on stakeholders	
a) Do you have any objections to the proposed project?	Yes ☐ No ☑ If Yes, give reason(s)
b) Are there positive impacts that you anticipate from the proposed project? Benefit to the proponent.	Yes ☑ No ☐ If Yes, list them

Page 4

Part IV: Environmental and social impacts of the proposed project	
a) Are there negative environmental and social impacts that you anticipate from the proposed project?	Yes ☐ No ☑ If yes, list them and the corresponding mitigation measures in the columns below
List of negative Environmental and Social Impacts of the proposed project	Proposed mitigation measures
N/A	N/A
b) Any other comments? (List them) N/A	

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Part I: Interviewer profile	
Name of interviewer	Jacinta Nthenya
Position/Title	Environmental Acultant
Date	8th December 2022
Signature	

Part II: Respondent's profile	
Name of respondent	Josephine Kamuru
Gender (Male, Female, N/A for companies)	Female
Position of respondent (For companies)	Neighbour
Occupation/type of business	Hotel operator
Approximate distance from site	~100m
Period of residency in the area (<5, >5years)	75years
Telephone contact	0714 877745
ID No. or Registration No. for businesses	1271 7845
Signature	

Page 3

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a) Do you know the proposed project site?	Yes ☑ No ☐ (If no, interviewer to show respondent the project site)
b) If Yes, do you have any specific environmental or social concerns regarding the project site historically?	(List them) N/A
PART IV: Objections and Impacts of the project on stakeholders	
a) Do you have any objections to the proposed project?	Yes ☐ No ☑ If Yes, give reason(s)
b) Are there positive impacts that you anticipate from the proposed project? Benefit the Proponent alone.	Yes ☑ No ☐ If Yes, list them

Page 4

Part V: Environmental and social impacts of the proposed project	
a) Are there negative environmental and social impacts that you anticipate from the proposed project?	Yes ☐ No ☑ If yes, list them and the corresponding mitigation measures in the column below
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N/A	N/A
b) Any other comments? (List them) N/A	

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Part I: Interviewer profile	
Name of interviewer	Joanta Nthenya
Position/Title	Environmental Assistant
Date	6th December 2022
Signature	JN

Part II: Respondent's profile	
Name of respondent	David Njuki
Gender (Male, Female, N/A for companies)	Male
Position of respondent (For companies)	
Occupation/type of business	Artisan
Approximate distance from site	100m.
Period of residency in the area (<5, >5years)	>5years
Telephone contact	0700612164
ID No. or Registration No. for businesses	42448133
Signature	

Part III: Knowledge of the proposed site and existing environmental concerns	
a) Do you know the proposed project site?	Yes ☑ No ☐ (If no, interviewer to show respondent the project site)
b) If Yes, do you have any specific environmental or social concerns regarding the project site historically?	(List them) 
PART IV: Objections and impacts of the project on stakeholders	
a) Do you have any objections to the proposed project?	Yes ☐ No ☑ If Yes, give reason(s)
b) Are there positive impacts that you anticipate from the proposed project?	Yes ☐ No ☑ If Yes, list them

Page 4

Part V: Environmental and social impacts of the proposed project	
a) Are there negative environmental and social impacts that you anticipate from the proposed project?	Yes ☐ No ☑ If yes, list them and the corresponding mitigation measures in the columns below
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b) Any other comments? (List them)	

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TO WHOM IT MAY CONCERN.

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA) STUDY REPORT FOR THE PROPOSED ECO-FRIENDLY SEAWALL AND A RAMP ON PLOT L.R. NO. MN /I / 13373, MOMBASA COUNTY.

We have been contracted by Balbinus Investments Limited to prepare an Environmental and Social Impact Assessment (ESIA) Study Report for the proposed eco-friendly seawall and a ramp on Plot L.R. NO. MN /I / 13373, Mombasa County. The proposed development aims to mitigate the proponent's residential facility against coastal / beach erosion through construction of an eco-friendly seawall and a ramp along the beach front area. The seawall will be built using mass concrete and will follow on the configuration and rise of the shoreline pattern. Additionally, the wall will be built at an alignment of 45° stretching across a total length of 33m. A 6m long ramp with additional steps in the middle will also be constructed and used to access the property's beach front area.

The ESIA is carried out pursuant to Section 58 of the Environmental Management and Coordination Act Cap 387 of the Laws of Kenya and the Environmental Management and Coordination (Impact Assessment and Audit) Regulations of 2003. The results of the ESIA will be used for the management of the proposed development to reduce potential environmental, safety and health risks to the environment and the general public.

As part of data and information collection during the ESIA process, we have prepared a questionnaire targeting the neighbors to the proposed project site. The purpose of this letter is therefore to request for your participation in the ESIA process by responding to the attached questionnaire. Please note that your response to the questionnaire is expected within 7 days after receipt.

ENVASSES ENVIRONMENTAL CONSULTANTS LIMITED
07 DEC 2022
P.O. Box 2013 - 80100, MOMBASA
Tel: 0722 347 155
Email: info@envasses.org

Yours sincerely,

Mr. Simon Nzuki
Chief Executive Officer and Lead Consultant

About the questionnaire
This questionnaire has four parts. Part I and II provide details of the interviewer and the respondent's profile. Part III seeks baseline information from the stakeholders who are likely to be affected by the proposed project. Kindly fill part II-IV and seek clarifications where necessary from the interviewer or from the lead consultant on 0722 347 155 or email: info@envasses.org.

Part I: Interviewer profile	
Name of interviewer	Jacinta Nthenya
Position/Title	Environmental Assistant
Date	8th December 2022
Signature	

Part II: Respondent's profile	
Name of respondent	Baraka Kalama
Gender (Male, Female, N/A for companies)	Male
Position of repondent (For companies)	
Occupation/type of business	Neighbour
Approximate distance from site	50m
Period of residency in the area (<5, >5years)	< 5 years
Telephone contact	0114060628
ID No. or Registration No. for businesses	32535778
Signature	

Part III: Knowledge of the proposed site and existing environmental concerns	
a) Do you know the proposed project site?	Yes ☑ No ☐ (If no, interviewer to show respondent the project site)
b) If Yes, do you have any specific environmental or social concerns regarding the project site historically?	(List them)
PART IV: Objections and impacts of the project on stakeholders	
a) Do you have any objections to the proposed project?	Yes ☑ No ☐ If Yes, give reason(s)
b) Are there positive impacts that you anticipate from the proposed project? Job employment	Yes ☑ No ☐ If Yes, list them

Page 4

Part V: Environmental and social impacts of the proposed project	
a) Are there negative environmental and social impacts that you anticipate from the proposed project?	Yes ☐ No ☑ If yes, list them and the corresponding mitigation measures in the columns below
List of negative Environmental and Social impacts of the proposed project	Proposed mitigation measures
N/A	N/A
b) Any other comments? (List them) N/A	

ENVASSES ENVIRONMENTAL CONSULTANTS LIMITED

Head Office: Kilifi House, P.O. Box 2013 [illegible], MOMBASA
Branch office: Vision Plaza, P.O. Box 40299-00100, NAIROBI
Email: [illegible] Telephone: +254 722 947 199

7th December, 2022

Our Ref: ESIA/BIL/2022/12

PUBLIC CONSULTATIONS QUESTIONNAIRE

TO WHOM IT MAY CONCERN,

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA) STUDY REPORT FOR THE PROPOSED ECO-FRIENDLY SEAWALL AND A RAMP ON PLOT L.R. NO. MN /I / 13373, MOMBASA COUNTY.

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07 DEC 2022
P. O. Box 2013 - KILIFI, MOMBASA
Tel: 0722 947 199
Email: [illegible]

Yours sincerely,

Mr. Simon Nzaki
Chief Executive Officer and Lead Consultant

12/11/22, 8:42 AM 54935f10-1d8b-45e4-9e26-5ae6b0b6b37.jpg

About the questionnaire

This questionnaire has four parts. Part I and II provide details of the interviewer and the respondent's profile. Part III seeks baseline information from the stakeholders who are likely to be affected by the proposed project. Kindly fill part II-IV and seek clarifications where necessary from the interviewer or from the lead consultant on 0722 347 159 or email: [illegible]

Part I: Interviewer profile	
Name of interviewer not seen	SHAZIA WANJIKU
Position/Title	Environmental Consultant Assistant
Date	7th /12/ 2022
Signature	

Part II: Respondent's profile	
Name of respondent	
Gender (Male, Female, N/A for companies)	
Position of respondent (For companies)	
Occupation/type of business	Neighbour
Approximate distance from site	next door
Period of residency in the area (<5, >5years)	<5yrs
Telephone contact	
ID No. or Registration No. for businesses	
Signature	

https://mail.google.com/mail/u/0/#inbox/FMfcgzGtMfvhfBVltsKThLnqpHfZsBvHFTj?projector=1&messagePartId=0.3 1/1

12/11/22, 9:42 AM [illegible].jpg

Part III: Knowledge of the proposed site and existing environmental concerns	
a) Do you know the proposed project site?	Yes [✓] No [ ] (If no, interviewer to show respondent the project site)
b) If Yes, do you have any specific environmental or social concerns regarding the project site historically?	(List them) YES ! -The tide comes in and out twice a day, this project is going against all our 'protect the environment' concerns. - The beach is public property & no one should build anything to disturb the coral etc
PART IV: Objections and impacts of the project on stakeholders	
a) Do you have any objections to the proposed project?	Yes [✓] No [ ] If Yes, give reason(s) The ecosystem of the beach is being eroded and the whole world is concerned about the environment. No one should be allowed to build like this
b) Are there positive impacts that you anticipate from the proposed project?	Yes [ ] No [✓] If Yes, list them NONE !

https://mail.google.com/[illegible] 1/1

[illegible]

[illegible] Are there negative environmental and social impacts that you anticipate from the proposed project?	Yes [✓] No [ ] If yes, list them and the corresponding mitigation measures in the column below
List of negative Environmental and Social impacts of the proposed project	Proposed mitigation measures
(1) Sea wall can never be eco friendly! (2) The coastal / beach erosion is happening all along the beach. We all have this problem. Why allow one person this? Everyone will want this and we will destroy our lovely beaches, coastline and marine & bird life. Please. Please do not do this.	

iv) Any other comments? (List them)

Please do not allow this to happen

Thank You.

ENVASSES ENVIRONMENTAL CONSULTANTS LIMITED
Head Office: Rafi House, P.O. Box 2013-80100, MOMBASA
Branch office: Vision Plaza, P.O. Box 42259-00000, NAIROBI
Email: info@envasses.org; Telephone: +254 722 347 155

7th December, 2022

Our Ref: ESIA/BIL/2022/12

PUBLIC CONSULTATIONS QUESTIONNAIRE

TO WHOM IT MAY CONCERN,

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Part I: Interviewer profile	
Name of interviewer	[illegible]
Position/Title	[illegible]
Date	7th/12/22
Signature	

Part II: Respondent's profile	
Name of respondent	Samuel Otieno
Gender (Male, Female, N/A for companies)	Male
Position of respondent (For companies)	
Occupation/type of business	
Approximate distance from site	> 300m
Period of residency in the area (<5, >5years)	>5years
Telephone contact	0114769266
ID No. or Registration No. for businesses	31060764
Signature	

Part III: Knowledge of the proposed site and existing environmental concerns	
a) Do you know the proposed project site?	Yes ☑ No ☐ (If no, interviewer to show respondent the project site)
b) If Yes, do you have any specific environmental or social concerns regarding the project site historically?	(List them) n/a
PART IV: Objections and impacts of the project on stakeholders	
a) Do you have any objections to the proposed project?	Yes ☐ No ☑ If Yes, give reason(s)
b) Are there positive impacts that you anticipate from the proposed project?	Yes ☑ No ☐ If Yes, list them

- it will help the residents Shoreline from upland erosion

Page 4

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a) Are there negative environmental and social impacts that you anticipate from the proposed project?	Yes ☐ No ☑ If yes, list them and the corresponding mitigation measures in the columns below
List of negative Environmental and Social impacts of the proposed project	Proposed mitigation measures
	- To use safe material for building because of marine [illegible]
b) Any other comments? (List them) N/A	

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7th December, 2022

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Part I: Interviewer profile	
Name of interviewer	Jacinta Nthenya
Position/Title	Environmental Assistant
Date	6th December 2022
Signature	

Part II: Respondent's profile	
Name of respondent	Rosemary Kinyanjui
Gender (Male, Female, N/A for companies)	Female
Position of respondent (For companies)	
Occupation/type of business	Hotel operator
Approximate distance from site	100m
Period of residency in the area (<5, >5years)	7 Syears
Telephone contact	0731501
ID No. or Registration No. for businesses	2649
Signature	

Part III: Knowledge of the proposed site and existing environmental concerns	
a) Do you know the proposed project site?	Yes ☑ No ☐ (If no, interviewer to show respondent the project site)
b) If Yes, do you have any specific environmental or social concerns regarding the project site historically?	(List them) N/A
PART IV: Objections and impacts of the project on stakeholders	
a) Do you have any objections to the proposed project?	Yes ☐ No ☑ If Yes, give reason(s)
b) Are there positive impacts that you anticipate from the proposed project? Protection of residential building	Yes ☑ No ☐ If Yes, list them

Page 4

Part V: Environmental and social impacts of the proposed project	
a) Are there negative environmental and social impacts that you anticipate from the proposed project?	Yes ☐ No ☑ If yes, list them and the corresponding mitigation measures in the columns below
List of negative Environmental and Social impacts of the proposed project	Proposed mitigation measures
N/A	N/A
b) Any other comments? (List them) N/A.	

FORM 7 r.13(7)

nema

NATIONAL ENVIRONMENT MANAGEMENT AUTHORITY(NEMA)

THE ENVIRONMENTAL MANAGEMENT AND CO-ORDINATION ACT

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

License No : NEMA/EIA/EA/6775/10253

Application Reference No: NEMA/EIA/EL/21284

M/S **Envasses Environmental Consultants Ltd**
(Individual or firm) of address

P.O. Box 2013 - 80100, Mombasa

is licensed to practice in the

capacity of a (Lead Expert/Associate Expert/Firm of Experts) **Firm of Experts**
registration number 6775

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

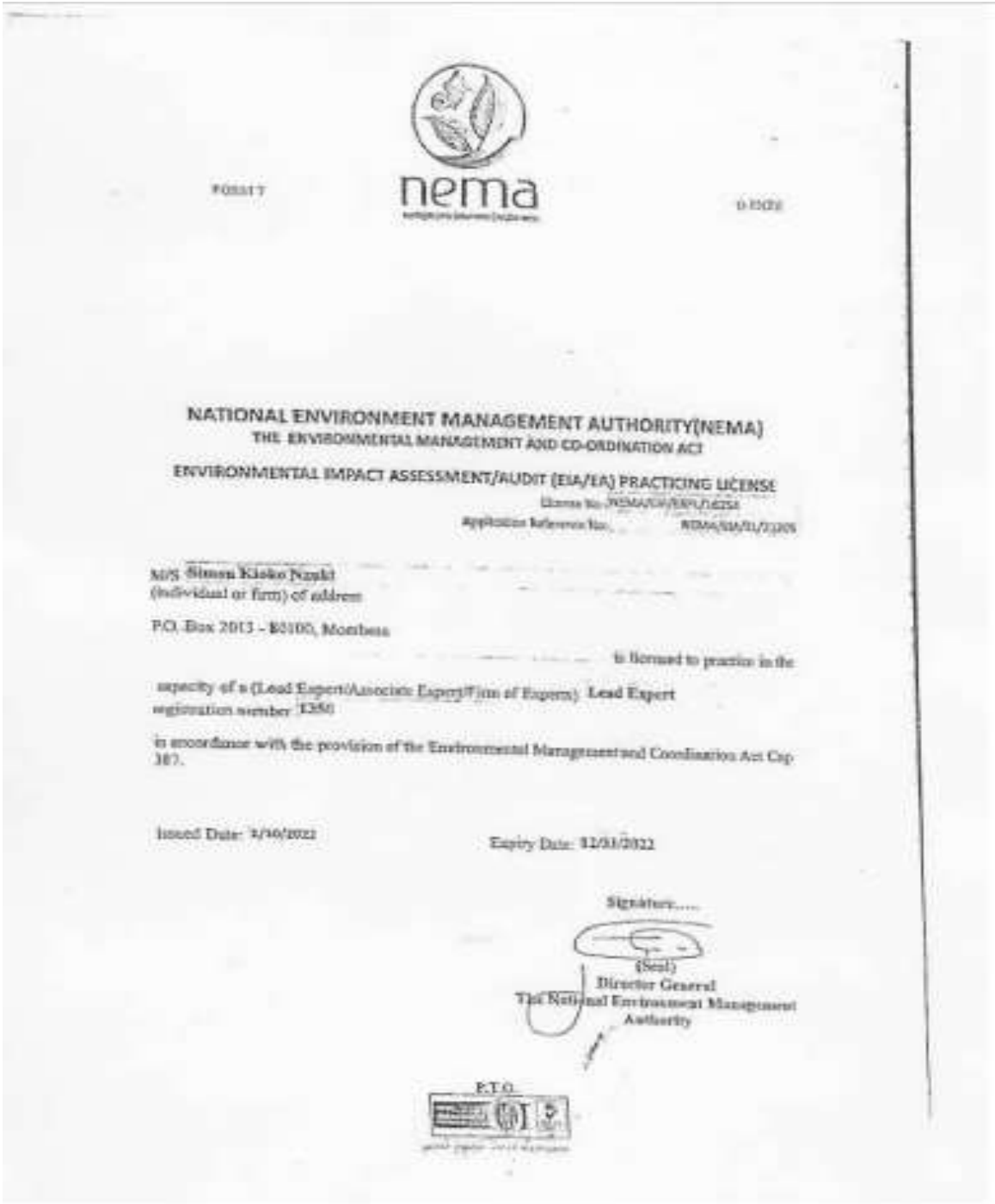
Issued Date: 9/16/2022

Expiry Date: 12/31/2022

Signature.....

(Seal)
Director General
The National Environment Management Authority

P.T.O.



nema

NATIONAL ENVIRONMENT MANAGEMENT AUTHORITY(NEMA)

THE ENVIRONMENTAL MANAGEMENT AND CO-ORDINATION ACT

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

Application Reference No.: NEMA/SIA/EL/23205

M/S Simon Kioko Nzuki
(Individual or firm) of address

P.O. Box 2013 - 80100, Mombasa

is licensed to practice in the

capacity of a (Lead Expert/Associate Expert/Firm of Experts): Lead Expert
registration number 1360

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

Issued Date: 3/10/2022

Expiry Date: 12/03/2022

Signature.....

(Seal)
Director General
The National Environment Management Authority

P.T.O.