ENVIRONMENTAL & SOCIAL IMPACTS ASSESSMENT STUDY REPORT; PROPOSED LIQUID PETROLEUM & NATURAL GAS TERMINAL & JETTY ON PLOT NO. KWALE/SHIMONI ADJ/441, KWALE COUNTY, KENYA

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PROJECT FACT SHEET

Project Name	Proposed Liquid Petroleum Gas Terminal & Jetty
Proponent	KenPetrogas Ltd
Report	Environmental and Social Impact Assessment Study Report
Project components	1. 10,000 MT LPG storage tanks (No.2 @ 5000 MT) 2. 140,000 m3 of LNG storage tanks (No.4 @35,000m^3) 3. Floating jetty 4. LPG/LNG trucks marshaling yard- 65 trucks
Project Cost	Ksh. 1,130,000,000/=
Project site	Plot no, **KWALE/SHIMONI ADJ/441** 10,000m^2

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Disclaimer:

This Environmental Impact Assessment Study Report is based on literature review, preliminary feasibility and design reports and findings from field assessment. It is strictly confidential and any materials thereof should strictly be used in accordance with agreement from the management of Ken Petrogas Ltd. It is however, subject to conditions in the Environmental Management and Coordination Act 1999 & Environmental (Impact Assessment and Audit) Regulations, 2003

Executive Summary

This study documents the outcome of the environmental and social impact assessment carried out for a proposed LPG/LNG terminal & jetty facility at Shimoni, Kwale County. The assessment was conducted by a cross-disciplinary team encompassing: environmentalists, urban planner & surveyors. The study team also tapped into the local knowledge of the communities within the project area through public meetings, informal interviews and engagement with local leaders.

The proposed project scope is:

- Installation of 2 nos 5000 metric tonnes LPG storage spherical tanks;
- Construction of 6 nos Trucks Loading bay
- Installation of 4nos 35,000 cubic meters LNG storage tanks
- Construction 2 nos 10 million water storage & fire pumps
- Installation & commissioning of 8-inch fire hydrant
- Floating Offloading jetty
- Trucks parking & marshalling yard
- Terminal control room
- LPG pumps & compressor
- Weighbridge
- Administration office block
- Perimeter masonry wall & security station.

Project cost is estimated to cost Ksh.1,130,000,000/=

The reference standards for the installation of this facility are; KS 1938: Standard for LPG Bulk Storage Installation, API 2510 Standard, ASME VIII DIV.2, NFPA 58: Storage and Handling of Oil & LPG, NFPA 20 Installation of Stationary Pumps for Fire protection, NFPA 13: Installation of Sprinkler Systems & API 62-650: Design & Installation of Oil Storage Tanks.

The ESIA study team identified impacts that would be of concern during the project cycle. To address these impacts an environment and social impact management plan. A synopsis of these concerns and proposals to ease them are captured in the table below.

Table 1 Summary of key project impacts from the proposed LPG & LNG terminal & Jetty facility

Environmental & Social concerns	**Mitigation measures**
Social impacts	1. Support Community liaison committee to interface with the project 2. Support vocational training programs for local workforce to develop skills relevant to the LPG/LNG industry 3. Support existing livelihoods as well as promote emerging opportunities related to LPG/LNG facilities
Traffic	4. Issue notices when construction vehicular traffic using local access roads 5. Training of all drivers to comply with speed regulations 6. Adequate traffic marshals to be employed to control traffic during construction & operations 7. Install & maintain appropriate road signage to ensure safe use of the public road access roads 8. Strict enforcement of vehicle checklist requirements to ensure vehicles & machinery at the project site are in good working condition & fit for purpose

Environmental & Social concerns	Mitigation measures
Occupational health & safety concerns	9. Continuous dust & noise monitoring at construction site 10. Provision of appropriate PPE for workers 11. Establish emergency procedures against hazards & conducting regular drills
Vegetation loss	12. Implement vegetation planting program within the project site boundary as well as mangrove replanting to offset losses during construction phase 13. Protection of key resources such baobab by establish protective buffers to exclude unintentional disturbance. 14. Implement mangrove offsetting project for
Water	15. Obtain authorization to drill and abstract water 16. Drilling a borehole to tap in to aquifer
Waste water	17. Setting up of bio digester to handle waste water from sanitary facilities 18. Kitchen waste to channeled to a grease trap for pretreatment
Emergency Preparedness & Security	19. Robust emergency plans & procedures to be communicated to all stakeholders before commencement of operations. 20. Apply spill prevention practices & responses actions in offloading & loading operations of products

Stakeholder consultation from the project involved: statutory consultees, the community residing in proximity to the proposed project area and fisher folk. Based on these consultations the main concerns identified were:

1. Creation of a conducive environment for reestablishment of riparian vegetation
2. Project decommissioning once objective had been achieved.
3. Health and safety at project site.

Based on the Environmental & Social assessment, the proposed project is a key investment in growing the country`s clean energy infrastructure & supply. Sustainability elements have been inbuilt into the design process making the project viable for licencing subject to adequate resourcing and implementation of the environmental and social management plan.

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ABBREVIATIONS

Abbr./Symb.	Term
amsl	above mean sea level
CDE	County Director of Environment
CGK	County Government of Kwale
DMP	Dust Management Plan
EHS	Environment Health & Safety
EMCA	Environmental Management & Coordination Act
EMP	Environmental Management Plan
ESIA	Environmental & Social Impacts Assessment
GIS	Geophysical Information System
GoK	Government of Kenya
KPL	Ken Petro Gas Limited
Km	Kilometres
m	Meters
NEMA	National Environmental Management Authority
NLC	National Land Commission
NMP	Noise Management Plan
OHMP	Occupational Hazard Management Plan
PHO	Public Health Officer
PPE	Personal Protective Equipment
ToR	Terms of Reference
WRA	Water Resources Authority (WRA)
CUM	Common User Manifold
SIDP	Shimoni Integrated Development Plan

1. Background to the Project

1.1 Introduction

This ESIA report documents the outcome of a multidisciplinary environmental assessment study conducted for kenPetroGas Limited. KPL commissioned an Environmental Impact Assessment for proposed construction and operation of an LPG/LNG terminal & jetty to be developed at Shimoni, Kwale County on Plot No. Kwale/Shimoni ADJ/441,Kibuyuni Grid reference - 4.635833, . 39.338889 Under the classification of projects in the Environmental Management and Coordination Act (EMCA) of 1999, LN no.31 Amendment of the 2nd schedule Part 3 sec 5 (e) hydrocarbon projects are listed as high risk projects.

1.2 Project Proponent

The project proponent is Ken Petrogas Ltd, a locally registered business name. Annex 1 (certificate of incorporation) and PIN certificate. The land is approximately 6.52 acres. Annex 2 shows the land document for the project site & survey plan.

1.3 Study area Location

The proposed project is located on plot number Kwale/Shimoni ADJ/441,Kibuyuni, Shimoni in Kwale county. The project site is about 4.5 kilometres from Shimoni town. The map below shows the location of the proposed project.

1.4 Objectives of the study

The goal of the environmental assessment was to inject sustainability into the proposed LPG/LNG infrastructure development. The ESIA study was guided by the following specific objectives:

1. To develop a robust baseline for predicting impacts and future monitoring.
2. To incorporate public input in the project planning process.
3. To develop an ESMP for mitigation of key adverse impacts of the LPG , LNG terminal & jetty development.

1.5 Terms of Reference

In accordance with the terms of reference, the following was the scope for this ESIA:

a) Clear description of the physical location and linkages of the project including the baseline conditions of the project area.
b) A description of the project characteristics including project objectives, project design, activities, technology, procedures and processes, materials to be used, products, by-products and waste generated, during the project construction, operation and de-commissioning phases.
c) A description of the national environmental legislative and regulatory framework, baseline information and any other relevant information related to the project.
d) Description of the recipient environment (baseline environment and social setting of the project area and the marine environment.
e) The potential environmental effect of the project, including the social and cultural effects and the direct, indirect, cumulative, irreversible, short-term and long-term effects anticipated.
f) Project alternative analysis including locations, technologies or process available, analysis of alternatives, and reasons for preferring the proposed option.
g) An environmental management and monitoring plan outlaying the activities, associated impacts, mitigation measures, monitoring indicators, implementation timeframes, responsibilities, and cost.

h) An action plan for the prevention and management of foreseeable accidents and hazardous activities in the cause of carrying out activities other development projects.
i) Measures to prevent health hazards and to ensure security in the working environment for the employees and for the management of emergencies.
j) Conclusions, recommendations and identification of gaps and uncertainties which were encountered in compiling the report.

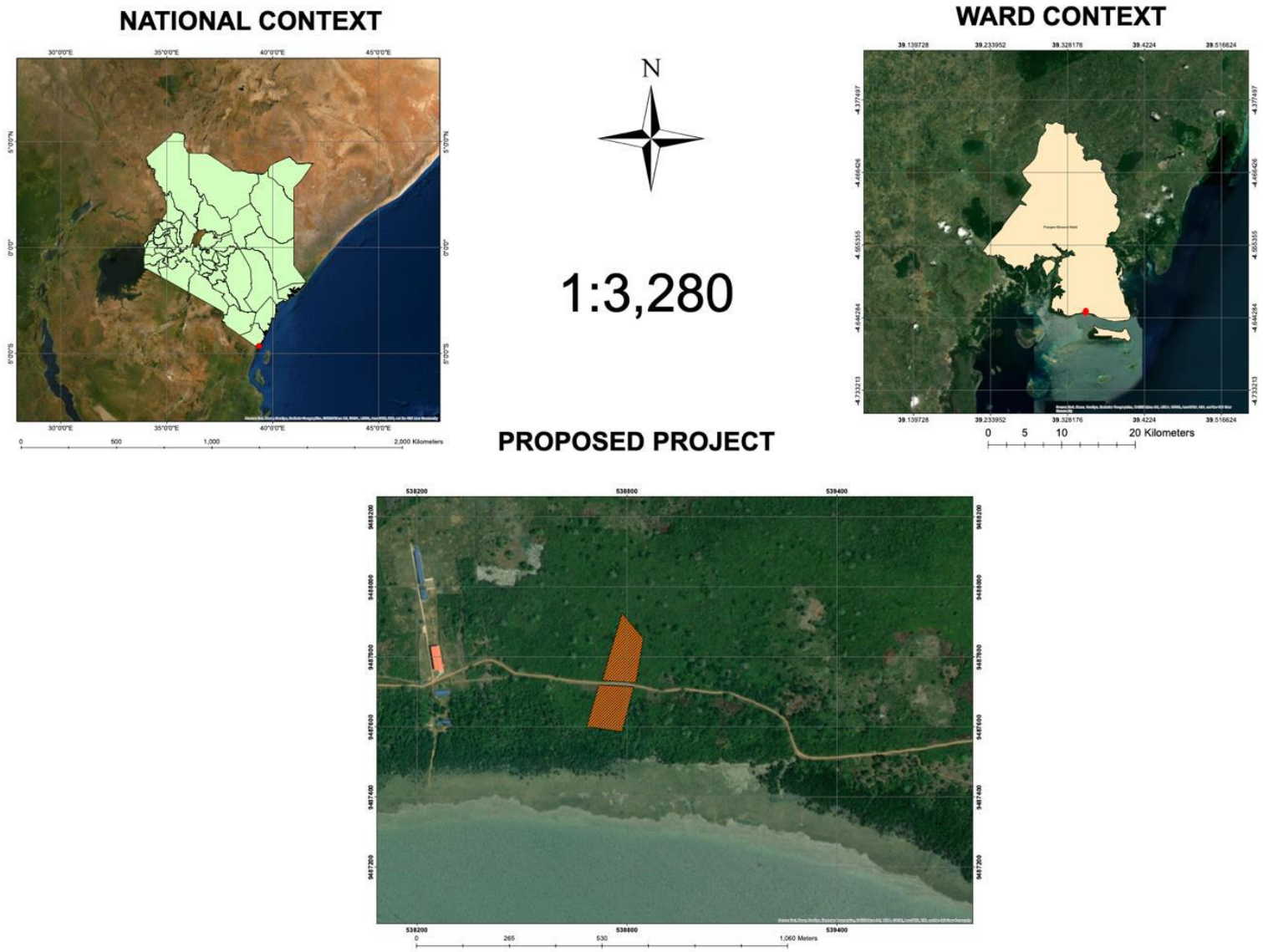
A copy of the approved ToRs report is attached in Annex 3

1.6 Methodology

The assessment was carried out using the following methods;

a) Review of project documents such as the architectural drawings, site plan, land and structural documents.
b) Review of relevant literature related to a project of such magnitude
c) Field visit to familiarize with the proposed site conditions and assess neighbouring activities.
d) Interviews with some neighbours to seek their comments with regard to the proposed project.
e) Holding a public baraza in conjunction with County Commissioner's office Lunga lunga subcounty.
f) Experts knowledge.

Figure 1: Location of proposed LPG & LNG terminal & Jetty



2. Environmental Conditions

2.1 Introduction

This section discusses baseline information of the study area in covering, climate, hydrology, geology, soils, land use, water supply and population.

2.6 Environmental Baseline

2.6.2 Climate

The climate in Shimoni area is influenced by monsoon winds of the Indian Ocean. The weather is dominated by the NE Monsoon (Kaskazi) between November to March and the SE monsoon (Kusi) blowing between May to August and bringing heavy rains.

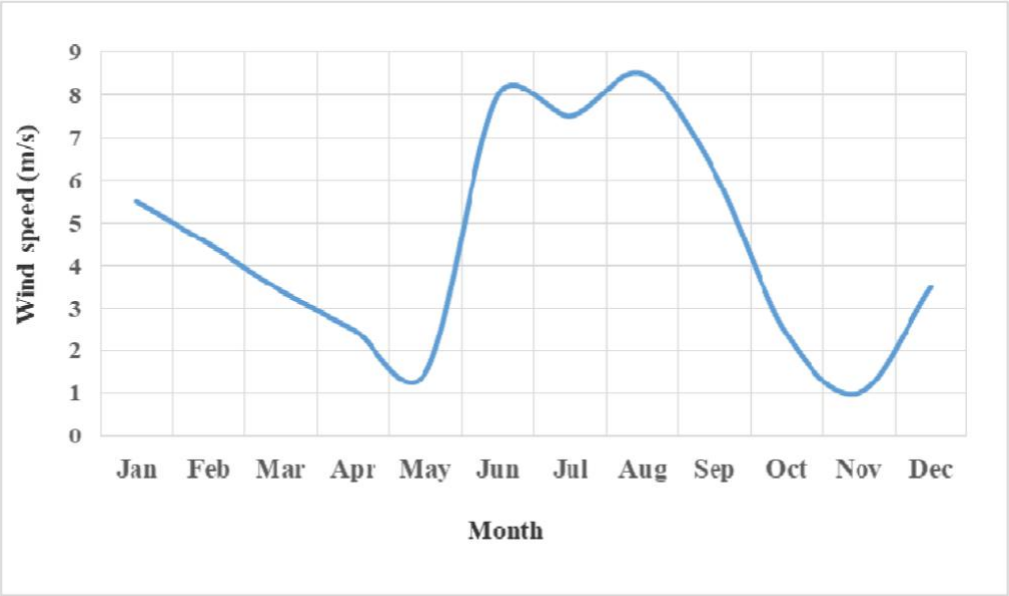


Figure 2 Seasonal variations of average wind speed Source: State of the Coast Report 2009

2.4 Project site characteristics

2.4.1 Flora & Fauna

Baobab trees are the most prominent flora in the project area with scattered coconut trees. On the seaside, there are mangrove vegetation that predominate the intertidal zones.

The coral reefs are one of the examples of biologically productive and taxonomically diverse ecosystems. About 140 species of soft and hard corals have been identified along the Kenyan coast. They are very important in that they form breeding grounds for various marine fauna, and serve as a barrier against the force of the sea and the lagoons they protect provide stable environments for breeding and feeding of marine biota.

2.5 Geology

The geology of Kenya's coastal strip was determined by the rifting and break-up of the palaeozoic Gondwana continent. Jurassic rifting of a Permo-Triassic basin filled with terrestrial clastic material into a pre-marine basin on the eastern edge of the African plate. These characteristics are generically the same as Southern Africa's Karoo sediments. Reworking and uplift led to the deposition of marine and peri-marine sediments, culmination in an erosive hiatus from Cretaceous to mid-Neogene times (the Pliocene). Fresh uplift led to the deposition of fluviatile pebble beds, gravels and sands of the Magarini/ Kilindini formation on older competent sediments. At Pleistocene times, sea level changes led to transgressions and regressions, leaving behind raised sands and fossil coral limestones (Horkel et al., 1984). Consequently, the hydrogeology of corals is characterised by good interconnectivity of pores which subsequently result into good permeability hence poor fair discharge & recharge of the aquifers in this region.

Coral reefs on the Kenya cost occur as lagoons, reef flats and as fringing reefs. Total area of coral reefs in Kenyan waters is estimated to be around 50,000 ha. The reefs in south coast of Kenya are almost contiguous fringing reefs with scattered lagoonal patch reefs as opposed to the northern reefs which are discontinuous and falls with a system of barrier islands and magongrove forests (ICZM Action Plan for Kenya 2019-2023 pg 19)

Locally, Caswell and Baker, (1953) shows that the site lies on coral and coral breccia formation. The water bearing formation is expected within the fractured and weathered zones of the sandy coral reef. The figure below some of the eroded coral reef as well as exposed coral limestone on the project site.

Plate 1 Coral rock outcrops at the proposed project site

Plate 2 Coral rocks & mangroves in the intertidal zone fronting the project site

2.6 Oceanography

Four oceanic currents influence the Kenya coast:

1. South Equatorial current;

2. The East African Coastal currents (EACC)- flows northwards throughout the year
3. The Equatorial counter currents (ECC); and
4. the Somali Currents (SC) – flows northwards during SE Monsoons & Southwards during NE monsoon (Swallow et. Al 1991; Schott and McCreary 2001)

The southward SC meets the EACC at latitude 2.25° S to form the eastward flowing ECC which flows as an undercurrent. During the SE Monson winds, the EACC joins up with Somali currents beyond Malindi and flow northwards right to the horn of Africa. However during the NE monsoon the EACC only reaches as far north as Malindi or Lamu where it meets the opposing Somali current. The meeting of the EACC and Somali current causes upwelling which is thought to be responsible for high fisheries productivity in the Northern Kenya Coast. The current movements are illustrated in the figure below. Kenya coastal inshore waters experience semi-diurnal tides with a spring tidal range of about not exceeding 4 meters (Brakel 1982: Tychsen 2006)

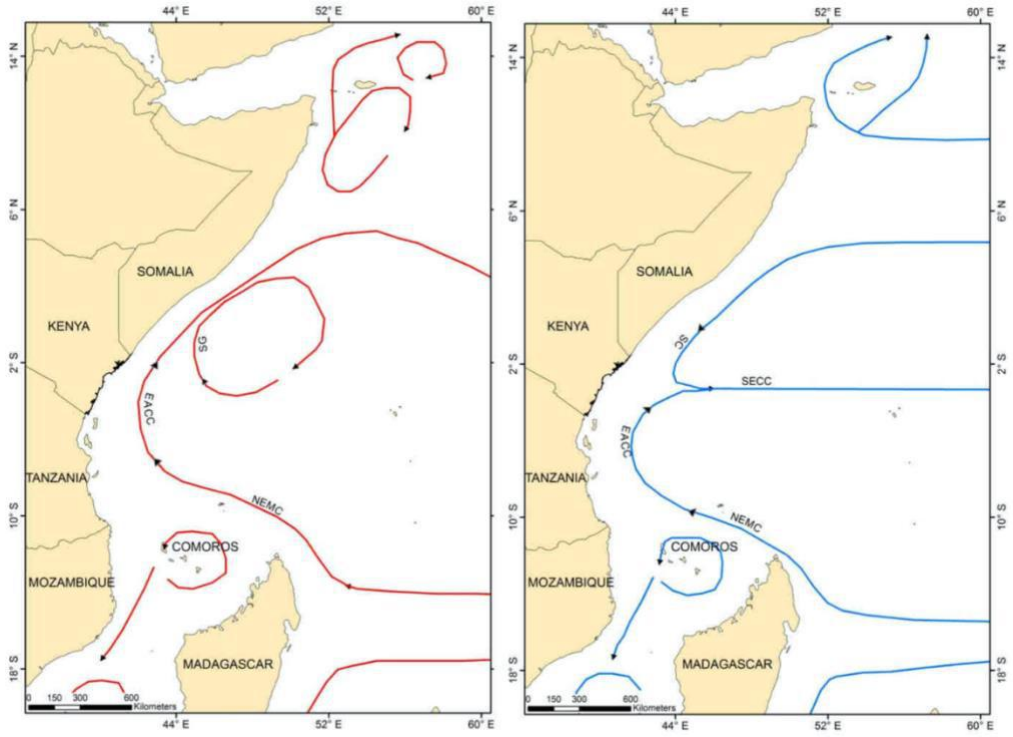


Figure 3 Schematic representation of ocean currents in the Indian Ocean during the SE Monsoon (Red) and NE Monsoon (blue) Source: KeNODC

A bathymetric survey of the proposed jetty area was conducted and the report is annex 4 in this report. The bathymetric report indicates that the depth of the Wasini channel where the floating jetty is proposed are adequate for anchorage for LPG/LNG tanker so berth without the need for dredging.

2.7 Socio- Economic Baseline

Table 2 Population in project area (Pongwe Kidimu) Location

Sub-county	Male	Female	Households	Density
Shimoni	3,370	3,150	1,618	393
Wasini/Mkwiro	963	957	327	474
Majoreni	4,439	4,698	1,681	151
Kibuyuni	10,396	10,780	40,211	159

(Source: 2019 census report)

The land use in the area is predominantly quarrying of coral limestone interspersed with agricultural activities. Fishing & tourism are the main economic stay of the Shimoni area. Seaweed farming has also taken root in the project area with a processing facility

located at Kibuyuni village. The housing typology is replaced by more indigenous housing structure that permanent or semi-permanent with thatched roofs or corrugated iron sheets as shown in the plate below.

Plate 3 Indigenous housing architecture in the Kibuyuni rural area

2.7.2 Commercial Land Use

In the project environ, there is a fish processing plant about 900 metres from the project site.

2.7.5 Agricultural Land Use

There are various agricultural activities in the area which includes subsistence farming and increasingly some farmers have started planting cotton as a commercial crop.

2.7.6 Transportation Land Use

The main linkage to the area is Shimoni road which is tarmacked. The access road to the project site is untarmacked and overgrown in some sections. This road runs parallel to the coast line to the project site.

Plate 4 Access road dividing the project site into two| Limestone rock outcrops at project site

2.7.7 Blue Economy

Blue economy is marine-based economic developments which leds to improved human well-being and social equity while significantly reducing environmental risk and ecological scarcities. It involves redefinition of oceans as “development space” that if subject to adequate spatial planning can integrate “conservation , sustainable use, oil and mineral wealth extraction, bio-prospecting,

sustainable energy production and marine transport in order to alleviate poverty, generate employment and promote equity.(UNEP 2013). The Shimoni Integrated Development Plan (SIDP) has been mooted to transform driver socio-economic development of Shimoni & Kwale country. The Shimoni fish port project under implementation is part of this planning. The energy infrastructure project therefore is compatible and an enabler of the proposed transformations.

2.9 Water resources

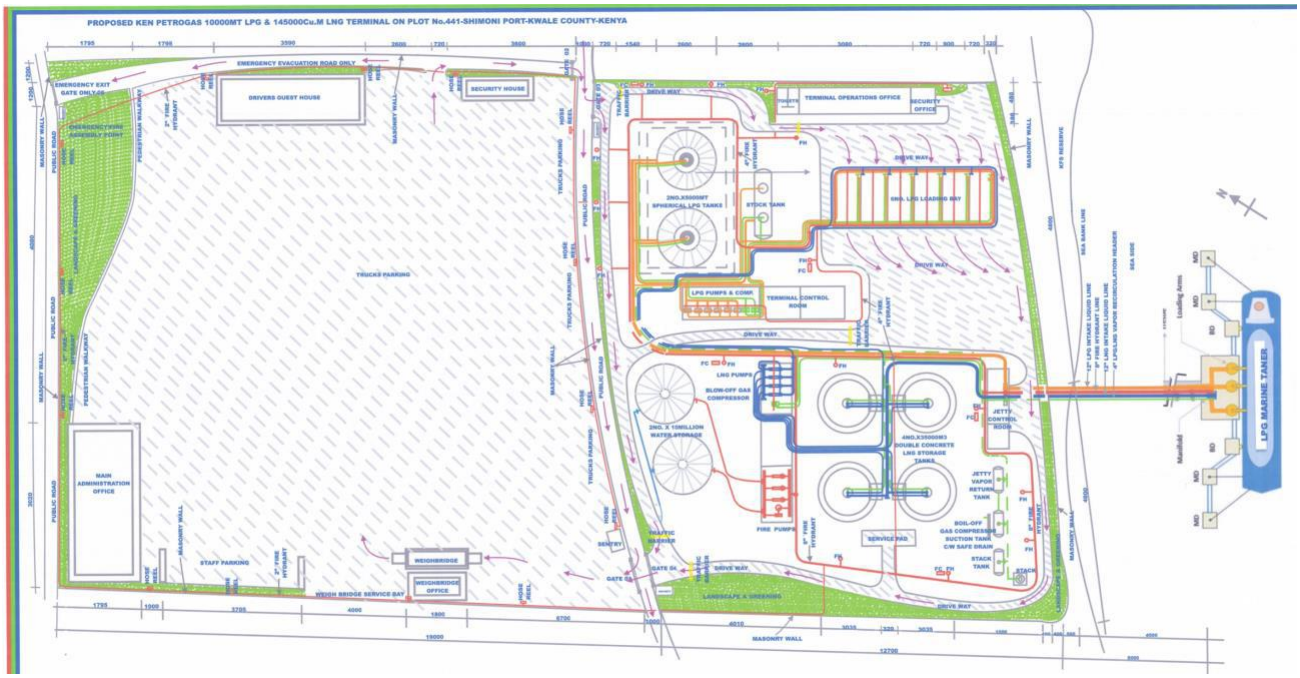
Plate 5 Shallow wells within the Kibuyuni/ Shimoni area

3. PROJECT DESCRIPTION & DESIGN

3.1 Introduction

The project entails the clearance of vegetation, demolition of derelict building, excavations work, and construction of the LPG receiving jetty & related infrastructure on Plot number Kwale/Shimoni ADJ/441 in Kwale County. The proposed development will cover an area of 6.52344 acres. The distance from the proposed project site in Kibuyuni to the Shimoni main road junction is 4.5km. The parcel of land on which the project is to be built is undeveloped and is abutting the India ocean overgrown with vegetation. The first phase of the proposed project will entail construction of an LPG receiving & storage facility that will be able to store up to 10,000 metric tonnes of LPG. In the second phase an LNG handling facility of 140,000 cubic meters. The site layout for the development is as shown figure below.

3.2 Project site layout



3.3 Technical Description

The proposed project shall consist of the following technical components.

- Civil works which includes reinforced concrete foundation and perimeter fencing with reinforced concrete blast wall;
- Two (2) 5000 metric tonnes LPG storage tanks,
- Four (4) x 35000M^3 double concrete LNG tanks;
- Floating Jetty
- LPG equipment and piping network with associated mechanical equipment;
- Firewater room with water pumps 20,000m^3;
- LPG pumps & LPG compressors shelter;
- LPG truck loading bay;
- Weighbridge;
- Electrical room;
- Generator room;
- Diesel tank;
- Workshop;

- Air compressor room;
- Administrative building;
- Entry guard house and gate;
- Exit guard house and gate;
- Truck road;
- Cars and trucks parks;

3.4 Project Construction Phase

The construction and installation shall therefore involve the following activities;

- Vegetation clearance.
- Excavations for the LPG/LNG tanks foundations;
- Construction of the LPG/LNG receiving jetty;
- Fabrication of the LPG/LNG tanks
- Installation of LPG/LNG piping network; and
- Trucks loading gantry.

The LPG & LNG tanks will be installed and tested hydrostatically on site prior to commissioning.

3.5 Project Operation Phase

The operation of the LPG terminal is guided by the World LPG Association (WLPGA) which is an authoritative voice of the global LPG industry representing the full LPG value chain. According to the association, amongst its primary goal is the promotion if compliance to good business and safety practices. Locally, the EPRA will guide the construction and operations of the proposed plant.

LPG Hazard and Precaution

LPG is highly flammable hence it has a high fire and explosion risk. When the LPG liquid leaks, it quickly evaporates into air and forms a cloud, but because its heavier than air, the cloud drops to the ground. Should this LPG vapor, meets with any source of ignition, it can burn or explode when it is in a confinement, e.g., drains or basements. On human health, the gas may cause cold burns to the skin and it can act as an asphyxiant (a substance that causes unconsciousness) at high concentration. LPG gas cylinders can explode if involved in fire. Before operation, a leak detection is performed to ensure that there is no leakage. To minimize fire risk, a firefighting system which is mainly a water spray system shall be installed. This system must be designed to ensure even spraying of water on the entire LPG installation. Leak detection is performed by increasing the pressure on the entire transfer system higher than that of the LPG vapor pressure to ensure that there is no leakage in any transfer line.

General Requirement of an LPG gas depot

The summary for the following requirements is extracted from “the Guidelines for Good Safety Practices in the LP Gas Industry”

- LPG must be stored in adequate location suitably positioned and having regard to the relevant codes of practice;
- LPG plant must be designed to appropriate standards and be properly installed and commissioned by competent persons;
- Plant must be fitted with adequate safety and monitoring control devices and operated by competent persons;
- Occupiers must notify the gas supplier of any structural or other changes which might affect the gas installation;
- There must be a suitable programme of maintenance and testing by competent persons;
- Records of maintenance and tests must be kept;
- Precautions must be taken to prevent fire and explosion including appropriate protection of storage tanks;
- Installations must have appropriate security measures to prevent deliberate interference;
- Incidents involving death or hospitalization, fire or explosion or a significant release of LPG must be reported to the Authority and records of such incidents must be kept;

The project has been conceptualised in two phases

Phase 1- Construction and operation of LPG terminal and open sea berth (floating jetty). This will have a total storage capacity of 10,000 metric tonnes.

Phase 2 - LNG tanks installation and operation. Once complete this facility will be able to store 104,000 cubic meters of LNG.

3.6 Project Estimated Cost

The project cost is estimated at Ksh.1,130,000,000 (**Kenya Shillings one billion one hundred and thirty million**).

4. POLICY & LEGAL FRAMEWORKS

4.1 Introduction

This chapter outlines the applicable international standards and relevant Kenyan regulatory framework that set the context within which the Project will operate. The Third Schedule of EIA/EA Regulations involves environmental guidelines and standards which include Kenya government policies and strategies, national legislation, multi-lateral environmental agreements and the institutional arrangements which should be incorporated in an ESIA report. The legal and institutional frameworks highlight safeguards for protection and conservation of fragile environments and vulnerable communities and enhance the implementation of the ESMPs. Under this section, the ESIA will therefore reviewthe applicable sets of laws, international agreements and institutions which environmental compliance requirements for the proposed LPG/LNG Terminal & Jetty.

4.2 Policy Framework

4.1.1 Kenya Vision 2030

Kenya Vision 2030 is the country's long term development blueprint guiding development in Kenya from 2008 to 2030.Its objective is to transform Kenya into a newly industrializing, ''middle income country providing a high quality life to all its citizens by the year 2030''

Section 5.4 on the Environment, states that Kenya aims to be a nation living in a clean, secure and sustainable environment by 2030. It also states that Kenya will harmonize environment-related laws for better environmental planning and governance. (Kenya Vision 2030, 2007)

Project Alignment

As part of environmental protection, mitigation measures have been formulated for this project which will ensure minimal negative effects to the environment. Protection of property is in line with constitutional provisions safeguarded by the state.

4.1.2 National Environmental policy, 2013

Sessional Paper No. 6 of 1999 on Environment and Development, since adoption by parliament in 1999 has been in use and had influenced the formation of EMCA (amended) 2015, but has since been surpassed by time and is therefore under revision to comprehensively cover areas that were previously left out to augment it. The revised National Environment Policy approved in 2013 by the Ministry of Environment, Water and Natural Resources prioritises a better quality of life in Kenya for present and future generations through sustainable management and use of freshwaterresources and wetlands. This policy emphasized on the use of environmentally- friendly development strategythat integrates and promotes cohesion of development and environmental policies and enhances transfer of environmentally sound technologies. Chapter 5 of the policy elaborates on environmental stewardship and specifically part 5.6 states that environment impacts of Infrastructural development like ports are distinct and unique such as effects on flora and fauna,social and psychological disruption and vegetation clearance among others. Chapter 6 of the policy elaborateson environmental quality and health and the need to ensure a clean and health environment for all.

Project Alignment

The project shall implement the EMSP to mitigate the impacts resulting during the construction and operational phases of the project; this will ensure that the natural environments are not destabilized by the subsequent project

activities. The EIA report, as one of the project's management tool, has developed an ESMP for the study on how to keep the project area in pristine state.

4.1.3 Integrated Coast Zone Management policy, 2017

The National Environment Policy statements tasks NEMA to develop and implement a harmonizedICZM 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 releaseof the second 2009 State of the Coast report in 2017, highlighting the status, trends, threats andimpacts to Kenya's coastal and marine environment; and the formulation of the ICZM Policy whichaddresses the conservation and protection the various coastal ecosystems and outlines institutional arrangements for the management of coastal and marine resources. The overall objective of theICZM Policy is to guide the management and utilization of the coastal and marine environment and its resources to ensure sustainable livelihoods and developments through seven strategic areas which have been identified and prioritized 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 prioritized for action in the ICZM policy, a National Plan for Action for the Coastal and Marine Environment of Kenya, 2019-2023 has been developed to promote sustainable development in the coastal zone. Its main objectives include conservationand 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).

Project Alignment

KPL management shall implement the ESMP to ensure that the environment around the proposed site is not polluted by subsequent activities during all project phases of the project. Coastal protection measures will be adhered to and enhanced during construction and operational phases.

4.1 .4 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 systematicbasis 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 28 (Shimoni to Vanga). The Table below shows an extract of Sediment Cell 28 where 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 28 Shimoni to Vanga	Promote fisheries	• Maintain fish landing sites within the cell. • Planning and enforcement to ensure against encroachment or illegal allocation of fish landing sites • Empower BMU

Cell	Objectives	Strategies
	Conserve mangroves, coral reefs, seagrass habitats	• Enforce laws related to use of destructive fishing gear • Control/reduce water pollution. • Appropriate development planning on adjacentshorelines (i.e., no highly polluting industries) • Develop harvesting plans for mangroves and rehabilitate degraded areas • Promote nature-based tourism
	Protect against flooding inUmba River	• Catchment / river basin management plan

The project is designed to ensure maintenance of the status quo as with respect to the shoreline management strategy

4.2 Legislative & Planning Framework

The Legislative frameworks relevant to the project are discussed below;

4.2.1 The Constitution of Kenya

In the Constitution of Kenya, 2010 Part II (Environment and Natural Resources), (I) the State shall:

- Ensure sustainable exploitation, utilization, management and conservation of the environment and natural resources, and ensure the equitable sharing of the accruing benefits.
- Work to achieve and maintain a tree cover of at least ten per cent of the land area of Kenya.
- Protect and enhance intellectual property in, and indigenous knowledge of, biodiversity and the genetic resources of the communities.
- Encourage public participation in the management, protection and conservation of the environment.
- Protect genetic resources and biological diversity.
- Establish systems of environmental impact assessment, environmental audit and monitoring of the environment.
- Eliminate processes and activities that are likely to endanger the environment.
- Utilize the environment and natural resources for the benefit of the people of Kenya.

(II) "Every person has a duty to cooperate with State organs and other persons to protect and conserve the environment and ensure ecologically sustainable development and use of natural resources.

Chapter 5 on Land and Environment emphasizes:

- Land use and management shall by law benefit local communities.
- Community land is protected from encroachment by State.
- Law shall protect Rivers, forests and water bodies.
- Equitable access to land.
- All lawful land rights are secured; only someone who has stolen land needs to worry.
- County governments will manage land in trust of the people in accordance with the Constitution. (The Constitution of Kenya, 2010)

Project Alignment

The Constitution of Kenya champions for sound management and sustainable development of all Kenyan projects, both public and private investments. It also calls for the duty given to the project proponent, to cooperate with State organs and other persons to protect and conserve the environment as mentioned in Part II. The project team has designed the project in a consultative manner in line with local & international best practices.

4.2.2 Kenya Vision 2030

The Kenya Vision 2030 is the national long-term development blueprint to create a globally competitive and prosperous nation with a high quality of life by 2030 in a clean and secure environment. It aims to transform Kenya into a newly industrializing middle-income country. TheVision is anchored on the economic, social, and political pillar.

Project Alignment

The proposed LPG & LNG terminal & Jetty falls under the economic pillar which aims to achieve an economic growth rate of 10% per annum andsustaining the same until 2030 in order to generate more resources to address the Sustainable Development Goals.

4.2.3 Kwale County Integrated Development Plan 2018-2022

The overall aim of the County Integrated Development Plan (CIDP) is to increase and expand sustainable development opportunities and build people's capacities to enable them create wealthand transform their lives for growth and prosperity in line with the Kenya's Vision 2030, Big FourAgenda and the Sustainable Development Goals.

Project Alignment

The development of the LPG & LNG terminal & Jetty is part ofthe CIDP 2018-2022 agenda to ensure increase in sustainable development opportunities and transform lives of people within Kwale County and nation at large.

4.2.4 The Environment Management and Coordination Act (Amended), 2015

The Environment Management and Coordination Act (Amended), 2015 provides for the establishment of an umbrella Legal and Institutional Framework under which the environment in general is to be managed. EMCA is implemented by the guiding principle that every person has a right to a clean and healthy environment and can seek redress through the High court if this right has been, is likely to be or is being contravened.

Section 58 of the Act makes it a mandatory requirement for an EIA study to be carried out by proponents intending to implement projects specified in the second schedule of the Act. Such projects have the potential of causing significant impacts on the environment. Similarly, section68 of the same Act requires operators of existing projects or undertakings to carry out Environmental Audits in order to determine the level of conformance with statements made during the EIA study. The proponent is required to submit the EIA and Environmental Audit reports to NEMA for review and necessary action. (Kenya Gazette Supplement, 2015)

Relevance

The proponent has undertaken an ESIA study report to ensure compliance and will undertake subsequent annual environmental audits. EMCA has provided for the development of several subsidiary legislations and guidelines that govern Environmental Management which are relevant to the current project.

(a) **Environmental Impact Assessment and Audit Regulations 2003(Rev, 2016)**

The proposed project is classified as a high risk project. Second Schedule of the Act. Part II of the Regulations indicates the procedures to be taken during preparation, submission and approval of the project study report. (Arrangement of Regulations, 2003)

Relevance.

The proponent has undertaken an ESIA project report to ensure compliance and will undertake subsequent annual audits

(b)The Environmental Management and Co-ordination Act (Water Quality) Regulations, 2006)

These Regulations were published in the Kenya Gazette Supplement No. 68,
Legislative Supplement No. 36, and Legal Notice No. 120 of 29th September 2006. The Regulations provides for sustainable management of water resources including prevention of water pollution and protection of water sources (lakes, rivers, streams, springs, wells, and other water sources). It is an offence under Regulation No. 4 (2), for any person to throw or cause to flow into or near a water resource any liquid, solid, or gaseous substance or deposit any such substance in or near it, as to cause pollution.
Regulation No. 11 further makes it an offence for any person to discharge or apply any poison, toxic, noxious or obstructing matter, radioactive waste or other pollutants or permit the dumping or discharge of such matter into the aquatic environment unless such discharge, poison, toxic, noxious or obstructing matter, radioactive waste or pollutant complies with the standards for effluent discharge into the environment.
Regulation 9 of these regulations provides for water quality monitoring. It states that the Authority in consultation with the relevant lead agency, shall maintain water quality monitoring for sources of domestic water at least twice every calendar year and such monitoring records shall be in the prescribed form as set out in the second schedule to these regulations.
(Environmental Management and Coordination Act, 2006 (2012))

Relevance

During the construction phase, KPLs contractor will ensure installation of that mobile sanitary facility for use by workers to comply with the standards specified in this regulation.

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

These Regulations were published in the Kenya Gazette Supplement No. 69, Legislative Supplement No. 37, and Legal Notice No. 121 of 29th September 2006. The regulations provide details on management (handling, storage, transportation, treatment, and disposal) of various waste streams Regulation No. 4 (1) makes it an offence for any person to dispose of any waste on a public highway, street, road, recreational area or in any public place except in a designated waste receptacle.
(Environmental Management and Coordination Act, 2006(2012))

Relevance

During construction & decommissioning phases, the proposed project will generate solid waste including metal cuttings, rocks and plastic membrane. The proponent will see to it that the wastes will be disposed as per the guidelines in the regulations.

4.2.5 The Environmental Management and Coordination Act (Noise and Excessive Vibration Pollution) (Control) Regulations, 2009

These regulations were published as legal Notice No. 61 being a subsidiary legislation to the Environmental Management and Co-ordination Act, 1999. The regulations provide information on the following:

i. Prohibition of excessive noise and vibration.
ii. Provisions relating to noise from certain sources.
iii. Provisions relating to licensing procedures for certain activities with a potential of emitting excessive noise and/or vibrations and
iv. Noise and excessive vibrations mapping.

According to regulation 3 (1), no person shall make or cause to be made any loud unreasonable, unnecessary or unusual noise which annoys, disturbs, injures or endangers the comfort, repose, health or safety of others and the environment.

Regulation 4 prohibits any person to (a) make or cause to be made excessive vibrations that annoy, disturb, injure, or endanger the comfort, repose, health, or safety of others and the environment; or (b) cause to be made excessive vibrations that exceed 0.5 centimetres per second beyond any source property boundary or 30 meters from any moving source.

Regulation 5 further makes it an offence for any person to make, continue or cause to be made or continued any noise in excess of the noise levels set in the First Schedule to these Regulations, unless such noise is reasonably necessary to the preservation of life, health, safety or property.

Regulation 12 (1) makes it an offence for any person to operate a motor vehicle which-(a) produces any loud and unusual sound; and (b) exceeds 84 dB (A) when accelerating. According to sub-regulation 2 of this regulation, no person shall at any time sound the horn or other warning device of a vehicle except when necessary to prevent an accident or an incident. Regulation 13 (1) provides that except for the purposes specified in sub-Regulation (2) there under, no person shall operate construction equipment (including but not limited to any pile driver, steam shovel, pneumatic hammer, derrick or steam or electric hoist) or perform any outside construction or repair work so as to emit noise in excess of the permissible levels as set out in the Second Schedule to these Regulations

Regulation 19 (1) prohibits any person to carry out activities relating to fireworks, demolitions, firing ranges or specific heavy industry without a valid permit issued by the Authority. According to sub-regulation 4, such permit shall be valid for a period not exceeding three months.

(Environmental Management and Coordination Act, 2006 (Rev 2012))

Relevance

The proposed project site neighbourhood is largely undeveloped and thus no immediate sensitive receptor so noise & vibration Nevertheless noise & vibration nuisance will be avoided and in the case of excess noise and vibration the contractor /sub-contractor for civil works will be required to ensure compliance with the above regulations in order to promote a healthy and safe working environment throughout the construction phase. This shall include regular inspection and maintenance of equipment and prohibition of unnecessary hooting of vehicles.

4.2. 6 Environmental Management and Coordination (Wetlands, River Banks, Lake Shores and Sea Shore Management) Regulations, 2009

This regulation under the provisions of Section 42 (3) of EMCA sets standards for the conservation, protection and sustainable use of wetlands. It also facilitates the sustainable utilization and conservation of resources on river banks, lake shores, and on the seashore by and for the benefit of the people and community living in the area.

Relevance

Subject to provisions of the act the proponent cannot carry out operations on the beach shore without an EIA license and authorizations from relevant authorities. The proponent will build an offshore floating jetty to allow for the offloading of gas products into the storage tanks at the proposed site at plot number Kwale/Shimoni/ADJ 441. , in order to facilitate offloading LPG & LNG from ships.

4.2.7 Kenya Maritime Authority Act, 2012

Kenya Maritime Authority (KMA) is responsible for Port and Flag State implementation of various international instruments relating to maritime transport. The Regulatory role of KMA therefore aims to broaden and modernize the institutional and legal framework for the implementation of maritime safety, security and the preservation of the aquatic environment.

Relevance to the proposed project

The proposed project will involve construction of a floating jetty within the marine ecosystem area. These works have safety implications on navigation at the water body as well as potential pollution which KMA has a direct oversight obligation as follows;

- National maritime legislation i.e., the KMA and the Merchant Shipping Acts remain the primary tools for attaining international standards in safety and security and the preservation of the marine environment. Only through such regulations can the Government enforce international maritime conventions, especially those emanating fromthe International Maritime Organization (IMO). Such rules and regulations are also relevantfor the implementation of national maritime safety, security and marine environment conventions/programmes
- KMA is the designated national competent oil spill authority responsible for the development and provision of guidelines for the management of oil spills in the maritime environment. Under Section 5 (i) of the Act, KMA is required to enforce safety of shipping, including compliance with construction regulations, maintenance of safety standards andsafety navigation rules.

4.2.8 Merchant Shipping Act, 2009

The Merchant Shipping Act is administered by the Kenya Maritime Authority. It is an Act of Parliament to make provision for the registration and licensing of Kenyan ships, to regulate proprietary interests in ships, the training and the terms of engagement of masters and seafarersand matters ancillary thereto; to provide for the prevention of collisions, the safety of navigation,the safety of cargoes, carriage of bulk and dangerous cargoes, the prevention of pollution, maritime security, the liability of ship-owners and others, inquiries and investigations into marine casualties;to make provision for the control, regulation and orderly development of merchant shipping andrelated services; generally to consolidate the law relating to shipping and for connected purposes. However, if the ship is of 24 meters or more, not exempted from registration.

Relevance to the proposed project

The proponent will collaborate with KMA in implementation of the Merchant Shipping Act in terms of ensuring ships and other maritime crafts accessing the jetty are licensed, prevention of pollution and in improving port and navigational safety.

4.2.9 Physical & Land Planning Act 2019

This is the main Act that governs land planning and all proposed developments must be approved by the respective local authority and certificate of compliance issued accordingly. Under the Act, the director of physical planning advises the commissioner of lands on land alienation issues that fall under Government Lands Act and Trust Land Act. The director also advises the commissioner of lands and local authorities on land use, sub-division and or amalgamation of land; prepares regional and local physical development plans.

At the County level, the County physical planning liaison committee comprises heads of the various departments and is chaired by the County Commissioner. One of the major functions of the liaison committee is to determine development applications for change of user or subdivision of land that could have significant impact on adjacent land and or breach registered conditions in a given title deed; and also industrial location which could have negative impact on the environment and adjoining land.

The director is required to publish the regional physical development plan and also notify the local authority within whose jurisdiction the plan is to be affected.

Section 36 states that if in connection with a development application a local authority is of the opinion that proposals for industrial location, dumping sites, sewerage treatment, quarries or any other development activity will have injurious impact on the environment, the applicant shall be required to submit together with the application an environmental impact assessment report.

Section 30(1) requires a developer in any local authority to be granted development permission by the respective local authority, failure to which heavy fines will ensue; and the land registrar shall decline to register such a document. No sub-division of private land shall take place within a local authority unless the sub-division is in accordance with the requirements of an approved local physical development plan.

(The Physical and Land use Planning Act, 2018)

Relevance

According to this act, the proponent will present its development plans to the Kwale County Physical Planning Offices for approval.

4.2.10 Water Act 2016

The Water Act No. 8 of 2016 provides for the management, conservation, use and control of water resources and for acquisition and regulation of rights to use water; to provide for the regulation and management of water supply and sewerage services. Section 18 of this Act provides for national monitoring and information systems on water resources. Following on this, sub-Section 3 mandates the Water Resources Management Authority to demand from any person or institution, specified information, documents, samples or materials on water resources. Under these rules, specific records may require to be kept by a site operator and the information thereof furnished to the authority.

Section 73 of the Act provides that a person who is licensed to supply water have a responsibility of safeguarding the water sources against degradation.

According to section 75(1) such a person is required to construct and maintain drains, sewers and other works for intercepting, treating or disposing of any foul water arising or flowing upon land for preventing pollution of water sources within his/her jurisdiction.

Section 94 of the Act also makes it an offence to throw or convey or cause or permit to be thrown or conveyed, any rubbish, dirt, refuse, effluent, trade waste or other offensive or unwholesome matter or thing into or near to water resource in such a manner as to cause, or be likely to cause, pollution of the water resource.

(Laws of Kenya- Water Act, 2016 [2012][2002])

Relevance

KPLs s will be required to work closely with the Water resources authority on drilling of water borehole & abstraction licencing.

4.2.11 Public Health Act (Cap. 242)

This is an Act of Parliament to make provision for securing and maintaining health. Section 115 of this act prohibits causing nuisance or other condition liable to be injurious or dangerous to health. Section 118 provides a list of nuisances that includes any noxious matter, or wastewater, flowing or discharged from any premises, wherever situated, into any public street, or into the gutter or side channel of any watercourse, irrigation channel or bed thereof not approved for the reception of such discharge. (Laws of Kenya- Public Health Act, 2012[1986])

4.2.12 Occupiers' liability CAP 34

This statute dictates that the occupier of premises owes the same duty, the common duty of care, to all his visitors, except in so far as he is free to and does extend, restrict, modify or exclude his duty to any visitor or visitors by agreement or otherwise. (Laws of Kenya- Occupiers' Liability Act, 2012[1980])

4.2.13 The Public Health (Drainage and Latrine) Rules

Rule 85 provides that every owner or occupier of every workshop, workplace or other premises where persons are employed shall provide proper and sufficient latrines for use by employees.

Rule 87 requires every contractor, builder or other person employing workers for the demolition, construction, reconstruction, or alteration of any building or other work in any way connected with building to provide an approved position sufficient and convenient temporary latrine for use by such workers. Rule 91 provides that no person shall construct a latrine in connection with a building other than a water closet or a urinal, where any part of the site of such building is within 200 feet of a sewer belonging to the local authority that is at a suitable level, and where there is sufficient water supply. (Laws of Kenya- Public Health Act, 2012[1986])

Relevance

This Act is applicable to the project since the contractor for civil works will be required to provide sanitation facilities for use by workers and visitors to the site during the construction.

4.2.14 The Penal Code (Cap. 63)

Section 191 of the Penal Code makes it an offence for any person or institution that voluntarily corrupts, or foils water for public springs or reservoirs rendering it less fit for its ordinary use. Similarly, section 192 of the same

act prohibits making the atmosphere in any place to make it noxious to health of persons/institution in dwellings or business premises in the neighbourhood or those passing along a public way. (Kenya Law)

Relevance

The main contractor for civil works and KPL Enterprises will be required to ensure strict adherence to the environmental Management Plan throughout the project cycle in order to mitigate against any possible negative impact associated with dust, noise, and effluent discharge.

4.2.15 County Governments Act 2012

The local government act was repealed after the final announcement of all the results of the first elections held under the Constitution as per the County Governments Act of 2012. Under section 134 subsection (1), The Local Government Act is repealed upon the final announcement of all the results of the first elections held under the Constitution. It further states in section 134, subsection (2) reads "All issues that may arise as a consequence of the repeal under subsection (1) shall be dealt with and discharged by the body responsible for matters relating to transition".

The project will according to the County Government act of 2012 ensure that the project activities conform to the regulation that shall be passed.(section 135 (1) The Cabinet Secretary may make regulations for the better carrying out of the purposes and provisions of this Act and such Regulations may be made in respect of all county governments and further units of decentralization generally or for any class of county governments and further units of decentralization.) comply to the set regulations and by laws. (The County Government Act, 2012)

Relevance

The contractor will need to abide by all the provisions of the act.

4.2.16 Employment Act

This is an Act of parliament that applies to all employees employed by any employer under a contract of service. The Act came in operation in June 2008. Employment of children in the following forms is prohibited in the following sections of the Act:

53. (1) notwithstanding any provision of any written law, no person shall employ a child in any activity that constitutes worst form of child labour.

56. (1) No person shall employ a child who has not attained the age of thirteen

(2) A child of between thirteen years of age and sixteen years of age may be employed to perform light work which is

(a) Not likely to be harmful to the child's health or development; and

(b) Not such as to prejudice the child's attendance at school, his participation in vocational orientation or training programmes approved by Minister or his capacity to benefit from the instructions received. (Laws of Kenya-Employment Act, 2012[2007])

Relevance

and the contractor will need to understand the requirements of the Act during employment. Equal opportunity should be given to all communities in project area so as to improve the socio-economic status of the area around the proposed project.

4.2.17 Work Injury Benefits Act (WIBA)

It is an act of Parliament to provide for compensation to workers for injuries suffered in the course of their employment.

It outlines the following:

Employer's liability for compensation for death or incapacity resulting from accident;

- Compensation in fatal cases
- Compensation in case of permanent partial incapacity
- Compensation in case of temporary incapacity
- Persons entitled to compensation and methods of calculating the earning
- No compensation shall be payable under this Act in respect of any incapacity or death resulting from a deliberate self-injury;
- Notice of an accident, causing injury to a workman, of such a nature as would entitle him for compensation shall be given in the prescribed form to the director.
  (The Work Injury Benefits Act, 2007)

Relevance

The contractor will need to abide by all the provisions of WIBA

4.2.18 Occupational Safety and Health Act, 2007

This is an Act of Parliament to provide for the safety, health and welfare of all workers and all persons lawfully present at workplaces, to provide for the establishment of the National Council for Occupational Safety and Health and for connected purposes.

It applies to all workplaces where any person is at work, whether temporarily or permanently.

The purpose of this Act is to:

- Secure the safety, health and welfare of persons at work.
- Protect persons other than persons at work against safety and health arising out of, or in connection with the activities of persons at work.

The Occupational Safety and Health Act 2007 (OSHA 2007) Kenya Gazette Supplement No.111 (Acts No.15) dated October 26, 2007 revokes the Factories and Other Places of WorkCap.514.

The scope of OSHA 2007 has been expanded to cover all workplaces including offices, schools, academic institutions, factories, and plantations. It establishes codes of practices to be approved and issued by the Directorate of Occupational Safety and Health Services (DOSHS) for practical guidance of the various provisions of the Act. (health.go.ke)

Relevance

The contractor and KPL will be required to comply with all the provisions of the Act throughout the project cycle.

4.2.19 Climate change act of 2016

This Act shall be applied for the development, management, implementation and regulation of mechanisms to enhance climate change resilience and low carbon development for the sustainable development of Kenya.(2) Without prejudice to subsection (1), this Act shall be applied in all sectors of the economy by the national and county governments to mainstream climate change responses into development planning, decision making and

implementation; build resilience and enhance adaptive capacity to the impacts of climate change; formulate programmes and plans to enhance the resilience and adaptive capacity of human and ecological systems to the impacts of climate change; mainstream and reinforce climate change disaster risk reduction into strategies and actions of public and private entities; facilitate capacity development for public participation in climate change responses through awareness creation, consultation, representation and access to information. (The Climate Change Act, 2016)

Relevance

This project can be viewed as a climate change mitigation measure since its goal is to improve LPG & LNG supply in the country and thus reduce deforestation driven by demand for charcoal fuel. The project may apply for carbon credit scheme that can be applied to supporting environment & social projects within Shimoni.

4.2.20 Forest Conservation and Management Act, 2016

This is an Act of parliament that gives effect to Article 69 of the constitution with regard to forest resources, to provide for the development and sustainable management and rational utilization ofall forest resources for the socio-economic development of the country and for connected purposes.

Relevance to the proposed project

Ken Petrogas Ltd should obtain a permit from the Kenya Forest Service to cut down trees or mangroves to pave way for the development. In addition, he should plant trees in areas within the facilities that will not be developed to compensate for loss during construction and identify and area for mangrove replanting.

4.2. 21 The Fisheries Management and Development Act, 2016

This act of Fisheries Management and Development provides the framework for the development, management, exploitation, utilization and conservation of fisheries and for connected purposes. The overall purpose of this act aims for the conservation, management and developmentof fisheries and other aquatic resources to enhance the livelihood of communities dependent onfishing. It also regulates the landing of fish and provides for the management of fishing ports, including fish landing stations. As part of the implementation of the Act and improve communityparticipation in the conservation and management of fisheries, the Kenya Government gazetted the Beach Management Units (BMUs) Regulations in 2007.In addition, section 99 of the Act statesthat the operator shall retain no more than 30% of the total fish catch taken from Kenya's Economic Exclusive Zone annually, or such other amount as maybe prescribed and the remainingportion of the bycatch shall be landed for sale in the local market.

Relevance to the proposed project

The project will interface with some part of seaweeds farming activities of the community. The proponent should collaborate with the seaweed farmers to avoid conflicts which are likely to arise from interference with the shoreline activities and support the sustainable development of the fisheries sector within Kwale County.

4.2.22 Energy Act Cap 314 & No. 12 of 2006 (Revised Edition 2012) Sections 95(1), 98 and 117

The Energy Act, amongst other issues, deals with all matters relating to all forms of energy including the generation, transmission, distribution, supply and use of electrical energy as well as the legal basis for establishing the systems associated with these purposes.

Stipulates that the Energy Regulatory Commission shall, before issuing a permit under section 90, take into account all relevant factors including the relevant government policies and compliance with Environment Management and Coordination Act, 1999 and in particular EIA report as per Impact Assessment and Audit Regulations 2003, the Physical Planning Act, 1996 and the Local Government Act.

EPRA is mandated to protect the environment, conserve natural resources, and protect the health and safety of workers, service users and the public at large.

Moreover, the proponent must comply with the Kenyan or other approved standards on environment, health and safety, and in conformity with the relevant laws. It must notify the Energy Commission of any accident or incident causing loss of life or personal injury, explosion, oil spill, fire or any other accident or incident causing significant harm or damage to property or to the environment

Relevance

The Act requires that before connecting to or installation of electric power to any site one must liaise with the Kenya Power and Lighting Company (KPLC) to ascertain the requirements required ensuring that the power to the site is adequate and doesn't affect the other users in the area. The proponent is planning to use energy from KPLC.

Table 3 Summary of applicable legislation and regulations

Legislation & regulations	Institution	Relevance in project cycle	Status/Remark
1. EMCA 1999 2. Wetlands, River Banks, Lake Shores and Sea Shore Management Regulations (Legal Notice No 19 of 2009)	NEMA	– Issuance of construction & operational license(EIA license) – Monitoring project compliance with approval conditions – Monitoring for compliance with all applicable legislations under EMCA Rev, 2015.	– ToR approved – ESIA report submitted
3. Physical & Land Planning Act 2019 4. County Government Act 2012 5. Noise & Excessing vibration pollution control regulations 6. Public Health Act Cap 242 7. EMC (Waste Management) Regulations, 2006	CGK	– Issuance development approval – Infrastructure provision- utilities & social amenities – Provision of waste management & emergency service – Sanitation & health standards at the project site	–
8. OSH 2007	DOHSS	– Registration of the construction site as a work place – Enforcing compliance with Occupational Health and Safety Regulations at the construction site	– Pending approval of ESIA

5. Project Alternatives

Analysis of alternatives of the proposed KPL LPG & LNG terminal & jetty project covers the following;

a) Project alternatives.
b) Alternative project site.
c) Design alternatives.

There are two project alternatives i.e. not to undertake the project (no project alternative) and to undertake the project (yes project alternative). The two project options are analysed below;

5.1 The "no project" alternative

This option will mean that proposed sea erosion control barrier will not be undertaken. This implies that the rising sea level and will continue eroding on the shoreline boundary of the villas leading to the eventual distabilisation of the existing developments on the property

In analysing this option the following was considered;

- ✓ **Technology transfer**: - implementation of the proposed will see transfer of various technology in with respect to floating jetty technology, LNG storage & handling. Therefore, the 'no project' alternative will not be favourable to this realization.
- ✓ **Employment creation**; - the current government policy on employment and wealth creation aims at creating as many jobs as possible to meeting the ever-increasing employment demand in the country. If the 'no option project' was to be considered, then this government target may not be realized.
- ✓ **Investor attraction; -** if the no option is considered it will not be consistent with the government aim of attracting and retaining investments in the country. The facility being an energy infrastructure can attract other industries in the Shimoni integrated development plan (SIDEP). Implementing such a project sends a positive signal & investor confidence.
- ✓ **Financial investment:** -The 'no' option will mean that the proponent will explore other investment locations and options potentially affect investment competitiveness ranking.
- ✓ **LPG cost stabilisation-** the project will increase offloading, handling & storage facilities for LPG & LNG and consequently the price of the clean energy fuel. Therefore, if the no option is to be pursued it likely that instability in LPG will persist.

5.2 The 'yes' project alternative

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

- ✓ Boost on investor confidence in beach property development.
- ✓ Proof of concept on the suitability of gabions as low-cost high impact adaptation measure to shoreline change

5.3 Alternative project site

Prior to settling on the Shimoni site, the project proponent considered 2 other sites for setting up of the project. One site was at Port Reitz in Mombasa County and the other at Tiwi in Kwale County. The merits of each site are summarised in the table below.

Site	Merits	Drawbacks
Shimoni site	Low settlement density Proximity to Shimoni port Proximity to SIDP area	Limited infrastructure Distance to market

Site	Merits	Drawbacks
	Direct access to Indian ocean Shelter water channel Flat terrain	
Port Reitz	Close proximity to the common user manifold (CUM) for LPG overtake Good infrastructures Proximity to market	High settlement density Traffic concerns Congestion Steep terrain
Tiwi	Low settlement density Direct access to the Indian Ocean Good infrastructure Proximity to the Dongo Kundu SEZ	Unsheltered waters Key marine biodiversity area High aerodynamic forces on moored ships

5.3.1 Preferred LPG, LNG terminal & jetty design

The preferred design for LPG, LNG terminal & jetty is one for mounded storage tanks with subsurface pipes and floating offloading jetty. This design is preferred because of the following: -

- ✓ Pipes are made out of corrosion resistant material (marine steel & hoses)hence long service life
- ✓ The technology is easy to install and will involve limited trenching & concrete works on coral reef.
- ✓ Submerged pipes means higher safety, less visual impact, minimised disruptions on surface ocean activities such transport & fishing
- ✓ Natural coral will establish itself over the pipe alignment.

6. PUBLIC CONSULTATION & FEEDBACK

6.1 Introduction

Consultation with various stakeholders and public participation was done throughout the Environmental Impact Assessment Project Report preparation and compilation. This was in line with the requirements of Legal Notice No. 101, Kenya Gazette Supplement No. 56 of June 13th 2003, the Environmental (Impact assessment and Audit) Regulations, 2003. Consultations and public participation was encompassing, interactive and intensive, so as to ensure that as many stakeholders as possible and the public were reached. The consultation was vital as it served to;

⇒ Inform all stakeholders of the proposed development within their locality.

⇒ Explain to the stakeholders the nature of the proposed project, its objectives and scope.

⇒ Give stakeholders a forum to present their views, concerns and issues regarding the proposed development.

⇒ Obtain suggestion from stakeholders on possible ways that potential negative impacts can be effectively mitigated.

The consultation was in the form of site visits, workshops and public meetings.

6.2 Consultation schedule

Table 4 Schedule of ESIA public barazas

Meeting	Venue	Date
Public Baraza	KPL project site	1st Nov 2022
Lead agencies	KWS Conference hall	9th Nov 2022
Community Leaders	KWS Conference hall	14th Nov 2022

6.3 Summary of issues raised from the consultation process

ISSUES RAISED	RESPONSE/ DISCUSSION
Disturbance to the marine ecosystem	• No dredging to be undertaken • Mangrove replanting & enhancement • Appropriate protection against leakages & spillages
Access to fishery resources	• Proposed jetty & associated infrastructure should not be an impediment to fishing activities • Project should not interfere with seaweed farming
Employment	• Contractor/Proponent to utilize local labour for the project.
Projects benefits sharing	• Community Liaison committee to be established to interface with the developer on benefits and CSR projects

The certified minutes of the deliberations and resolutions are attached in annex 6 of this report.

Plate 6 Public meeting held at Ken PetroGas Ltd project site

Plate 7 Consultative workshop with Lead agencies at KWS Shimoni

6.4 Consultations beyond ESIA Process

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

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

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

5. IMPACTS PREDICTION & MITIGATION

Impact Assessment and Scoring

The potential impacts associated with the proposed development have been assessed as presented in the table below. Precautionary principle was used to establish the significance of impacts and their management and mitigation i.e. where there is uncertainty or insufficient information, the Environmentalist erred on the side of caution.

	Severity of the impact	Rating	Scoring
1.	Insignificant / non-harmful/less beneficial	-1/+1	Very Low
2.	Small/ Potentially harmful / Potentially beneficial	-2/+2	Low
3.	Significant / slightly harmful / significantly beneficial	-3/+3	Medium
4.	Great/ harmful / beneficial	-4/+4	High
5.	Disastrous/ extremely harmful / extremely beneficial	-5/+5	Very high
	Spatial Scope of the Impact		
6.	Activity specific	-1/+1	Very Low
7.	Right of way specific	-2/+2	Low
8.	Within Project area 5km radius	-3/+3	Medium
9.	Regional	-4/+4	High
10.	National	-5/+5	Very high
	Duration of Impact		
11.	one day to one month	-1/+1	Very Low
12.	one month to one years	-2/+2	Low
13.	Within Project construction period	-3/+3	Medium
14.	within the Project life	-4/+4	High
15.	at decommissioning	-5/+5	Very high

Example of Cumulative Impact Scoring: 1. +3, +2, +5, +4, +4, +1=+4 (the weight that occurs more is adopted) 2. +2, +2, +5, +4, +4, +1=+3 (if two scores or more tie, then an average of the scores shall be adopted)

6. POTENTIAL IMPACTS

The proposed LPG/LNG storage depot & jetty project will result in both positive and negative impacts to the physical, biophysical and socio-economic environment. All feasible measures should be put in place to ensure that; any significant negative impacts are mitigated; positive impacts are enhanced and maximized and local people benefit positively from the project.

8.1 Potential positive impacts from the implementation of the project

Positive impacts likely to result from implementation of the proposed project will include;

- ⟹ Creation of jobs.
- ⟹ Greater energy security
- ⟹ Acceleration of industrialisation of the Shimoni Port area
- ⟹ Reduced pressure on forest-based fuel resources
- ⟹ Greater public utility from the restored beach

Job Opportunities

Construction sites are a major source of employment opportunities. Although the jobs are not permanent, a considerable number of casuals and contracted people are able to get employment opportunities. The proposed project will create employment opportunities for local youths.

8.2 Potential negative Impacts from implementation of the project

Key potential negative environmental impacts are likely to result from the proposed KPL during both the construction and operational phase of the project as discussed below;

Construction phase impacts	Operational phase impacts
❑ Noise nuisance	❑ Impact on marine environment.
❑ Impact on flora & fauna	❑ Impacts of solid waste
❑ Impacts of solid waste	❑ Impact on traffic & road infrastructure
❑ Traffic impact	

An in-depth analysis of each of the potential negative impacts is as follows.

Impacts on the flora & fauna

The proposed location of the LPG/LNG storage terminal & jetty will have localised impact on coral & mangroves at the intertidal zone of the project. If the implementation is carried out in such a way that it does not regard and conserve the riparian vegetation while at the same time ensuring public access to marine resources is not interfered, then such an implementation may result in the following negative impacts to the marine ecosystem.

7.2.1 Marine pollution. Impacts on Biodiversity

The construction of the pipeline and associated trenching works will result in albeit to a small extend the loss of the sub tidal seabed and the mangrove forest that provide habitats for organisms such as crabs, brittle stars, worms, starfish, sea urchins, etc. Preparatory work for excavations for the placement of the pipeline from the jetty will result in clearance of mangrove patch thus impacting negatively on the integrity of ecosystems that serve as critical habitats to a wide range of marine organisms. This will in turn affect marine fauna such as fish and crustaceans.

Marine pollution

Encroachment by manmade structures prevents the natural movement of sand thus resulting in the degradation of beach habitats through factors such as beach erosion. Most nests are found at the vegetation line with common vegetation present being vines. Marine pollution likely in the construction & decommission phase of the project when workers will be installing or uninstalling the jetty structures and pipe works. The envisaged pollution is mainly through poor construction waste & demolistion debris management.

Marine pollution during construction phase

During construction phase, beach pollution may occur as a result of the following activities;

- ✓ Disposing of construction solid waste on the shoreline.
- ✓ Channelling of liquid waste onto the marine environment.

Disposing of construction solid and liquid waste within the marine zone

The beach ecosystem forms an important habitat for various activities of marine organisms. During construction phase both liquid and solid waste will be generated, some of the likely solid waste may include concrete waste, pieces of stone and rock material, off cuts of the geomembrane lining. Likely liquid waste to be generated may include wastewater from food preparation activities, cleaning and from sanitary facilities of construction staff. If all this waste is disposed within the beach it will result in significant pollution.

Proposed safeguards against of marine pollution

1. All solid waste to be collected handled, managed and disposed according to the Environmental Management and Coordination (Waste Management) Regulations, 2006.
2. All liquid waste to be collected handled, managed and disposed according to the Environmental Management and Coordination (Water Quality) Regulations, 2006.
3. Waste receptacles to be provided at the construction site for holding of solid waste;
4. Suitable & adequate mobile toilet facilities should be provided at the site during the construction phase of project

Shoreline Erosion

Development of beach plots along the Kenyan Coast is associated with activities such as introduction of beach embankments, destruction and removal of riparian vegetation and removal of beach sand. One or a combination of these activities associated with development of beach plot can result in beach erosion. Beach embankments can potentially destabilise beach process resulting in shoreline erosion. The destabilization can be occasioned by the following among others; activities that will result in disturbance of mangrove vegetation & sea grasses; this can include trenching on the coral rock outcrop or physical removal of flora within the intertidal zone which acts as a natural barrier to break sea waves and hence sand deposition and introduction of hard solid barriers along the beach that interfere with local tidal dynamics

Potential Negative Impacts of Shoreline Erosion

Shoreline erosion may potentially result in the following negative impacts;

1. Habitat for marine organisms will be destroyed; this will negatively impact on the population and survival of marine organisms.
2. Destruction of local aesthetics.

Proposed Safeguards Against Shoreline Erosion

1. Minimise the removal of mangrove vegetation within the shoreline of the project site
2. Avoid disturbance of the coral outcrops.
3. All construction activities should be limited to the official plot boundaries.

Restricted marine resources

The proposed project site frontage is mangrove forest interspersed with coral rock outcrops along the Kibuyuni shoreline. The Kibuyuni area has active seaweed farming carried out by the Kibuyuni BMU and fish traps along the shoreline by local fisherman. Due to the rock nature of the shoreline some sections of the Kibuyuni shoreline are only accessible during lowtides.

The concern of securing the LPG/LNG facility must be balance against the need for the continued access by the fisherfolk community in the project area

Potential negative impacts of restricted access to marine resources

⟹ Litigation issues as local people will be denied their constitutional right of accessing and using the s.

⟹ Constrained relationship between developer and local people.

⟹ Reduced livelihoods from the fishing & seaweed farming.

Safeguards on Marine access

1. Formalisation & opening up of public shoreline access routes for the general public.
2. Floating jetty is proposed to allow for free movement of artisanal fishermen & transportation along the Kibuyuni shoreline
3. Security arrangements at the facility should not interfere with free movement of local people along the coastal waters& shoreline.

NOISE NUISANCE

Noise is likely to be generated from the following activities/areas:

- ✓ During ground preparation.
- ✓ During assembly of building materials on site.
- ✓ Fabrication of gas storage tanks

A brief elaboration of each of the potential source/cause of noise is as follows: -

Assembly of building materials

Building materials to be used in construct site will first be gathered and assembled on site. These include building blocks, timber, steel bars, sand, gravel cement. Possible courses of noise nuisance when assembling construction material on site include;

- ✓ Offloading of building materials on site especially steel bars, gravel and building blocks can result in noise.
- ✓ Trucks ferrying in building materials can be a source of noise.

- ✓ Employees involved in offloading of building material can be a source of noise.

Installation of the proposed LPG/LNG facility

The installation of the KPL will be labour intensive. Possible sources of noise during construction work may include: vibration and noise during excavation and leveling works & fabrication noises

Potential Environmental Impacts of Noise

Impacts of noise will potentially affect the immediate neighbors; and employees.

Impacts of noise to immediate neighbours

- o Noise nuisance especially from lorries delivering material to the site may be a nuisance to immediate neighbors.
- o Continuous exposure of neighbors to noise nuisance may result in noise induced hearing lose.
- o Noise nuisance may reduce concentration of neighbors in their private matters.

Noise impacts to employees

- o High noise level will force employees to shout laud when communicating to one another.
- o Exposure of employees to high noise level (above 85dB) continuous for 8hours per day may result in noise induced haring lose.
- o Exposure of ear to peak sound level instantaneously may result to deafness.

Proposed Noise Safeguards

The following measures can be put in place to mitigate possible negative impacts of noise that can result from implementation of the proposed project.

1. Noise levels to be within the prescribed limits as stated in EMCA (Noise and Excessive vibration pollution control) Regulations, 2009.
2. All construction work to be limited to daytime only.
3. Immediate neighbors to be notified in writing on the date of commencement of construction work at least one month in advance.
4. All employees likely to be exposed to ear noise to be provide with ear protectors.
5. Contractor to ensure strict enforcement on user of ear protectors.
6. Where applicable and possible exceptionally noisy machines to be fitted with noise reduction devices.
7. Any employee who may complain about ear related pain and or complication while at work to access medical attention at the expense of the contractor or project proponent.
8. Where employees are likely to be exposed to continuous noise, management to organize for work to be done in four hour shift instead of eight-hour shift.
9. Noise equipment especially concrete mixer to be located as far away as possible from sensitive receptors.

Traffic Impact

Vehicular traffic for the project will be generated during construction & operational phase. The LPG/LNG depot will utilise trucks to move the stored cargo from the depot to the various supply points. The facility provides truck parking for up to 65 trucks. To minimises negative impacts on traffic and road infrastructure a traffic impact assessment was conducted and recommendations made on appropriate safeguard to this concern. The traffic impact assessment report is annexed in this report.

7. ENVIRONMENTAL & SOCIAL MANAGEMENT PLAN

The Environmental and Social Management plan (ESMP) spells out the policies and specific action plans required to mitigate against the key negative impacts predicted in the preceding three chapters. The policies and action plans form the first section of the ESMP. The second section comprising of the environmental monitoring and decommissioning plans form the final components of the ESMP. The goal of the ESMP is to achieve an environmentally sound and sustainable project venture.

Table 5 Construction Phase ESMP

Activity	**Negative Impact**	• **Mitigation Measure**	**Monitoring** • **Indictors**	**Cost (KShs)**
Construction of the Proposed Project site	Community misconception s	1. Awareness creation amongst the Communityon project facts; 2. Community issues to be responded to promptly; 3. Project progress reports and monitoringreports to be prepared and recommendationsimplemented;	• Records of Meetings with Community • Records of community issues recorded andresponses.	Approx. 100,000/= for convening meetings
	Increase in social vices/ Security Concerns	4. Conduct Information Education and Communication; (IEC) amongst thecommunity and the project staff; 5. Hold meetings between Contractor Staff and Community; 6. Have regular police patrols at the beginning of project development; 7. Collect information on persons coming into 8. the project area to settle during project implementation.	• Meeting reports • Police records onproject area security	Approx. 300,000/=for convening meetings
	Surface run off and sedimentation from construction activities	9. Construction of effective drainages andculverts; 10. Plant soil binding grasses and other nativeplants	• Surface runoff water impact protection facilities in the projectarea	Construction Obligation
	Sanitary facilities for construction workers	11. Installation of appropriate sanitary facilities; 12. Having a monitoring programme for the septictanks to ensure no overflow takes place	• Presence of Toilet Facilities for Workers and Visitors to the Construction Site.	Construction Obligation

Activity	Negative Impact	• Mitigation Measure	Monitoring • Indictors	Cost (KShs)
	Dangers of having Child Labour issues arising	13. Contractor to be strictly advised not to engage any underage persons(under 18 years of age) to perform any form of work at the site duringconstruction 14. Contractor will be required to comply with the Employment Act, 2007	• List of workers that does not contain underage persons	Construction Obligation

Table 6 Operational Phase ESMP

Activity	Negative Impact	• Mitigation Measure	Monitoring • Indictors	Cost (KShs)
Operation of Proposed Facility	Maintenanceof facilities Working atheights	1. Use of barrier tapes to isolate the maintenance areas; 2. Provide harnesses/scaffolds for working atheights; 3. Inspect and maintain fall protection 4. equipment; Use of protective devices to mitigate against injury; 5. Provide first aid facilities at the site;	• Use of Proper PPEand Equipment Handouts on safety	Approx. 200,000/=
	Risk of Fire	6. Sensitization of Workers on Fire Safety Risks; 7. No burning of any materials near or in the site	• Handouts on FireHazards and Safety	Routine SiteOperation Activity
	Pollution of surface waterand Waste management	8. Ensure solid waste is collected andappropriately disposed of; 9. Ensure that used oil from trucks are not released to the ground; 10. Used oil is to be put into containers and appropriately disposed of by a NEMA approved agent; 11. Provision of used oil containers for use by truck drivers	• Presence of solid waste containers • Containers for storage of used oil recovered from trucks	Approx. 20,000/= for provision of used oil containers
	Health issues of Facility Workers, Truck Driversand Community	12. Sensitize workers and community on sexually transmitted diseases especially STIs and HIV/AIDS which is spread throughsocialization and unprotected sex; 13. Provide workers and community with condoms. 14. Encourage Workers, Truck Drivers and Community to go for HIV Testing and Counselling in order to live a productive life;	• Presence of a HIV Programme at the Facility • Records of disease incidences • /prevalence	100,000/= for sensitization and provision Of condoms.

Activity	Negative Impact	• Mitigation Measure	Monitoring • Indictors	Cost (KShs)
			(URTI, HIV/AIDS, Water Borne Diseases etc.	
	KPG Site Solid Waste Management during Operation	15. Provision of communal solid waste containers(skip); 16. Provision of secured solid waste collectioncontainment where waste container (skip) is to be placed; 17. Regular disposal waste depending rate fill up	• Waste Collection and Disposal Reports • Presence of WasteBins	Approx. 20,000/= for Waste Containers 10,000/=permonth for wastedisposal by NEMA approved Firm
	Monitoring and Evaluation ofthe effectiveness of project Mitigations	18. Implementationof monitoring of facility operations 19. and success of proposed mitigations 20. Health Trends (URTI, Malaria, STIs andHIV/AIDS); 21. Livelihood and socio-economic status ofproject area community; 22. Community perception on the KPG Facility 23. Any new emerging issues, threats andbenefits of the LPG Storage Facility	• Quarterly Reports on Facility performance	Routine Operation of the Facility

Table 7 Decommissioning Phase ESMP

Activity	Negative Impact	Mitigation Measure	Monitoring Indictors	Cost (KShs)
Decommissioning of Proposed Project Facility	Air Pollution(dust, smoke, fuel emissions)	1. Control of demolition vehicle speeds; 2. Prohibition of idling of vehicles; 3. Water is to be sprayed on building undergoing demolition during decommissioning o reduce dust emission; 4. Regular maintenance of vehicles and equipment; 5. Provision of dust masks for use in dusty conditions. 6. Use of serviceable vehicles and machinery toavoid excessive smoke emission	• Decommissioning Records	Approx. 200,000/=for noise protection equipment (dustmasks)
	Noise pollution	7. Noise reduction/ hearing protection deviceswhen working with noisy equipment; 8. Use of serviceable equipment with low noiselevel; 9. Instruction to truck/machinery operators toavoid raving engines; 10. Use of noise protection (ear muff) duringdemolition;	• Decommissioning Records	Approx. 200,000/=for noise pollution mitigation
	Potential Injury to oWorkers	11. Use of appropriate head, hand and feet protection (PPE) during demolition ofstructures 12. Adopting ergonomic work flow designs that fitphysical tasks to employees and not viceversa while maintaining a balance with productivity;	• Availability ofappropriate gear/Records • Use of Proper PPE	Approx. 200,000/=for PPE and othersafety equipment
	Working atheights	13. Use construction site barrier tape to isolate the site to guard site visitors from accidents and injuries; 14. Implement a fall protection program that includes training in climbing techniques and use of fall protection measures, Provide 15. Harnesses; 16. Use of helmets and other protective devices ito mitigate against injury, 17. Provide first aid facilities at the site	• Availability of appropriate Safety Gear/Records • Proper use of PPE	Approx. 100,000/=for PPE and othersafety equipment

Activity	Negative Impact	Mitigation Measure	Monitoring Indictors	Cost (KShs)
	Site area rehabilitation and restoration	18. Remove all demolished waste material; 19. Repair and restore project area site 20. Evaluate site contamination 21. Plant trees and other appropriate vegetation	• Site Pollution Report • Well restored site	1,000,000/= for site Pollution assessment

9. Decommissioning Plan

9.1 Introduction

Decommissioning is the last phase of project life. It involves terminating project activities and operations and rehabilitating site to or close to its original state.

Decommissioning of the proposed project will address two main components namely:

1. Efficient solid waste management.
2. Restoration of the site to its original state.

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9.2 Conceptual Environmental Management Plan for the decommissioning phase of the KPL development

Recommended Mitigation Measures	Responsible Party	Time Frame	Cost (Ksh)
1. Demolition waste management			
1. A conceptual decommissioning plan will be submitted to NEMA for approval	Proponent	3 months prior	
2. All pipework's, tanks & auxiliary infrastructure that will be removed and recycled/reused as far as possible	Contractor, proponent		TBD
2. Rehabilitation of proposed project site			
1. Rehabilitation of shoreline area impacted by the jetty	Contractor, Proponent	Annual	TBD

10. Conclusion & Recommendation

10.1 Introduction

Ken Petrogas Limited proposes to put up a green field development of LPG & LNG storage terminal with associated jetty facility at Shimoni Port area. The development will consist of storage facility of 10,000 metric tonnes of LPG & 104,000 cubic meters of LNG delivered via a floating offloading jetty. The offtake of the gas will be through LPG trucks.

10.2 Conclusions

In summary, the following can be concluded:

1. The energy infrastructure is likely to complement the overall Shimoni integrated development master plan that fits into the wider Blue economy strategy
2. Increasing of LPG & LNG storage is likely to translate to better energy security, prices & lower impact on forestry resources
3. The project is in a low-density development area.
4. There are limited impacts on the mangrove forests that can need to adequately offset.
5. The design of the project is compatible with existing livelihood activities namely: fishing, seaweed farming & tourism.

10.3 Recommendations

The ESIA study team recommends the LPG/LNG project for licencing subject to the following proposals to inject environment sustainability:

1. The proponent will ensure timely resourcing & implementation of the proposed EMP
2. The implementation of the development will take the minimum period possible
3. All necessary approvals will be obtained and conditions of such approval complied with.
4. Project to priorities employment of local labour and content in the project implementation & operational cycle
5. Mangrove replanting offset program for the area cleared for the Jetty access be initiated in conjunction with KFS.

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ANNEXES

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Annex 5	Copy of preliminary design drawing
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