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ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT PROJECT REPORT

FOR

THE PROPOSED LAMU PORT ACCESS ROAD



PREPARED BY:

KENYA NATIONAL HIGHWAYS AUTHORITY

OCTOBER 2018

Kenya National Highways Authority
Quality Highways, Better Connections

Authentication page

I the undersigned confirm that the contents of this report are a true representation of the Environmental and Social Impact Assessment project report of the proposed Upgrading of the Lamu Port Access Road.

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DIRECTOR GENERAL

EXECUTIVE SUMMARY

The Government of Kenya (GoK) through its agency, Kenya National Highways Authority (KeNHA) intend to upgrade the Lamu Port Access road to link it with the Lamu – Witu – Garsen (C112) road to bitumen standard. The project will be funded by the Government of Kenya through development fund.

The proposed Lamu Port Access road falls within Lamu West Sub County of Lamu County and is within Hindi division. Lamu County borders Garissa County to the north, Tana River County to the South East and Republic of Somalia to the northeast and the Indian Ocean to the South.

The project will involve construction of about 11.4 km to the port and an addition 2.9kms access to the Lamu Kenya Army Barracks. Works will involve bush clearing, earth works, laying of AC, landscaping, road markings / furniture and drainage works among others. The main objective is to provide road connectivity that will ease cargo evacuation from and to the new Lamu Port once it become operational.

The proposed project is located in Eastern Coastal region within Lamu County. The project starts at GPS: -2.1999818, 40.831214 (North west of Lamu Town) approximately 180m from Gulf Energy Station, off Lamu Witu Garsen (C112) Road. Runs in a southeasterly direction through Jipe and ends at the entrance of Lamu Port. Will involve construction of dual carriage road of approximately 11.4km, construction works will entail bush clearing, earth works, landscaping, concrete works, pavement layering, drainage works, setting up campsites, road markings and furniture among others. The main objective is to provide road connectivity that will ease cargo evacuation from and to the new Lamu Port once it become operational.

The project area is normally flat with vertical elevation ranging from zero to 50m above sea level. The main topographical features include coastal island and Dudol plains, sand dunes and the Indian Ocean. The landform/topography is higher level coastal plain, consisting of mostly flat to slightly undulating (0-4%) relief. The terrain is made up of spontaneous geological depressions which are filled with water at times during rainy seasons and periods of high tides. Sections with such depressions have been given special attention during design and will continue during construction and future maintenance.

The soils are imperfectly drained, very deep, brown, very firm, sandy loam to sandy clay loam, abruptly underlying a thick topsoil of friable loamy sand and with a slightly to moderately sodic deeper subsoil, with inclusions of many small bottomlands

The project area falls under agro-climatic zones IV, V and VI which are classified as semi-humid to semi-arid, semi-arid, and arid respectively. The rainfall distribution is bimodal with the long rainy season occurring between the months of March to May with a peak in April, while the short rainy season is from the month of October to December with a peak in November.

The project area and the county at large have a series of habitat types ranging from grassland, palmed bushed grasslands, coastal tidal environment, disturbed habitats and swamps/ flooded bottomlands.

Due to the disturbed nature of the project area only a few mammal species are found around the project site namely baboons, warthogs, and hippos that forage around the site from the Hindi Swamp. Mongooses are also common as indicated by the presence of their scant.

The county has land surface area of 6273.1km^2 composed of 5517 km^2 of arable land 649.7 km2 of non-arable land, 130km2 of coastline and 308 km2 under water mass. Lamu West where the project lies has surface area of 3971.3km2 taking the bulk of 63.3% of total land, leaving Lamu East with 36.7%. Kiunga division in Lamu East occupies 96.6% of Lamu Eastland surface area. Due to the physiographic climate and other natural conditions, the county is made of two broad economic zones covering the mainland for agriculture and livestock keeping and Islands for marine activities. The larger chunk of agricultural land resources is found within Lamu West Sub County as the Lamu East is predominant of water mass. Depending on physiographic and prevailing climatic conditions, the county has 5 Agro-Ecological zonings namely Coastal lowlands, Coconut Cassava zone, Cashew Nut-Cassava zone, Livestock, millet zone and Lowland ranching zone.

Highlights both the national and international legal, policy and institutional frameworks for management and coordination of environmental, social and safety matters related to road development programs in Kenya. In Kenya there are about 77 statutes that govern the undertakings of environmental management and conservation. These regulations are sector specific, covering broad spectrum of issues such as public health, soil conservation, protected areas conservation and management, endangered species, public participation, water rights, water quality, air quality, excessive noise control, vibration control, land use among others.

The legal frameworks relevant to the proposed project are the National Environment and Management Authority Cap 387 and Associated Regulations, Water Act Cap. 372, 2002, Public Health Act (Cap. 242), Occupational Health and Safety, 2007, Physical Planning Act, 1999, Kenya Roads Act 2007 and traffic Act Chapter 403 among others .Policy frameworks include Kenya Vision 2030,Agenda Four initiative

,Poverty Reduction Strategy Paper (PRSP) and Policy Frameworks for Transport including the roads sub sector

The concerns/views of key stakeholders through consultative meetings alongside administration of questionnaires revealed that they are in harmony with implementation of the project and have got no objection based on what they are experiencing with the current state of the road and their expectations should the project kick off. Key stakeholders consulted wanted the local communities to be engaged through employment reservations for locals based on their abilities and local administrative units.

The analysis considered the proposed road alignment, technological design and No project alternative along with their impacts to existing valued environmental components along the project corridor. Impacts of not upgrading the Lamu Access road was evaluated to ascertain impacts that would occur. The analysis showed that even though the existing environmental and social conditions would remain the same, the project objectives would not be achieved under such circumstance. Meaning the Lamu Port will not have bituminous dual carriage road connectivity to enhance free, smooth and easy movement of cargo from and to the port. Residents of Hindi/Magogoni, Mokowe and entire Lamu County will continue suffering due the current poor condition of the road. The best alternative reached at was to allow sustainable upgrading of the proposed project to bitumen standard since proper remedial and corrective measures for significant impacts have been proposed and will be implemented to reduce the envisaged negative impacts to insignificant level.

Potential negative and positive impacts will be associated with the project. The impacts will be related to activities or operations to be carried out during its life stages i.e. construction, operation and decommissioning. Positive impacts include:

- Creation of employment opportunities-during construction, several temporary opportunities will be created for both skilled and non-skilled citizens. This will help in reducing the rate of unemployment in the county.
- Enhance trade – Large quantities of construction materials such as road fill aggregates will be outsourced within the locality and the neighboring counties, other players such as industries, enterprises and local vendors will be attracted to serve the workforce due to availability of ready market.
- Skills transfer- The skills and experience by locals during the construction period will be gained through apprenticeship, internships, on job training and work experience

Negative impacts will include:

- The majority of the soils in the project corridor are loose sandy and sandy-loam soils that are susceptible to soil erosions, project operations such as bush clearing and excavations may lead to increased soil erosions.
- Heavy machines/trucks moving during construction will cause to compaction of soil particles hence reducing water holding and percolation capacity.
- Dusts will be generated within the project corridor due to construction activities and moving machines being used
- Movement of heavy trucks, braking, hooting and vibrating machines are likely to cause sound pollution within construction site and surrounding environment
- Influx of population from foreign places is likely to cause acculturation that will interfere with the indigenous cultures within Hindi/Magogoni, Mokowe and Lamu County**.**

On the basis of the analysis of potential impacts and the recommended mitigation measures in this environmental and social impact assessment report, overall, the Proposed upgrading of the Lamu Access port to bitumen standard is not likely to impose some negative impacts on the environment and existing social set up within Hindi/Magogoni and Mokowe locations and Lamu County as whole. The majority of envisaged negative impacts are negligible or minor in nature.

The potentially moderate or major negative effects have been identified and mitigation measures proposed to reduce them to less significant level. There will be effective enforcement of those measures with regular monitoring and evaluation for possible review to ensure sustainable construction of the access road. Based on environmental, social and economic viability, the project is feasible and should be implemented. In right of the impacts the following mitigation measures should be implemented:

- Confining project operations such as earthworks, excavations and bush clearing to the road corridor only to avoid exposing adjacent soils to agents of soil erosion
- Proper installation of drainage structures to channel storm water to the nearest natural catchments.
- Stabilizing road embankments and progressive re-vegetation of developed sections and areas cleared unintentionally
- Use of wet crushing technology at quarries, scarifying with water at borrow pits and diversions /detour spots to be sprayed (damping) with water to combat dusts emissions.

- Use of machines/trucks efficient in fuel consumption, no idling of machinery and vehicles.
- Spillages or leakages of oil will be remediated immediately using appropriate absorbent material to prevent their entry into water resources.
- Machine operators /truck drivers to be sensitized on safe driving to avoid unnecessary braking or hooting.
- Tress along the traverse not within carriage should not be cut as they will act as sound absorbers.
- Provision of PPEs (ear muffs) to operators working with noise machines

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ABBREVIATION LIST

dB (A)	A-weighted decibels
EIA/EA	Environmental Impact Assessment /Environmental Audit
EHS	Environmental Health and Safety
ERP	Emergency Response Plan
ESIA	Environmental and Social Impact Assessment
ESMP	Environmental and Social Management Plan
ESS	Environmental and Social Standards
EMCA	Environmental Management and Co-ordination Act
GPS	Global Positioning System
GIIP	Good International Industry Practice
IFC's	International Finance Corporation
TMP	Traffic Management Plan
ToR	Terms of Reference
KeNHA	Kenya National Highways Authority
LAPSSET	Lamu Port-South Sudan-Ethiopia-Transport
OSH	Occupational Safety and Health
PPEs	Personal Protective Equipment
PS	performance standards
PM	Particulate Matter
STI	Science, Technology and Innovation
S0x	Sulphur Dioxide
VOC	Volatile Organic Compounds
WB	World Bank
WRA	Water Resources Authority

CHAPTER 1.0: INTRODUCTION

1.0 INTRODUCTION

The ESIA report was prepared by KeNHA's Environment and Social Safeguards Department on behalf of the Director General Kenya National Highways Authority. The proposed project involves the upgrading to bitumen standards of the access road linking Lamu Port and the Lamu – Witu – Garsen (C112) Road.

1.1 DEVELOPER IDENTIFICATION

1.1.1 ADDRESS

Table 1: Proponent Details

Designation	DIRECTOR GENERAL, KENYA NATIONAL HIGHWAYS AUTHORITY, BLUE SHIELD TOWERS, HOSPITAL ROAD, UPPER HILL, P.O. BOX 49712-00100, NAIROBI, KENYA **TEL:** +254 020 8013842 **|** 020 4954000 **|** **CELL:** +254 0731330336 **|** 0700 423606 **EMAIL:** dg@kenha.co.ke **|** **WEBSITE:** www.kenha.co.ke

1.2 BRIEF REGIONAL DESCRIPTION

The proposed Lamu Port Access road falls within Lamu West Sub County of Lamu County and is within Hindi division. Lamu County borders Garissa County to the north, Tana River County to the South East, Republic of Somalia to the northeast and the Indian Ocean to the South.

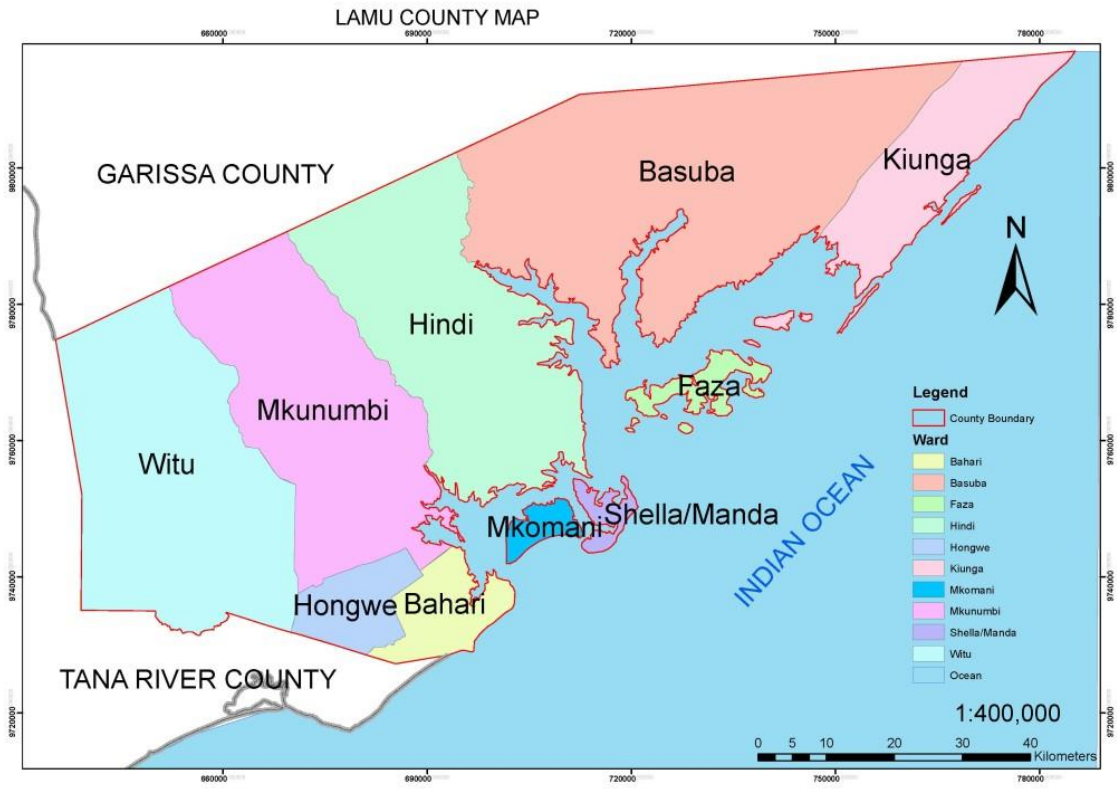


Figure 1.1: Showing the Map of Lamu County

1.2.1 Project Background

The Government of Kenya through the LAPSSET Corridor Program embarked on construction of 32 berth deep Sea Port in Lamu County. The construction of the first three berths is ongoing with delivery times of 24 months of the first berth and 45 months for the next two at a cost of 480 Million US$. To facilitate this, several preliminary and support infrastructures such as the Port headquarters, port police station, road network, electric power connection to the national grid and water reticulation network were undertaken and are complete. Construction of the port management housing scheme is also ongoing. At the same time the Government is structuring the remaining 29 berths to be concessional to the private sector for construction and operations. The first phase is expected to be opened in June, 2019, however the link road to the berth is in dilapidated state.

Toward this end, Kenya National Highways Authority has allocated some funds through the Development Budget for the Construction of Garsen –Witu – Lamu (A7)

formerly (C112) and for the feasibility study, preliminary engineering design, environmental impact assessment, social impact assessment and detailed Engineering design of link road to the new Lamu Port from Lamu – Garsen Road (A7).

1.2.2 Overview of the Project

The project will involve construction of about 11.4 km to the port and an addition 2.9kms access to the Lamu Kenya Army Barracks. Works will involve bush clearing, earth works, laying of AC, landscaping, road markings / furniture and drainage works among others.

1.2.3 Project Purpose and Objectives

The main objective is to provide road connectivity that will ease cargo evacuation from and to the new Lamu Port once it become operational.

Specific objectives are;

- Providing bituminous dual carriage link road to the Lamu port and single carriage to the Lamu Kenya Army Barracks;
- Fasten movement of cargo from and to the Lamu port;
- Ease traffic snarl up mostly from trailers which will be evacuating cargo from the port; and
- To enhance accessibility within Hindi/Magogoni and Mokowe sub wards.

1.2.4 Project Justification/Rationale

The construction of 32 berth deep Sea Port in Lamu County to deliver a just and prosperous middle-income Kenya by the year 2030 is underway. The construction of the 1st berth is almost complete but the access road is in poor condition. To enhance smooth and easy movement of cargo from and to the port, there must be good capacity enhanced (dual carriageway) road connectivity. Therefore, easy and smooth evacuation of cargo once the 1st berth becomes operational will only be achieved through the upgrading the Lamu Port Access Road to bitumen standard.

1.4 PURPOSE OF ESIA

1.4.1 Main objective

This Environmental and Social Impact Assessment (ESIA) report has been prepared to identify significant linkages of the road project to the environmental and social settings of the project. The ESIA report provides management plans and intervention that are based on biophysical environmental setting and social characteristics, defined timelines and implementation cost elements. The prepared management actions are also based on road design concepts and principles.

1.4.2 Specific Objectives of ESIA:

- To prepare an environmental and social impact assessment report compliant with the Environmental management and Coordination Act CAP 387 and detailing findings and recommendations (aligned to IFC standards and other international best practices/polices).
- To generate baseline data upon which impacts will be assessed and mitigation measures monitored and evaluated during the project life cycle.
- To identify all potential significant adverse environmental and social impacts of the proposed project and recommend mitigation measures.
- To verify compliance (identify and analyze the relevant legal provisions) with the environmental regulations and industry's standards.
- To recommend cost effective measures to be implemented to mitigate against the expected impacts.
- To provide guidelines to stakeholders participating in the mitigation of adverse social impacts of the project.

1.5 TERMS OF REFERENCE

ESIA study process was guided by ToR which was developed as summarized below;

- Provision of background and baseline information;
- Highlight of the effects of the proposed project on biological diversity both within and outside the project corridor i.e. effects on flora and fauna, habitat quality and issue of habitat fragmentation;
- Surface water run-off, containment and flood control;
- Sustainable use of resources and ecosystem maintenance and enhancement
- Economic implications of the proposed upgrading of Lamu Port Access road, employment and livelihoods;
- Security – threats, risks and enhancement;
- Public health impacts;
- Social cohesion, culture, emigration and communication;
- Demand and development of infrastructure and social amenities within the county;
- Assessment of the effects on aesthetic values;
- The compatibility of the project with the existing land use patterns;
- Development of an environmental and social management plan with mechanisms for mitigation of impacts, monitoring and evaluating effectiveness of mitigation measures the compliance and ascertaining project's Environmental, Social and Safety Performance. Environmental performance.

1.6 STRUCTURE OF REPORT

This report is presented in Nine Main Chapters as follows as follows: -

Chapter One	Introduction
Chapter Two	Provides a description of the project
Chapter Three	Environmental and Social Impact Assessment Methodology
Chapter Four	Policy, Legal and Regulatory Framework
Chapters Five	Baseline Environmental and Social Parameters
Chapter Six	Environmental and Social Impacts
Chapter Seven	Analysis of Project Alternatives
Chapter Eight	Environmental and Social Management Plan
Chapter Nine:	Environmental and Social Management Plan

CHAPTER 2.0: PROJECT DESCRIPTION

2.1 INTRODUCTION

The Government of Kenya through the LAPSSET Corridor Program embarked on construction of 32 berth deep Sea Port in Lamu County. The construction of the first three berths is ongoing with delivery times of 24 months of the first berth and 45 months for the next two at a cost of 480 Million US$. To facilitate this, several preliminary and support infrastructures such as the Port headquarters, port police station, road network, electric power connection to the national grid and water reticulation network were undertaken and are complete. Construction of the port management housing scheme is also ongoing. At the same time the Government is structuring the remaining 29 berths to be concessional to the private sector for construction and operations. The first phase is expected to be opened in June, 2019, however the link road to the berth is in dilapidated state.

Toward this end, Kenya National Highways Authority has allocated some funds through the Development Budget for the Construction of Garsen –Witu – Lamu (A7) formerly (C112) and for the feasibility study, preliminary engineering design, environmental impact assessment, social impact assessment and detailed Engineering design of link road to the new Lamu Port from Lamu – Garsen Road (A7).

2.2 PROJECT LOCATION

The proposed project is located in Eastern Coastal region within Lamu County. The project starts at GPS: -2.1999818, 40.831214 (North west of Lamu Town) approximately 180m from Gulf Energy Station, off Lamu Witu Garsen (C112) Road. Runs in a southeasterly direction through Jipe and ends at the entrance of Lamu Port. The approximate length of the Access Road is about 11.4km and an additional 2.9kms to the Lamu Kenya Army Barracks. The project road acts as the boundary between two locations namely Hindi and Mokowe within Lamu County.



Figure 1.2: Map Showing the Proposed Lamu Access Port Road and Lamu Kenya Army Barracks Access

Location of proposed Material Sites



Figure 1.3: Map Showing the Proposed borrow pit s and the ones currently being used by H-Young Construction Company Limited (green line and green pins).

2.3 OVERVIEW OF ROAD CONSTRUCTION

The project will involve construction of 11.4 km access road to the port and 2.9kms access road to the Lamu Kenya Army barracks. The works to be carried out are bush clearing, earth works, landscaping, road markings / furniture and draining works among others. The structures will include access culverts, cross culvers and box culverts among others.

CHAPTER 3.0: ENVIRONEMTAL AND SOCIAL IMPACT ASSESSMENT METHODOLOGY

3.1 APPROACH TAKEN IN THE ESIA

The ESIA study involved integration of various methodologies which could help in identifying the positive and negative impacts of the proposed project and proposing mitigation measures for the adverse impacts envisaged while maximizing the possible positive impacts. The environmental and social impact assessment process was aligned to ascertaining how the proposed project activities will interact with the biophysical environment and their social acceptability. The environmental and socioeconomic aspects of the project area were considered for integration during design, development and maintenance of the access road. The key activities which were undertaken during ESIA study were:

- Reviewing the existing literature on environmental conditions and a detailed fieldwork along the project corridor to collect data on:
    - Geology,
    - Relief,
    - Biological resources i.e. Flora and Fauna
    - Edaphic,
    - Climate, and
    - Hydrology.
- Analyzing the prevailing socio-economic status of the region, this entailed:
    - Conducting consultative meetings alongside administration of questionnaires to key stakeholders;
    - Situation analysis to examine the relationship between project activities during construction/ post construction and human dimensions.
- Identifying likely bio-physical and socio-economic impacts related to project,
- Proposing appropriate mitigation measures and/or design changes to enhance elimination and or reduction of risks and negative impacts envisaged, and
- Preparation of environmental management, mitigation and monitoring plans to be enforced during project implementation.

CHAPTER 4.0: POLICY, LEGAL AND REGULATORY FRAMEWORK

4.1. POLICY, LEGAL AND INSTITUTONAL FRAMEWORK

This chapter outlines the applicable international standards and relevant Kenyan regulatory framework that set the context within which the Project will operate. It also identifies applicable licensing and permitting requirements that the project will require upon successful implementation of the project.

This ESIA will be conducted in accordance with:

IFC Performance Standards for Social and Environmental Sustainability, April 2012

IFC's General Environmental, Health and Safety (EHS) Guidelines,

Kenyan laws, regulations and permits applicable to the Project

4.1.1 National Legal Framework

Table 2: Legislative Framework

Legislation	Legislative Scope	Relevance to Proposed Project
The Constitution of Kenya, 2010	The constitution declares that the people of Kenya are respectful to the environment, which is their heritage and they are determined to sustain it for the benefit of future generations. The constitution under article 42 states that every person has a right to a clean and healthy environment. Also, 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, according to section 2 of Chapter 5. Article 70 deals with enforcement of environmental rights and everyone who feels their right to a clean and healthy environment has been denied has the obligation to go to court to seek redress. Section 63 states that any unregistered community land shall be held in trust by county governments on behalf of the communities for which it is held	The Contractor must ensure that during construction they follow the ESMP provided ensuring operations are working in a clean sustainable way. This will ensure both workers and community members to operate in a healthy and clean environment
The Environmental Management and Co-ordination Act (EMCA), 1999 (Amendments 2015)	This is the principal law governing environmental protection. It contains various legal notices with regulations on environmental conservation and Management, while Part II confers the right of every person to a clean environment and therefore makes it mandatory to work in a clean environment and protect people living close to the project. Details mechanism and stipulation regarding environmental impact assessment. Sub-section (1) of section 58 The act also prohibits anyone from discharging or applying poisonous, toxic, noxious or obstructing matter, radioactive or any other pollutants into aquatic environment. Require that operators of projects which discharges effluent or other pollutants to submit to NEMA accurate information about the quantity and	The Act requires Project to acquire an EIA license from NEMA before commencing of any development. The Act also requires that no one should pollute the environment by discharging or dumping of waste unless it meets the required standards for effluent, solid waste to be disposed of on designated dumping sites. Hence, Contractor should contract a NEMA registered waste handler to dispose of the waste

Legislation	Legislative Scope	Relevance to Proposed Project
	quality of the effluent. Prohibits discharge or dispose of any wastes, whether generated within or outside Kenya, in such a manner as to cause pollution to the environment or ill health to any person, Sections 90 through 100 outlines more regulations on management of hazardous and toxic substances including oils, chemicals and pesticides.	
Environmental (Impact Assessment and Audit) Regulations, 2003	Stipulates the mechanisms for undertaking an EIA. Project Proponent, upon consultation with NEMA shall appoint at their own cost lead expert/firm of experts registered under NEMA to undertake an environmental impact assessment. Provides ways in which environmental experts should conduct an EIA/EA. Requires during public participation, licensing procedure, inspection and any possible offences and penalties as part of EIA process	The Act requires that project proponent to contract a licensed EIA expert to conduct an EIA. As per the regulation the public and stakeholders were consulted during the exercise.
EMCA (water quality) Regulations, 2006	These regulations provide for the protection of lakes, rivers, streams, springs, wells and other water sources. Also address the challenges of pollution of water resources as well as their conservation. Provides guidelines for water use, and conservation for the proposed project, as well as effluent standards for discharge Prohibits abstraction of water from natural water body unless such water meets the standards set out in schedule nine of the regulation in this legislation.	The Regulation requires that water guidelines set to be adhered to and no water to be abstraction unless it meets standards required. Also, it will be important to protect ground water sources and meeting standards for discharge of effluent, both National and International. One of the options in sourcing freshwater for the project is abstracting from rivers on the mainland. The client will need to adhere to guidelines set. The Regulation also requires the Contractor to meet the effluent discharge standards in section 4.1.1.1 in this report
EMCA (Waste	Focuses on management of solid wastes, industrial wastes, hazardous	The waste generated in this project will include:

Legislation	Legislative Scope	Relevance to Proposed Project
management) Regulations, 2006	wastes, pesticides and toxic substances and radioactive substances. Provides standards for handling, transportation, and disposal of different types of waste. Addresses concerns such as responsibility for waste generators and obligations for disposal. Prohibits disposal of any waste on a public highway, street, road, recreational areas or in any public place except in a designated waste receptacle. Requires that any persons whose activities generate waste will collect, segregate, and disposed by person who is licensed by NEMA. Requires that any person granted a license to transport waste to ensure that does not cause scattering, escaping and/or flowing out of the waste. No owner or operator of a trade or industrial undertaking will discharge or dispose of any waste in any state into the environment, unless the waste has been treated in a treatment facility and in a manner prescribed by the Authority in consultation with the relevant lead agency.	domestic waste, scrap metals, used tires, used oil, used vehicle and machinery parts among others. For waste management there should exists proper contractual agreement with NEMA licensed solid waste handlers and that solid wastes are disposed of in designated sites approved by County Government of Lamu. It will be good to segregate waste from the source and managed in line with the provisions of this regulation, and adhere to all the National and International guidelines for waste management.
EMCA (Fossil) Fuel Emission) Control) 2007	Regulations gives direction on the emission limits expected from internal combustion engines of various engines include; Hydrocarbons (HCs), Volatile organic Compounds (VOC), Sulphur dioxide (SOx), Nitrogen oxides (NOx), Particulates (PM) and Carbon Monoxide (CO).	Regulation requires that all emissions standards must observe as set out in on First schedule of this regulation. Also, machines with internal combustion engines will be required to undergo annual combustion inspection to ensure compliance to this regulation.

Legislation	Legislative Scope	Relevance to Proposed Project
EMCA(Conservation of Biological Diversity and Resources, Access to Genetic Resources and Benefit Sharing) Regulations, 2006	This regulation sets that any activity that will lead to a. An adverse impact on any ecosystem b. introduction of any exotic species c. unsustainable use of natural resources Will require an EIA license before commencement of the activity	The proposed project has the potential of having an impact on the biodiversity in the project area, hence it will require an EIA license before commencement of the project. Also, as a requirement, the contractor will be required to monitor species count in the area, or to monitor if any exotic/ invasive species are introduced in the project site. This will be a requirement introduced in the ESMP
EMCA (Wetlands, River Banks, Lake Shores and Sea Shore Management) Regulation, 2009	This regulation 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	Subject to provisions of the act the contractor cannot carry out operations on the shore and mangrove ecosystem without an EIA license and authorizations from relevant authorities.
EMCA (Noise and Excessive Vibration Pollution) (Control)	These regulations prohibit any person from making or causing 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. It also prohibits excessive vibration which annoys, disturb, injure or endanger the comfort, repose, health or safety of others and the environment or excessive vibrations which exceed 0.5 centimeters per second beyond any source property boundary or 30 meters from any moving source Part III provision relating to Noise. No. 12 on noise from motor vehicles, (1) No person shall operate a motor vehicle exceeds 84 dB (A) when accelerating.	The permissible noise levels set under this regulation and the IFC standards should be adhered to at all phases of the project to avoid reprimanding from the NEMA officers. This could be done through technological advancements, i.e. use of noise mufflers in equipment and generators

Legislation	Legislative Scope	Relevance to Proposed Project
Water Cap 372	The Act provides for the management, conservation, use and control of water resources and for the acquisition and regulation of rights to use water; and to provide for the regulation and management of water supply and sewerage services. The proponent will require a license for the following purpose: a) Any use of water from a water resource b) The drainage of any swamp or other land c) The discharge of a pollutant into any water resource d) Any purpose, to be carried out in or in relation to a water resource, which is prescribed	According to the Act, there will be need to apply for water permit from WRMA, for water abstraction from any water source (underground and surface water bodies) for use during construction works and any other uses.
Standards Act Cap 496	The Act provides specifications for standardization of commodities and the codes of practice in the use of those commodities and their raw materials. In establishing Kenya Bureau of Standards, the Act seeks to consolidate control powers of the agencies that quality standard in the country.	All materials to be used for the construction activities should have a mark showing accreditation as of quality from Kenya Bureau of Standard (KEBS).
County Government Act 2012	The law empowers the County Governments to control or prohibit all businesses, factories and other activities (including the proposed project which, by reason of smoke, fumes, gases, dust, noise or other cause may be or become a source of danger, discomfort or annoyance to the neighborhood) and to prescribe conditions subject to which such activities shall be carried. The legislation emphasizes on the right of citizens to participate to any development projects to their implementation.	The contractor will observe all the regulations provided by Lamu County Government in respect to environment health and safety of the locals
Penal code cap 63	It's an offence to make or vitiate the atmosphere in any place to make it noxious to health of persons/institution in dwellings or business premises in the neighborhood or those passing along public way, commit an offence. It's the responsibility of every person who is in charge or has under control anything, that in the absence of care or precaution in its use or management, might endanger the life, safety or health of any person, to use reasonable care and take reasonable precautions to avoid the danger.	The Act addresses the welfare of workers, to work and operate in a safe and healthy environment. The Contractor must ensure that their safety policy is in line with the Act on site at all time.

Legislation	Legislative Scope	Relevance to Proposed Project
Occupation Health and Safety Act, 2007	Provides for the safety, health and welfare of workers and all persons lawfully present at workplaces, in all phases of the project. Prohibits any persons from engaging in improper activity or behavior at work place which may create or constitute a hazard to that person or any other person. Gives powers to occupational safety and health officer to enter, inspect, and examine, by day and by night, a workplace, and every part thereof, when he has reasonable cause to believe that any persons is employed therein, and enter, inspect, and examine, by day, any place which has reasonable cause to believe to be part of a workplace and any building of which a workplace forms part and in which have has reasonable cause to believe that explosive, highly inflammable, or any other hazardous materials are stored or used	The Act requires the employer to ensure a safe working environment for the workers, through provision of appropriate Personal protective equipment (PPE), adequately equipped first aid kits, fire safety apparatus, training on use of the above, emergency response mechanisms, and health schemes as required by the Act
Occupation Safety Act, 2007 Subsidiary Legislations:	2. Factories (First-Aid) Order: Provides requirements of what needs to be included in a first aid box. 3. Factories (Docks) Rules: Provides rules of and process of loading, unloading, moving and handling goods in, on or at any dock, wharf or quay in any port or harbor. Equipment's used in lifting cargo must be inspected regularly to ensure maintenance of good quality materials. 4. Factories and Other Places of Work (Safety and Health Committees) Rules, 2004: Provides for health, safety and welfare of persons employed in factories and other places of work. Also, it ensures measures to protect employees from dust, fumes or impurities originating from any process within the facility 5. Factories and Other Places of Work (Medical Examination) Rules, 2005: It shall be the duty of the employer to ensure that all persons employed in any of the occupations outlined in the Eighth Schedule to the Act undergo both pre-employment and periodic medical examinations by the designated health practitioner as outlined in the First Schedule.	These regulations states that it's the duty of the employer to provide the health, safety, and welfare of persons employed on site. The Contractor will provide a safe working environment for all workers, through provision of appropriate PPE (safety boots, safety gloves, ear muffs, reflective clothes, helmet among other PPE). The Contractor will have fully equipped First Aid Kit and trained first aider onsite at all times to attend on emergency cases. Also, will have an emergency response mechanism, and health schemes as required by the Act.

Legislation	Legislative Scope	Relevance to Proposed Project
	6. Factories and Other Places of Work (Noise Prevention and Control) Rules, 2005: this provides regulations for activities that produce noise levels of the continuous equivalent of 90 dB(A) in 8 hours within any 24 hours' duration; and 140 dB(A) peak sound level at any given time. It states machinery should be well maintained, PPE provided such as ear muffs, placing o warning signs. 7. Factories and Other Places of Work (Fire Risk Reduction) Rules, 2007: This provides safety requirements for at risk areas. Safety requirements include: good ventilation systems, good housekeeping, fire safety training/drills, firefighting equipment on site 8. Factories and Other Places of Work (Hazardous Substances) Rules, 2007: this provides measure to limit/ protect employees from hazards.	
Work Injury Benefit Act, 2007	Provides for compensation for work related injuries and diseases contracted in the course of their employment and for other purposes of protecting employees from occupational health and safety faults at work place. Provides for insurance for the employer. Provides for entitlement of benefits to an employee who is involved in an accident resulting in the employee's disablement or death Employer is liable to pay compensation in accordance with the provisions of this Act to an employee injured at work	The Act requires that the Contractor should have a grievance policy to redress the social, security, health, and welfare grievances of the employees and local residence during the project implementation.
Public Health Act	This is an Act of Parliament to make provisions for securing and	The Contractor should ensure adequate compliance

Legislation	Legislative Scope	Relevance to Proposed Project
Cap 242	maintaining health. Sections include those dealing with notification of infectious diseases; inspection of infected premises and examination of persons suspected to be suffering from infectious diseases; rules for prevention of diseases; venereal diseases and infection by employees, among others. The proposed project will encourage the movement of people in search of jobs and opportunities, and with this, the risk associated with spread of diseases. Part IX, section 115, of the Act states that no person/institution shall cause nuisance or condition liable to be injurious or dangerous to human health. Section 116 requires that Local Authorities take all lawful, necessary and reasonably practicable measures to maintain their jurisdiction clean and sanitary to prevent occurrence of nuisance or condition liable to be injurious or dangerous to human health. Such nuisance or conditions are defined under section 118 and include nuisances caused by accumulation of materials or refuse which in the opinion of the medical officer of health is likely to harbor rats or other vermin.	to the health and sanitation provisions set out in this Act. Also the environmental management plan (EMP) advises on the safety and health aspects, potential impacts, personnel responsible for implementation and monitoring, frequency of monitoring.
Employment Act, 2007	Defines the fundamental rights of employees, to provide basic condition of employment of employees, to regulate employment of children.	The Contractor should adhere to basic conditions of employees to be observed to avoid unnecessary conflicts in the future.
The Physical Planning Act, Cap 286	Gives the county governments' physical planning department to develop regulations for development control in their areas of jurisdiction in terms of buildings to ensure orderly and sustainable development planning. Any person who carries out development without permission will be required to restore the land to its original condition. In case the local authority is of the opinion that the proposed development activity will have injurious impact on the environment, the applicant shall be required to submit together with the application an EIA report	This covers all development activities in preparation of the well pad that may result in adverse effects on the environment, particularly the generation of waste and the method of its discharge.
Land Act 2012	According to section 31 of the Act Community land shall be managed in	Community land shall not be disposed of or

Legislation	Legislative Scope	Relevance to Proposed Project
	accordance with the law relating to community land enacted pursuant to Article 63 of the Constitution - *Section 63 of the Constitution states that any unregistered community land shall be held in trust by county governments on behalf of the communities for which it is held"* - *According to Section 3 of the constitution, Community land consists of—* *(a) land lawfully registered in the name of group representatives under the provisions of any law;* *(b) land lawfully transferred to a specific community by any process of law;* *(c) any other land declared to be community land by an Act of Parliament; and* *land that is—* *(i) lawfully held, managed or used by specific communities as community forests, grazing areas or shrines;* *(ii) ancestral lands and lands traditionally occupied by hunter-gatherer communities; or* *lawfully held as trust land by the county governments but not including any public land held in trust by the county government under Article 62(2).*	otherwise used except in terms of legislation specifying the nature and extent of the rights of Members of each community individually and collectively.
Traffic Act Cap 403	This Act consolidates the law relating to traffic on all public roads. Key sections include registration and licensing of vehicles; driving licenses; driving and other offences relating to the use of vehicles on roads; regulation of traffic; accidents; offences by drivers other than motor vehicles and other road users. Many types of equipment and fuel shall be transported through the roads to the proposed site. Their registration and licensing will be required to follow the stipulated road regulations. The Act it prohibits obstruction of traffic, either by persons or facilities which are constructed in such a way as to interfere with the flow of traffic on roads or road reserves.	During transportation of the heavy machines the heavy trucks should not interfere with traffic flow, also the speed limit should be should be observed All personnel operating the vehicles and machineries should be licensed by relevant authorities

Legislation	Legislative Scope	Relevance to Proposed Project
Public Roads and Roads of Access Act Cap. 399	The Act provides for the dedication, conversion or alignment of public travel lines including construction of access roads adjacent lands from the nearest part of a public road. The law allows for notices to be served on the adjacent landowners seeking permission to construct the respective roads. The project design concept has left the required road reserves and relevant road widening surrenders. This Act consolidates the law relating to traffic on all public roads.	The Contractor will use the existing road to transport equipment to the proposed site.
Forestry Services Act, 2005	Provides that if mining, quarrying or any other activity carried out in the forest, where the activity concerned is likely to result in forest cover depletion, the person responsible shall undertake compulsory re-vegetation immediately upon the completion of the activity.	The Act requires one to apply for a special license and involvement of applicable forest officers in public consultations as part of the EIA process. The site is located in a disturbed area that used to be farmlands but has now been colonized by shrub and bush. Vegetation. There is no protected forest in the project site
Wildlife Conservation and Management Act, 2013	The Act prohibits activities that are likely to have adverse effects on the environment, which include seepage of toxic waste into rivers, streams, lakes and wetlands. The Act also it prohibits any mining and quarrying activities in a National park without approval and consent of Kenya Wildlife Service. KWS will only approve quarrying and mining if only EIA has been conducted according to provisions of the EMCA 1999. The Act in its sixth schedule list various animals and tree species that are nationally considered as critically endangered, vulnerable, nearly threatened and protected species.	The Act relates to the disturbance and interference with protected areas around the Project area. There is no protected forest in and around the proposed site, however animals such as baboons, warthogs, and numerous birds frequent the bushland and wetlands/ ponds common along the project area.

Legislation	Legislative Scope	Relevance to Proposed Project
The Kenya Roads Act 2007	KeNHA is one of the established road authorities which is a corporate body with perpetual succession and common seal. The highway authority has a role of management, development, rehabilitation and the maintenance of the National roads. Part II section 4 of the Act shows the functions of the authority which includes: • Constructing, upgrading, rehabilitating and maintaining roads under its control, • Controlling the national roads and road reserves and access to the road side development, • Implementing of the road policies in relation to the national roads, • Ensuring adherence to the roles and guidelines on the axle load control prescribed under the traffic act (Cap 403) and under any regulations under these act ensuring roads quality as prescribed by the minister, • Monitoring and evaluating the use of national roads, and • Liaising and coordinating with other road authorities in planning and operation with respect to roads.	The road project is within the authority's mandate of managing, developing, and rehabilitating and maintaining national roads and other roads of special importance.
Traffic Act Chapter 403	This Act consolidates the law relating to traffic on all public roads. The Act also prohibits encroachment on and damage of roads including land reserved for roads.	The Access road to Lamu Port project falls under the provisions of the Act.

Table 3: National Policies

National policy	Applicability
Kenya Vision 2030	Kenya Vision 2030 is the country's new development blueprint covering the period 2008 to 2030. The vision has three pillars to achieving its goal and they are economic, social and political and their foundations are anchored by macroeconomic stability; continuity in governance reforms; enhanced equity and wealth creation opportunities for the poor; infrastructure; energy; science, technology and innovation (STI); land reform; human resources development; security; and public sector reforms. Road infrastructure development in Kenya is identified as one of the sectors that contribute to the country's economic growth.
National Land Policy 2009	The Policy was formulated in August 2009, under Sessional Paper No.3 of 2009 on National Land Policy. This was the first time that Kenya adopted a comprehensive policy on land. The policy covers all aspects of land as regards to holding, classification, adjudication, registration, ownership and management. It also deals with historical injustices on land, and covers issues on natural resources and environment. The policy to achieve the goals of securing the National interests, where the is exploitation of natural, exploration should confer benefits to the local community, government is to compulsorily acquire land in areas where minerals are discovered with an aim of preventing environment degradation and securing mechanisms for restoring the land after exploitation.
Policy Paper on Environment and Development (Sessional Paper No. 6 of 1999)	The policy recommends the need for enhanced re-use/recycling of residues including wastewater, use of low or non-waste technologies, increased public awareness and appreciation of a clean environment. It also encourages participation of stakeholders in the management of wastes within their localities. Regarding human settlement, the paper encourages better planning in both rural and urban areas and provision of basic needs such as water, drainage and waste disposal facilities among others. The policy aims to: Ensure that from the onset, all development policies, programmes, and projects take environmental considerations into account Ensure that an independent EIA report is prepared for any industrial venture or other development before implementation Effluent treatment standards that will conform to acceptable health guidelines.

4.1.2 IFC Performance Standards

IFC Sustainability Frameworks consist of IFC's Policy and Performance Standards on Environmental and Social Sustainability and IFC's Access to Information Policy. On environment and social sustainability, the framework, assess the commitments, roles, and responsibilities necessary from ensuring environmental sustainability.

Table 4: IFC Standards

Performance Standards	Applicability	Relevance to the Project
PS1: Assessment and Management of Environmental and Social Risk and Impacts	This PS relates to integrating and managing environmental and social performance throughout the life of a project with the aim of identifying and evaluating environmental and social risks and impacts of the project; adopting a mitigation hierarchy to anticipate and avoid, or where avoidance is not possible, minimize; and where residual impacts remain, compensate/offset for risks and impacts to workers, Affected Communities, and the environment, promote improved environmental and social performance of clients through the effective use of management systems and to ensure that grievances from affected communities and external communications from other.	The standard requires the management of environmental and social performance throughout the life of a project. It requires the developer to identify the environmental and social risks, establish management programs that will mitigate the risks, establish, maintain, and strengthen organizational structure that defines roles, responsibilities, and authority to implement the ESMS, establish and maintain an emergency preparedness and response system, establish procedures to monitor and measure the effectiveness of the management program, as well as compliance with any related legal and/or contractual obligations and regulatory requirements and establish a stakeholder engagement plan that will be used to disclose and disseminate information, consult and involve stakeholders as well as grievance mechanism.

Performance Standards	Applicability	Relevance to the Project
PS 2: Labour and Working Conditions	This standard seeks to ensure project proponents establish, maintain, and improves the worker-management relationship that promotes the fair treatment, non-discrimination and equal opportunity of workers, and compliance with national labour and employment laws. This PS aims to protect the workforce by applying this standard, which also addresses child labour and forced labour, and promoting safe and healthy working conditions, and to protect and promote the health of workers by recognizing the role of employees.	Requires the adoption and implementation of human resources policies and procedures appropriate to its size and workforce that set out its approach to managing workers consistent with the requirements of this Performance Standard and national law. Provide reasonable working conditions and terms of employment. Respect the rights to form and to join workers' organizations of their choosing without interference and to bargain collectively even if not recognized by national laws To base employment relationship on the principle of equal opportunity and fair treatment, and not to discriminate with respect to any aspects of the employment relationship. Prior to implementing any collective dismissals, to carry out an analysis of alternatives to retrenchment. If the analysis does not identify viable alternatives to retrenchment, a retrenchment plan will be developed and implemented to reduce the adverse impacts of retrenchment on workers. The retrenchment plan will be based on the principle of non-discrimination and will reflect the client's consultation with workers, their organizations, and, where appropriate, the government, and comply with collective bargaining agreements if they exist.

Performance Standards	Applicability	Relevance to the Project
		To establish a grievance mechanism for workers (and their organizations, where they exist) to raise workplace concerns. Not to employ children in any manner that is economically exploitative, or is likely to be hazardous or to interfere with the child's education, or to be harmful to the child's health or physical, mental, spiritual, moral, or social development. Not to employ forced labor, which consists of any work or service not voluntarily performed that is exacted from an individual under threat of force or penalty. To provide a safe and healthy work environment, taking into account inherent risks in oil and gas sector and specific classes of hazards in the work areas, including physical, chemical, biological, and radiological hazards, and specific threats to women.
PS 3: Resource Efficiency and Pollution Prevention	The Performance Standard 3 aims at abetting pollution to air, water, and land that may threaten people and the environment at the local, regional, and global levels. The main objectives of this PS are; to avoid or minimize adverse impacts on human health and the environment by avoiding of minimizing pollution from project activities; to promote more sustainable use of resources, including energy and water and to reduce project-related GHG emissions.	To implement technically and financially feasible and cost-effective measures for improving efficiency in its consumption of energy, water, as well as other resources and material inputs, with a focus on areas that are considered core business activities. To consider alternatives and implement technically and financially feasible and cost-effective options to reduce project-related GHG emissions during the design and operation of the project To adopt measures that avoids or reduces

Performance Standards	Applicability	Relevance to the Project
		water usage so that the project's water consumption does not have significant adverse impacts on others. To avoid the release of pollutants or, when avoidance is not feasible, minimize and/or control the intensity and mass flow of their release. This applies to the release of pollutants to air, water, and land due to routine, non-routine, and accidental circumstances with the potential for local, regional, and trans boundary impacts To avoid the generation of hazardous and non-hazardous waste materials. Where waste generation cannot be avoided, to reduce the generation of waste, and recover and reuse waste in a manner that is safe for human health and the environment
PS4: Community Health, Safety, and Security	The role of this PS is to anticipate and avoid adverse impacts on the health and safety of the Affected Community during the project life from both routine and non-routine circumstances and to safeguard personnel and property in accordance with relevant human rights principles and in a manner that avoids or minimizes risks to the Affected Communities. This study evaluates the risks and impacts to the health and safety of the Affected Communities during the project lifecycle and proposes mitigation measures consistent with good international industry practice (GIIP), such as in the World Bank Group Environmental, Health and Safety Guidelines (EHS Guidelines) or other internationally recognized sources	To identify risks and impacts and propose mitigation measures that are commensurate with their nature and magnitude. To design, construct, operate, and decommission the structural elements or components of the project in accordance with GIIP, taking into consideration safety risks to third parties or affected communities To avoid or minimize the potential for community exposure to hazardous materials and substances that may be released by the project. To identify those risks and potential impacts on priority ecosystem services that may be exacerbated by climate change

Performance Standards	Applicability	Relevance to the Project
		To avoid or minimize the potential for community exposure to water-borne, water-based, water-related, and vector-borne diseases, and communicable diseases that could result from project activities, taking into consideration differentiated exposure to and higher sensitivity of vulnerable groups. To assist and collaborate with the affected communities, local government agencies, and other relevant parties, in their preparations to respond effectively to emergency situations, especially when their participation and collaboration are necessary to respond to such emergency situations To assess risks posed by its security arrangements to those within and outside the project site.
PS5: Land Acquisition and Involuntary Resettlement	The PS5 deals with land acquisition and resettlement of people on the land that they have been depending on. Involuntary resettlement refers both to physical displacement (relocation or loss of shelter) and to economic displacement (loss of assets or access to assets that leads to loss of income sources or other means of livelihood1) as a result of project-related land acquisition and/or restrictions on land use	This standard relates to the temporary land acquisition process for the proposed exploratory drilling project. To consider feasible alternative project designs to avoid or minimize physical and/or economic displacement, while balancing environmental, social, and financial costs and benefits, paying particular attention to impacts on the poor and vulnerable. If displacement cannot be avoided, to offer displaced communities and persons compensation for loss of assets at full replacement cost and other assistance to help them improve or restore their standards of living or livelihoods.

Performance Standards	Applicability	Relevance to the Project
		To engage with affected communities, including host communities, through the process of stakeholder engagement on decision-making processes related to resettlement and livelihood restoration should include options and alternatives, where applicable. To establish a grievance mechanism consistent which will allow receiving and addressing specific concerns about compensation and relocation raised by displaced persons or members of host communities in a timely fashion, including a recourse mechanism designed to resolve disputes in an impartial manner. In case of involuntary resettlement, to establish a resettlement and livelihood restoration plan for the affected In the case of physical displacement, to develop a Resettlement Action Plan that covers, at a minimum, the applicable requirements of this Performance Standard regardless of the number of people affected. In the case of projects involving economic displacement only, to develop a Livelihood Restoration Plan to compensate affected persons and/or communities and offer other assistance that meet the objectives of this Performance Standard.
PS6: Biodiversity Conservation and Sustainable Management of Living Natural Resources	This PS aims at protecting and conserving biodiversity based on Convention on Biological Diversity, which defines biodiversity as "the variability among living organisms from all sources	To consider direct and indirect project-related impacts on biodiversity and ecosystem services and identify any significant residual impacts especially focusing on habitat loss, degradation

Performance Standards	Applicability	Relevance to the Project
	including, inter alia, terrestrial, marine, and other aquatic ecosystems and the ecological complexes of which they are a part; this includes diversity within species, between species, and of ecosystems". This PS divides habitat into three categories, modified, natural, and critical. Critical habitats are a subset of modified or natural habitats. Modified habitats are areas that may contain a large proportion of plant and/ or animal species of non-native origin, and/ or where human activity has substantially. These may include areas managed for agriculture, forest plantations, reclaimed6 coastal zones, and reclaimed wetlands.	and fragmentation, invasive alien species, overexploitation, hydrological changes, nutrient loading, and pollution To establish appropriate actions that include avoiding impacts on biodiversity through the identification and protection of set-asides, implementing measures to minimize habitat fragmentation, such as biological corridors, restoring habitats during operations and/or after operations; and implementing biodiversity offsets. In event the project is located within a legally protected area or an internationally recognized area, the Contractor will demonstrate that the project in such areas is legally permitted ,act in a manner consistent with any government recognized management plans for such areas , consult protected area sponsors and managers, affected communities, indigenous peoples and other stakeholders on the proposed project, as appropriate; and implement additional programs, as appropriate, to promote and enhance the conservation aims and effective management of the area Not to intentionally introduce any new alien species (not currently established in the country or region of the project) unless this is carried out in accordance with the existing regulatory framework for such introduction.

Performance Standards	Applicability	Relevance to the Project
		To conduct a systematic review to identify priority ecosystem services. These areas, those services on which project operations are most likely to have an impact and, therefore, which result in adverse impacts to affected communities and/or) those services on which the project is directly dependent for its operations (e.g., water)
PS 7: Indigenous Peoples	This standard deals in safeguarding Indigenous People which it defines as social groups with identities that are distinct from mainstream groups in national societies, are often among the most marginalized and vulnerable segments of the population.	To identify, all communities of Indigenous Peoples within the project area of influence who may be affected by the project, as well as the nature and degree of the expected direct and indirect economic, social, cultural (including cultural heritage2), and environmental impacts on them. Undertake engagement process with the affected communities of Indigenous Peoples To consider feasible alternative project designs to avoid the relocation of Indigenous Peoples from communally held lands and natural resources subject to traditional ownership or under customary use.

Performance Standards	Applicability	Relevance to the Project
PS 8: Cultural Heritage	This standard defines Cultural heritage as any tangible forms of cultural heritage, such as tangible moveable or immovable objects, property, sites, structures, or groups of structures, having archaeological (prehistoric), paleontological, historical, cultural, artistic, and religious values; unique natural features or tangible objects that embody cultural values, such as sacred groves, rocks, lakes, and waterfalls; and certain instances of intangible forms of culture that are proposed to be used for commercial purposes, such as cultural knowledge, innovations, and practices of communities embodying traditional lifestyles. As a control measures, the standard requires the project proponents to identify and protect cultural heritage by ensuring that internationally recognized practices for the protection, field-based study, and documentation of cultural heritage are implemented.	To protect cultural heritage in project design and execution. Take the responsibility of siting and designing a project to avoid significant adverse impacts to cultural heritage. The environmental and social risks and impacts identification process to determine whether the proposed location of a project is in areas where cultural heritage is expected to be found, either during construction or operations To consult with affected communities who use, or have used within living memory, the cultural heritage for long-standing cultural purposes. To allow continued access to the cultural site or will provide an alternative access route, subject to overriding health, safety, and security considerations

4.1.3 World Bank policies

World Bank is not involved in upgrading of Lamu Port Access Road Project, but has well-established environmental assessment procedures which will be emulated. The procedures can be viewed as relatively standard procedures for the preparation and approval of an environmental assessment study.

The World Bank adopted a new set of environment and social policies called the Environmental and Social Framework as summarized in Table below.

Table 5: WB ESS Standards

No.	ESS Standard	Triggers	Trigger mechanism
ESS1	Assessment and Management of Environmental and Social Risks and Impacts	Triggered	Impacts and risks associated with project must be assessed
ESS2	Labor and Working Conditions	Triggered	There is need for safe working environment
ESS3	Resource Efficiency and Pollution Prevention and Management	Triggered	Natural resources within the county should be conserved /protected from pollution
ESS4	Community Health and Safety	Triggered	Safety and health of host communities will be safeguarded
ESS5	Land Acquisition, Restrictions on Land Use, and Involuntary Resettlement	Not triggered	People are not going to be involuntarily displaced from homes, land and livelihood
ESS6	Biodiversity Conservation and Sustainable Management of Living Natural Resources	Triggered	There is a need to conserve all the flora and fauna within project corridor.
ESS7	Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities	Triggered	The marginalized group will be considered
ESS8	Cultural Heritage	Triggered	Indigenous cultures will be preserved
ESS9	Financial Intermediaries	Not triggered	Not financed by world bank
ESS10	Stakeholder Engagement and Information Disclosure	Triggered	There will be constant consultation and involvement of key stakeholders and timely information sharing throughout project implementation period

CHAPTER 5.0: BASELINE ENVIRONMENTAL AND SOCIAL PARAMETERS

5.1 INTRODUCTION

5.1.2 Geographical Aspects and Boundaries

The proposed project starts at GPS: -2.1999818, 40.831214 (North west of Lamu Town) approximately 180m from Gulf Energy Station, off Lamu Witu Garsen (C112) Road. The road runs in a southeasterly direction through Jipe and ends at the entrance of Lamu Port. The approximate length of the Access Road is about 11.4km. The other section runs in a northly direction towards for 2.9km and terminates at the Lamu Kenya Army Barracks.



Figure 4: Map Showing the Proposed Lamu Access Port Road and Lamu Kenya Army Barracks Access

5.1.3 Administrative Structure

The county has two constituencies, namely Lamu West and Lamu East. Lamu East Divisions are Faza, Kiunga and Kizingitini while the Lamu West Divisions are Amu, Hindi, Mpeketoni and Witu. The total number of locations in the county are 23 while the sub-locations number 38. The project area falls within Lamu west Sub County covering tow Wards i.e. Hindi/Magogoni and Mokowe. The administrative units can be summarized as shown in the table below

Table 6: Administrative Units

Sub-County	Division	Land Area (Km^2)	No. of Locations	No. of Sub-Locations
Lamu West	Amu	99.7	4	6
	Hindi	1150.8	2	4
	Mpeketoni	1727.7	6	10
	Witu	975.4	2	4
Lamu East	Faza	79.2	4	6
	Kizingitini	17.7	3	4
	Kiunga	2222.6	2	4
Total		**6273.1**	**23**	**38**

Source: County Commissioner's Office, Lamu, 2013

The county has 2 Sub Counties namely: Lamu West with 7 County Assembly Wards and Lamu East with 3 County Assembly Wards.

5.2 ENVIRONMENTAL BASELINE SURVEY

5.2.1 Physiography and Geology

The project area is normally flat with vertical elevation ranging from zero to 50m above sea level. The main topographical features include coastal island and Dudol plains, sand dunes and the Indian Ocean. The landform/topography is higher level coastal plain, consisting of mostly flat to slightly undulating (0-4%) relief. The terrain is made up of spontaneous geological depressions which are filled with water at times during rainy seasons and periods of high tides. Sections with such depressions have been given special attention during design and will continue during construction and future maintenance.





Plate 5.1: Showing the flat low lying terrain (a and b), and coastal flat (c) and depression that is seasonally inudated cutting off the access road

5.2.2 Soils

The soils are imperfectly drained, very deep, brown, very firm, sandy loam to sandy clay loam, abruptly underlying a thick topsoil of friable loamy sand and with a slightly to moderately sodic deeper subsoil, with inclusions of many small bottomlands. The surface is covered by grassed woodland vegetation consisting. The top soils are average to high in organic matter content and of average infiltration capacity. The erosion condition is stable due to flat topography, dense vegetation and grass cover. Where it borders bottomlands, the unit is subject to seasonal ponding and waterlogging. The soil pH is lightly acidic with pH of 6.2 and faily alkalinic of with pH 8.26.





Plate 5.2: Showing different soil conditions along the project road.

5.2.3 Climate

The project area falls under agro-climatic zones IV, V and VI which are classified as semi-humid to semi-arid, semi-arid, and arid respectively. The rainfall distribution is bimodal with the long rainy season occurring between the months of March to May with a peak in April, while the short rainy season is from the month of October to December with a peak in November. The relative humidity is high in the coastal areas but rather low within the mainland.

5.2.4 Air Quality

The study area is sparsely to moderately populated, undeveloped and more or less in a rural setting. There are very few diffuse source and industrial centers (point source), which may contribute to air pollution. One of the prominent centers is Lamu Port. The project area falls under the semi-humid to semi-arid and arid climatic zones, it has fairly thick vegetation cover comprised of bush land, bushy grassland, which play a very critical role in filtering the air and blocking the strong on-shore winds. However, the study area is not completely devoid of natural particulate air pollution as a result of the vehicles and motor bikes traversing the area.

In addition, herds of grazing animals especially such as cows contribute to minimal air pollution as they raise dust in the course of movement from one point to another. In general, the air pollution occurring in the area is localized, transient and of negligible impact

5.2.5 Surface and Groundwater Resources

Water being utilized by County residents are obtained from ground, surface and sea water (desalination of sea). The ground water sources mainly boreholes supply the bigger chunk of water consumed. Surface fresh water sources are mainly lakes e.g. Lake Kenyatta (Lake Mkunguya) and Lake Amu serving people of Hindi/Magogoni, water marshes of Ziwa la Roka, Ziwa Gambi, Ziwa Kiboko, and Ziwa Kambe. Rainfall dependent rivers such as Wange, Duldul, Arosen and Dodori. The numerous bottomlands inundated provide a crucial source of water for the resident and their livestock and numerous household shallow boreholes.

The water supply systems within Lamu County are managed by different institutions e.g.

- Lamu Water and Sewerage Company in charge of Mokowe and Lamu water networks
- Lake Kenyatta Water Association supplying water to residence of Mpeketoni Division,
- Hindi /Magogoni Water Association managing water networks within Hindi Division
- Witu User Association manage water supplies in Witu division
- ENI Kenya B.V in partnership with County Government /Ministry of Energy and petroleum supply bottled(mineral) water to entire county residences after desalination
- Community committees managing their respective community boreholes.



Plate 5.3: A drying water pan and Hindi/Magogoni Water Users Association Offices in Hindi, inundated bottomland and a household shallow borehole.

5.2.6 Terrestrial/ Aquatic Environment: Flora and Fauna

Several habitat types were recorded and common species observed were recorded and documented as follows.

5.2.6.1 Grasslands

The grasslands present are chiefly natural and pristine. However, an occasional traditional burning of the grasses is practiced by the local community. Seasonal flooding and poorly drained soils are important factors in maintaining the natural grass. A variety of grassland associations occur, especially around heavy black clays dominated by *Echinochloa haploclada* with *Bothriochloa glabra*, *Setaria spp* and other less common species. Along the coastal plains, mangroves, and sand dunes, a salt tolerant grassland type occurs which is dominated by the tough spiky *Sporobolus spicatus* occurring with *Sueda monoica* and *Batis maritima.*



Plate 5.4: Grassland habitat within the project area

5.2.6.2 Coastal Tidal Environment

As section of the lower project area is influenced by the influx of ocean water during periods of high and spring tides. The ecosystem that is characterized by sandy, salty clay is dominated by species such as *Arthrocnemon indicum* commonly known as Ushanga jangwa, *Lepturus repens*, *Ceriops tagal* (yellow mangrove) and *Avicennia marina* (white mangrove) and *Bruguiera gymnorrhiza* (black mangrove).



Plate 5.5: *Avicennia marina* (white mangrove) and *Arthrocnemon indicum*

5.2.6.3 Palm-bushed grassland

Palm-bushed grassland areas tend to be found in sandy well drained bottomland areas and/or where the water table is high. This kind of vegetation was a common feature along the traverse. The dominant palm was *Hyphaene coriacea.* Other species include *Terminalia spp, Grewia sp, Indigofera, Acacia sp* and *Dichrostachys cinerea.*



Plate 5.6: Palmed grassland habitat at various sections of the project road

5.2.6.4 Disturbed Sites

A large section of the project area falls within an area which was under farmlands. Some of the farms have been abandoned though several are under different types of crops (cow beans, finger millet, maize, black beans) and agro forestry-based trees such cashew nuts, casuarina, and mangoes. Other sites have been colonized by castor plant *(Ricinus communis), Indigofera sp, Crotaralia sp,*





Plate 5.7: Areas that have been converted into farmlands and put under (a) cashewnuts *(Anacardium occidentale)* and (b) Casuarina *(Casuarina equisetifolia)* and finger millet

5.2.6.5 Seasonal Swamps/ Bottomland Areas

A majority of rivers in the study area are seasonal intermittent, leading to the formation of vast areas of seasonal swamps / bottomland areas. The formation of these swampy habitats could be linked to geological processes. Seasonal flooding and poorly drained (heavy black soils) soils are important factors in maintaining the natural grasslands.

The inundated areas are utilised for livestock grazing. The ponds are covered with aquatic grass species *(Echinochloa haploclada*, and *Bothriochloa bladii)*; *Setaria splendida and* sedges Floating macrophytes include the Nile Cabbage *(Pistia stratiotes), Azolla nilotica*, water lily *(Nymhaea lotus)*, *Lemna* spp and *Hydrophila auriculata*. The sites have a variety water fowls such as the open billed stork, Egyptian geese, woolly necked stork, and grey heron among others.





Plate 5.8: Inundated areas colonized by water lily *(Nymhaea lotus),* Lemna sp, hornworts and *Hydrophila auriculata*

5.2.6.6 Terrestrial Fauna

Due to the disturbed nature of the project area only a few mammal species are found around the project site namely baboons, warthogs, and hippos that forage around the site from the Hindi Swamp. Mongooses are also common as indicated by the presence of their scant.



Plate 5.9: Mongoose scant

The inundated bottomlands are also habitat to a variety of birds' species



Plate 5.10: Waterfowls at one of the bottomlands

5.2.7 Land Use and Resources

The county has land surface area of 6273.1km^2 composed of 5517 km^2 of arable land 649.7 km2 of non-arable land, 130km2 of coastline and 308 km2 under water mass. Lamu West where the project lies has surface area of 3971.3km2 taking the bulk of 63.3% of total land, leaving Lamu East with 36.7%. Kiunga division in Lamu East occupies 96.6% of Lamu Eastland surface area. Due to the physiographic climate and other natural conditions, the county is made of two broad economic zones covering the mainland for agriculture and livestock keeping and Islands for marine activities. The larger chunk of agricultural land resources is found within Lamu West Sub County as the Lamu East is predominant of water mass. Depending on physiographic and prevailing climatic conditions, the county has 5 Agro-Ecological zonings namely Coastal lowlands, Coconut Cassava zone, Cashew Nut-Cassava zone, Livestock, millet zone and Lowland ranching zone.







Plate 5.11: Shows farm under (a), cotton, (b) kitchen garden with spinach, kales and capsicum, (c) farm under cow peas, (d) farm under maize and (e) cows

5.3 SOCIAL-ECONOMIC BASELINE SURVEY

5.3.1 Social Characteristics

5.3.1.1Population

According to 2012 demographic forecast, the total number of persons living in Lamu County was 112,251, comprising of 58,641 males and 53,610 females. Using inter-census growth rate of the County as 3.34 per cent, the population was projected to be 124,092 and 137,180 by the year 2015 and 2017 respectively. The Table below shows the projected population by density and composition based on 2009 census done by Kenya Bureau of statistics.

Table 7: Population Projections for selected Age Groups within Lamu County

Age group	2009 (Census)			2012 (Projections)			2015 (Projections)			2017 (Projections)		
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
Under 1	1,597	1,578	3,175	1765	1744	3,510	1952	1928	3880	2087	2062	4148
Under 5	8,038	7,681	15,719	8886	8491	17377	9823	9387	19210	10503	10036	20539

Primary school Age (6-13)	10,832	10,498	21,330	11975	11605	23580	13238	12830	26068	14153	13717	27870
Secondary school Age (14-17)	4,593	4,151	8,744	5078	4589	9666	5613	5073	10686	6001	5424	11425
Youth population (15-29)	14,897	13,577	28,474	16468	15009	31478	18206	16593	34798	19465	17740	37204
Reproductive age – female (15-49)	-	22,843	22,843	-	25253	25253	-	27917	27917	-	29847	29847
Labour force (15-64)	29,619	26,044	55,663	32743	28791	61535	36198	31829	68026	38,700	34029	72730
Aged population (65+)	1,822	1,668	3,490	2014	1844	3858	2227	2038	4265	2381	2179	4560

Source: Kenya National Bureau of Statistics, 2013

5.3.1.2 Education

The county has 150 Early Childhood and Development (ECD) Centers, namely 132 in Lamu West and 18 in Lamu East. There are 92 primary schools, 71 in Lamu West and 21 in Lamu East. The County has 19 secondary schools with 16 in Lamu West and three in Lamu East. There are two youth polytechnics in the county namely Mpeketoni Polytechnic and Lamu Youth Polytechnic that was lately constituted as a constituent college of Mombasa Polytechnic. The county has no university but land has been set aside for two proposed universities.



Plate 5. 12: Photo of a school boy riding into Hindi primary school

5.3.1.3 Housing

The housing aspect within Lamu County can be categorized based on the materials used to construct them. Most of the houses are either mud or wood walled with roofed Makuti or corrugated iron sheets. Floors within the rural set up are bare earth materials, the town or urban set up have cemented/tiled floors.



Plate 5.13: Photos showing Housing styles within Hindi/Magogoni centre

5.3.1.4 Land tenure system

Land tenure system in Lamu County is not well defined because most of the land parcels have got no land owners with title deeds (unregistered). The project road traverses through settlement schemes such as Hindi/Magogoni Phase 1 and 2.

5.3.2 Economic Settings

The main economic activities under taken with in the county are agriculture, mining, cottage, Fisheries industries and tourism.

5.3.2.1 Agriculture

Is predominantly practiced within mainland, the agricultural actives carried out are mainly agroforestry, mixed cropping, mixed farming and livestock keeping. The agricultural activities are majorly carried out by small scale farmers for both cash crops and food crops. Main food crops grown are maize, sorghum, cow pees, green grams, d. lablab, rice and cassava. Cash crops are cotton, Sim Sim, coconut, cashew nuts, bixa, vegetables and mangoes. Horticulture is also a major enterprise in the County producing vegetables such as amaranth, kales, tomatoes and capsicums. Fruits crop such citrus and bananas are also grown for both local market and other markets. The proposed project is going to have positive impacts to farmers within Mokowe and Hindi/Magogoni because they will transport their farm inputs and out puts to preferred destinations conveniently.



Plate 5.14: Photos showing cotton, mango, spinach, capsicums and kales et al (Mixed Cropping)

5.3.2.1.1: Livestock Production

Livestock keeping is a major economic activity to locals within Mokowe and Hindi/Magogoni locations. The herders keep variety of livestock such cattle, goats, sheep and poultry. According to Lamu County Government profile 2017, livestock population was estimated at 646,782 as shown in the Table below.

Table 8: Livestock Population in Lamu County, 2017

No.	Types of Livestock	Heads
1.	Zebu Cattle	173,794
2.	dairy cattle	8549
3.	H/goats	136,597
4.	Chicken	310,760
5.	donkeys	5425
6.	Beehives	7557 hives
7.	Rabbits	4100

Source: Lamu County Government profile, 2017



Plate 5.15: Evidence of livestock herding within the proposed project corridor

5.3.2.2 Tourism

Tourism is one of income generating activity carried out within Lamu County. It's a tourist destination influenced by rich diversity of cultural heritage, home to several world heritage sites, fauna and flora. For instance, Lamu Old Town being the oldest and best-preserved Swahili settlement in East Africa with its retained traditional functions attracts a lot of tourists both domestic and foreign. There are three 3 national reserves e.g. Boni, Kiunga Marine and Dodori, two national parks and three private ranches which are home to several species of wild animals attracting tourists. Tourists are accommodated at 2 classified hotels and 181 unclassified hotels with a total bed capacity of 1881.The classified hotels attract high market clientele. With its 130 km of sandy beach coastline and diverse tourist attractions a lot of foreign exchange is earned.

5.3.2.3 Mining

Lamu County is endowed with minerals such as Titanium, Salt, Limestone, Natural Gas, Coral Stones and Sands. Multi-billion oil and gas exploration activities have been going on in Faza Ward, Lamu East Sub County.

5.3.2.4 Labour force

According to Lamu County integrated development plan 2013/2017, the productive population i.e. people aged from 15-64 years were 61,535 persons accounting for 54% of the total county population by 2012. Expressed by gender distribution, 32,743(52%) persons were male while females were 28,721(48%). The dynamics in cultural and religious beliefs favored the formal employment of Male gender as the females are mostly

engaged in domestic chores. In general, the labour force is usually unskilled because county residents lack desired level of education for skilled work. This can be attributed to limited or inadequate learning institutions and poverty level which hinder them from seeking education/training outside the county.

5.3.2.5 Commerce and Industry

There are no manufacturing industries part from small scale cottage industries dealing with baking, flour milling, oil processing and art and crafts.

According to Lamu County development plan 2013/2017, in 2016 there were 857 registered small-scale traders and 29 whole registered wholesalers operating within the county trading centers such as Lamu town, Faza, Shela, Mpeketoni, Hindi, Mokowe, and Witu. The commercial banks functioning within the county are Kenya Commercial bank, Gulf bank, ABC bank, Equity bank, Cooperative and Diamond trust bank. Micro fining institutions are also available such as Lamu Teachers SACCO.

5.3.3 Health Settings

There are 42 health facilities, 24 government owned, 3 owned by faith-based organizations, 1 NGO owned and 14 private institutions composed of 3 level five facilities, 5 health centers, 1 nursing home and 33 dispensaries with a total bed capacity of 172 beds. The average distance to the nearest health center is approximately 5 kms. The facilities close to project area are Mokowe Health Centre, Hindi Magogoni Dispensary, Hindi Prison Dispensary, Mpeketoni Sub District Hospital and King Fahad Hospital on Lamu Island. During project implementation period workers can seek medical attention to the nearest facility depending with the level of the need. The completion of the road will enhance the access of medical services across the county.

Lamu County is one of 15 Counties that account for over 60% of maternal deaths in Kenya. According to WHO Fact sheet 2016, the latest estimate of the County's maternal mortality ratio (MMR) is 676 deaths per 100,000 live births. As per the 2017 Lamu County Government profile, Malaria accounts for 63.3% of illness in the county as majority do not sleep under treated nets.



Plate 5.16: Photo of King Fahad Hospital (outer view and radiology Section)

5.3.4 Security and Public Safety

In the recent past (2005) the coastal counties were relatively security friendly and there were few cases of banditry or other forms of insecurity. The Kenya Integrated Household Budget Survey (KIHBS 2005) indicated that 69 per cent of the population felt very safe while only 10 per cent of the Counties' population felt unsafe. This compares well with the rest of the country where only 34 per cent of the population felt safe. However, Lamu County has become unsafe more so the non-locals following numerous cases of invasions by local and external Al-Shabaab extremists. Several non-locals and security officers have been wounded and killed by al shabaab militants in Lamu County for instance, the killing of a woman and injury of five police officers in an ambush at Nyongoro on the Lamu-Garsen road, killing of over 30 police officers in different attacks between May and November 2017, destruction of Pandanguo Police Post and the recent killing of 5 and wounding of 6 KDF soldiers after their vehicle ran over a homemade bomb between Bodhei area, Boni.

To enhance public safety and security, security camps have been established in all hotspots prone to Al-Shabaab attacks on the road e.g. at Milihoi, Nyongoro, Lango la Simba and Mambo Sasa.The project area is safe due to heavy presence of KDF Solders and US marine who has set up military camp at Monday Bay. The KDF soldiers are frequent users of the Access road making it safer for carrying out construction activities.

Other incidences of insecurity, assault and bhang smoking were reported and on the increase. These are a major cause of concern to the security agencies and community in general.

CHAPTER 6.0 ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT

6.1 INTRODUCTION

This chapter outlines the potential negative and positive impacts that will be associated with the project. The impacts will be related to activities or operations to be carried out during its life stages i.e. Construction, operation and decommissioning. The impacts are grouped into impacts on physiography and geology, soils, climate, air quality, surface and groundwater resources, terrestrial/ aquatic flora and fauna, public health and safety.

6.2 PROJECT ENVIRONMENTAL AND SOCIAL POTENTIAL IMPACTS

6.2.1: Positive impacts (Environmental, social and economic*)*

During construction

- Creation of employment opportunities-during construction, several temporary opportunities will be created for both skilled and non-skilled citizens. This will help in reducing the rate of unemployment in the county.
- Enhance trade – Large quantities of construction materials such as road fill aggregates will be outsourced within the locality and the neighboring counties, other players such as industries, enterprises and local vendors will be attracted to serve the workforce due to availability of ready market.
- Skills transfer- The skills and experience by locals during the construction period will be gained through apprenticeship, internships, on job training and work experience.

During decommissioning

- Decommissioning activities such as restoration of material sites will improve the aesthetic value of the areas and alongside recruitment of demolition staff.

During operational stage

- Once completed, the road will enhance the achievement of Government's agenda four initiative; for instance, goods from the port will easily be evacuated to their destinations where they are demanded, locals from Hindi/Magogoni and Mokowe locations will have improved access to nearby health facilities.
- Increased revenue collection-county and national governments will collect more taxes from traders who will be setting business along the Access Road.
- Reduction of dust emissions; Once completed, there will be no dust emissions as hauling vehicles will be using the paved surfaces hence improving the air quality unlike the current situation where a lot of dusts are emitted by moving vehicles during drying spell.
- Comfort and road safety will be enhanced

- Low vehicle maintenance and operation costs to owners

6.2.2. Negative Impacts and Mitigation Measures

6.2.2.1 Soils

Impacts

i. **Increase in soil erosion**
   - The majority of the soils in the project corridor are loose sandy and sandy-loam soils that are susceptible to soil erosions, project operations such as bush clearing and excavations may lead to increased soil erosions.

ii. **Soil compaction**
   - Moving heavy machines/trucks during construction will cause compaction of soil particles hence reducing water holding and percolation capacity.

iii. **Loss of soil fertility**
   - Loss of organic matter as result of vegetation clearance, removal of top soil and subsequent soil erosion is likely to occur.

Mitigation Measures

i. Confining project operations such as earthworks, excavations and bush clearing to the road corridor to avoid exposing adjacent soils to agents of soil erosion
ii. Proper installation of drainage structures to channel storm water to the nearest natural catchments.
iii. Stabilizing road embankments and progressive re-vegetation of developed sections and areas incidentally cleared.
iv. Heavy machines/truck movements that may cause soil compaction will be restricted within permitted working corridor.
v. Drivers /operators will be sensitized on sustainable machine operations such as keeping off vegetation within project corridor and access roads to material sites.

6.2.2.2 Climate

Impacts

i. Use of fossil energy such as diesel will increase the rate of greenhouse gas emissions into the atmosphere thus increasing global warming**.**

Mitigation Measures

i. Efficient use of fossil fuels

ii. Planting of more trees to absorb (carbon sink) greenhouses such carbon monoxide being emitted by machines/trucks

Residual Impacts

i. Transit trucks carrying cargo from the port will cause persistent emissions of greenhouse gases and particulate matter above the recommended ambient levels resulting into climate change and localized pollution of air within Mokowe and Hindi/Magogoni.

Recommendations

The county government of Lamu, LAPSSET Corridor Development Authority and the Kenyan National Government should come up with integrated Climate Action Plan that will be effective in addressing climate change/global warming.

6.2.2.3 Air Quality

Impacts

i. Dust emissions

- Dusts will be generated within the project corridor due to construction activities and moving machines.

ii. Exhaust emissions

- Heavy machines and hauling trucks which use fossil power will be used during construction phase, thereby emitting exhaust gases such as carbon dioxide, nitrogen dioxide and particulate matter into the air.

Mitigation Measures

i. Use of wet crushing technology at quarries, scarifying with water at borrow pits and diversions /detour spots to be sprayed (damping) with water to combat dusts emissions.

ii. Use of machines/trucks efficient in fuel consumption, no idling of machinery and vehicles with engines running.

6.2.2.4 Surface and Groundwater Resources

Impacts

i. **Increased utilization of water resources**
   - There is water scarcity within project area as it's dominated by ocean water and construction activities will require large quantities of water, this is likely to constrain limited fresh water resources.

ii. **Water use conflicts**
   - Water use conflicts are likely to occur when local communities and the contractor scramble for constrained fresh water resources.

iii. **Accident spillages**
   - Incidental oil spills, leakages or release of potential contaminants such as fuels, may find their way into nearby surface water resources (ponds) and shallow boreholes.

Mitigation Measures

i. The contractor will look for alternative means like drilling boreholes to supply water needed for construction works in consultation with Water Resources Authority.

ii. Contractor will avoid abstracting water from community fresh water resources in addition to drilling some boreholes for exclusive use by host communities.

iii. Spillages or leakages of oil will be remediated immediately using appropriate absorbent material to prevent their entry into water resources.

6.2.2.5 Terrestrial/ Aquatic Environment: Flora and Fauna

Impacts

i. **Vegetation Clearance**
   - The vegetation of the area is composed of wooded grasslands, shrubs and woodlands. At least a span of 50metres from the center line on either side of the road is going to be cleared.

ii. **Habitat destruction**
   - Sections of vegetation to be cleared along the traverse is currently inhabited by wildlife (various organisms such as birds, reptiles among others).

Iii **Disturbance of Flora and Fauna**
   - Construction activities (such as dust, noise & movement of machinery and human activity) are likely to be nuisance to wildlife.

Mitigation Measures

i. The contractor will avoid unnecessary bush clearing.
ii. Progressive re-vegetation of completed sections will be practiced.
iii. Compensatory tree planting will be done.
iv. Biological stabilization of road embankments will be carried out.
v. Dust, noise and other effects resulting from construction activities will be suitably managed and appropriate guidance followed.

Recommendations

Planting of trees, grasses and shrubs should be done just before the onset of rains

6.2.2.6 Land Resources

Impacts

i. Change in land use or land scape when land is acquired for campsites, storage of bulk construction materials, material sites and other workers facilities.

Mitigation Measures

i. Temporary campsites, storage compounds and other facilities will be located on areas that cause minimal disturbance to existing land use(s) pattern, this will be done with collaborative consultation with land owners.
ii. In case of ground contamination, ground remediation will be carried out as per the contaminants.
iii. The borrow pits will be rehabilitated as per the borrow pit rehabilitation plan.

Residual Impacts

i. The borrow pits may not be reclaimed to its original productive trajectory causing permanent change on land use

Recommendations

Progressive rehabilitation and value addition programs e.g. converting them into water pans, botanical gardens or animal sanctuaries is recommended to enhanced environmental sustainability.

6.2.2.7 Visual Aesthetics

Impacts i. Disruption to land scape character or value through construction activities (campsites, machines, borrow pits)
Mitigation Measures **i.** Construction operations such as housekeeping will be carried out according to best practices and existing vegetation outside working corridor will be fully protected.

6.2.2.8 Noise and Vibrations

Impacts i. Movement of heavy trucks, braking, hooting and vibrating machines are likely to cause sound pollution within construction site and surrounding environment.
Mitigation Measures i. Machine operators /truck drivers to be sensitized on safe driving to avoid unnecessary braking or hooting. ii. Tress along the traverse not within carriageway will be not be cut as they will act as sound absorbers. **iii.** Provision of PPEs (ear muffs) to operators working with noisy machines.

6.2.2.9 Solid and Liquid Wastes

Impacts **i. Waste generation** • Construction and decommissioning operations are likely to generate solid wastes such as spoils, packaging, garage/workshop e.g. tires and wastes from campsites. • Liquid wastes such as used oil, hydraulic fluids, coolants and waste water from campsites are like to be generated.
Mitigation Measures i. Waste management hierarchy; prevention, reuse, recycling, recovery (if possible) and safe disposal shall be applied. **ii.** Management of wastes generated to be in line with provisions given in Waste Management Regulation, 2006.

6.2.2.10 Social Characteristics

Impacts

i. Intrusion of foreign cultural settings

- Influx of population from foreign places is likely to cause acculturation that will interfere with the indigenous cultures within Hindi/Magogoni, Mokowe and Lamu County**.**

Ii Increase and spread of sexually transmitted infections

- Influx of people from different regions (with different prevalence rates of STDs such as HIV/AIDs) is likely to cause increase STDs infections within project locality.

Mitigation Measures

i. The contractor will employ community liaison officer who will ensure that indigenous cultural groups and values are protected and preserved.

ii. Negative vices likely to change local people's way of lives will not be tolerated and appropriate measures will be taken.

iii. Sub-contractor will be contracted to enforce HIV/AIDS mitigation measures.

7.0 **PUBLIC CONSULTATION**

Public consultation was carried out during ESIA study process to comply with Environmental Management and Co-ordination Act (Cap. 387), Environmental Impact and Audit Regulations 2003, Constitution of Kenya 2010 and international best practices/policies. During this process the views or concerns of stakeholders were gathered.

Objectives of public participation

The general objectives of the consultation and public participation were to:

1. Disseminate and inform the stakeholders about the project with special reference to its key components and location.
2. Create awareness among the public on the need for the ESIA for the proposed project.
3. Gather comments, suggestions and concerns of the stakeholders, involving them in identification of issues and concerns and the development of mitigation measures based on their indigenous knowledge.
4. Incorporate the information collected in the ESIA study.
5. Establishment of Communication channels between stakeholders.

Methodology Used

The Stakeholders were involved through consultative meetings alongside administration of questionnaires. Meetings were held with Deputy County Commissioner- Lamu West Sub County, Assistant County Commissioner- Hindi Division and Boda Boda riders plying the prosed project route.



Plate 6.1: Meeting at the ACC-Hindi Division's Office

Table 9: Summary of Public Consultation

Respondent	Tel. No/	ID/No	Benefits of the Project	Impacts of the current State of Road	Negative impacts of the projects and Mitigation measures	Community participation in the project	Any other comment
KEY STAKEHOLDERS							
Louis Ronoh	0724758431	9886870	• Ease the transportation of cargo from Lamu to other areas in the country. • Open up Lamu for new investors • Reduction in prices for commodities since transportation cost will be lower.	• Insecurity cases • Lack of heavy vehicles for transportation of commodities because of poor roads.		• Community members to be part of project implementing team	• Ensure short construction timelines to enable quick empowerment of the project area.
Jamal Kea	0700688555	22408239	• Easier transportation of cargo from Lamu port • Creation of job opportunities to the community by the contractor.	• Inaccessible although it's a short trench to the new port area	• Emission of dust during construction • Sprinkle water to reduce the amount of dust.	• Provision of available jobs to the locals.	• Road design to consider erection of speed bumps and safe Livestock crossings

Respondent	Tel. No/	ID/No	Benefits of the Project	Impacts of the current State of Road	Negative impacts of the projects and Mitigation measures	Community participation in the project	Any other comment
Ahmed M Lausi	0726803165	5354732	• Creation of job and business opportunities	• Existing road is narrow hence need for its expansion.	• May increase accident cases • Erection of speed bumps.	• Offer casual jobs to the community.	• Consider erection of speed bumps
Alex Karisa	0729703518	12728500	• Creation of job opportunities • Improvement of transportation • Improvement of security • The area will be more developed	• Presence of pot holes • Muddy during rainy seasons • Some sections of the road are swampy thus hold water during rainy season.	• Emission of dust: • Sprinkle water to reduce dust emission during construction phase.	• Both the skilled and non-skilled youths to be given priority when recruiting workforce.	• Contractor to have favourable working conditions more so on employees' welfare.
Johnson Balozi	0725234654	11374517	• Enable convenient, cheaper and faster transportation. • Booming of business • Kiongoni area will be more developed	• Cutting of road during rainy season • Muddy/ silting during rainy season • Difficulty in movement at night • Wildlife attack such as buffaloes		• Provision of employment opportunities to youth and women.	
Abio Tsmar	0797912876	35280567	• Easier Transportation of cargo from Lamu port • Creation of job opportunities	• Existing road is narrow for expected capacity of vehicles	• Emission of dust		
Edward Ngalla	0743730110	23445439	• Improvement of trade • Enhance	• Rough road with pots holes which make it muddy		• Goods and services needed during project	

Respondent	Tel. No/	ID/No	Benefits of the Project	Impacts of the current State of Road	Negative impacts of the projects and Mitigation measures	Community participation in the project	Any other comment
			convenient transportation of goods and services • Reduce crime incidents on Boda Boda operators.	and slippery during rainy season. • All bushy encouraging crimes and insecurity.		implementation should be outsourced locally e.g. catering services	
Lylian Manga	0704662479	25030947	• Faster and easy transportation hence saving on travel time • Create conducive environment for business opportunities	• Swampy/ water ponding on some parts of the road. • Rough road that becomes muddy during rainy season.	• Population influx that may lead to spread of STDs; • Ensure presence of awareness campaigns against STDs. • Cutting of tree. • Tree planting once the road is completed.	• Provision of employment to youths and women during road construction • Allow locals to be involved in construction via business and employment.	• Provision of Livestock crossing routes • Enact ways to contain wildlife (buffaloes) encroachment
Peter Mwaura	07 26572443	0164487	• Ease travelling • Creation of business and job opportunities	• Narrow road	• Accident cases since it will be new road to locals	• Engage the host communities through the local administration such as chiefs	• Erection of speed bumps to control crashes.
Kiplangat Stephen	0790286682	33676904	• Improve trade within the area • Creation of job opportunities to area youths. • Improvement of project area to a residential	• Incidence of insecurity cases • No job opportunities due to poor roads	• Accidents to local labourers because of Illiteracy level on use of construction machines. • Local labourers	• Public participation through chief baraza to ensure community acceptance and support.	• Rehabilitation of access roads lining the major institutions. • Land/property compensation to the project

Respondent	Tel. No/	ID/No	Benefits of the Project	Impacts of the current State of Road	Negative impacts of the projects and Mitigation measures	Community participation in the project	Any other comment
			one due to road network and economic impact within Lamu area.		to be trained or ensure hiring of qualified human labour.		affected persons if there shall be.
Stephen Masha	0718216651	26180059	• Easy transportation • Creation of more business opportunities • Improvement of standards of living	• Rough road that is muddy and slippery during rainy season • Bushy resulting to poor visibility	• Cutting of trees during bush clearing. • Compensatory tree planting.	• Allow locals to carry out business within project corridor • Employment of local labour	
Bakari	0721393270		• Facilitation f transportation of farm produce to other markets. • Improvement of business • Create conducive environment for external investors	• Frequent breakdown of vehicles leading to high maintenance cost. • Narrow road	• Increase of accidents due to over speeding. • Engage traffic police and erect speed bumps.	• Unskilled jobs be prioritized to the community members.	• Ensure short timelines for construction of access road.



Plate 6.2: Public consultation; Boda Boda operators within Kililana

CHAPTER 8.0: ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

8.1 INTRODUCTION

This chapter covers Environmental and Social Management Plan (ESMP) for proposed upgrading of the access road to bitumen standards. It provides workable/practical strategies through which the envisaged negative environmental and socio–economic impacts are going to be mitigated and monitored. The ESMP was prepared based on prevailing baseline conditions, evaluation of the environmental and social aspects of project activities while bench marking on environmental and social framework practices in different ongoing and completed projects. The ESMP is flexible and covers all the projects life cycle (design, construction, decommissioning and operation) and assigns responsibilities of action to be taken by various stakeholders.

8.2 OBJECTIVES OF THE ESMP

1. To ensure that the project operations are in compliance with applicable national environmental and social regulations and international best practices in management and coordination of environmental and social issues.
2. To identify likely environmental, social and safety risks and impacts due to project implementation and related activities.
3. To propose remedial or corrective measures to risks and negative impacts that will be enforced throughout projects life cycle.
4. To propose institutional arrangements, applicable Legislation / Regulations, incorporate roles and responsibilities of various stakeholders required to implement and monitor the ESMP

8.3 LIST OF COMPONENTS TO BE ADDRESSED INCLUDE

Components to be addressed include

1. Physiography and Geology
2. Soils
3. Air Quality
4. Surface and Groundwater Resources
5. Water Quality
6. Terrestrial Environment (Habitats, Flora, and Fauna)
7. Land Resources and National Parks
8. Archaeological, Historical and Cultural Sites
9. Visual Aesthetics
10. Noise and Vibrations
11. Solid and Liquid Wastes

12. Social Characteristics
13. Economic Characteristics
14. Occupational Health and Safety
15. Security and Public Safety
16.

8.4 ROLES, RESPONSIBILITIES AND TRAINING

8.4.1 Duties of the Proponent

It will be the duty of the KeNHA as the proponent to ensure that the project complies with compliance obligation measures put in place as specified by the law, regulations or policies. The specific duties include;

- Handing over the site to the Contractor for implementation of the project and defining the area of the site, which may be occupied by the contractor as campsites.
- Funding the project through GoK development funds
- Acquiring the NEMA license for upgrading of the Access road
- Monitoring and evaluating the environmental, social and safety performance of the project
- Strengthening stakeholder participation through functional stakeholder engagement plan and grievance redress mechanism.

8.4.2 Duties of the Contractor

- The contractor has the duty to comply with all the legal, policy and institutional frameworks linked to the project.
- Prepare and maintain an approved time and progress work-chart, showing clearly the period allowed for each section of the work.
- To comply with all regulations and by-laws of the local authority including serving of notices and paying of the fees.
- To obey the rights of workers during the night, public holidays and any other time when no work is being carried out on-site, the contractor shall accommodate only security personnel.
- The contractor shall make compensations for any damage he may cause to the public, environment, private roads, drainages and pavements in the course of carrying out the road work.
- Integrating all recommendations given in ESIA report, enforcing the implementation of ESMP and obtaining NEMA license for all the material sites.

- The contractor shall make his own arrangements for sanitary conveniences for his workmen. Any arrangements so made shall be in conformity with the public health requirements for such facilities and the contractor shall be solely liable for any infringement of the requirements.
- Bearing the responsibility or liability of any action taken by the sub-contractors.
- The contractor shall take all possible precautions to prevent nuisance, inconvenience or injury to the neighboring properties and to the public generally, and shall use proper precaution to ensure the safety of wheeled traffic and pedestrian.
- All work operations which may generate noise, dust, vibrations, or any other discomfort to the workers and/or guests of the client and the neighbors must be undertaken with care, with all necessary safety precautions taken by the contractor.
- The contractor shall take all effort to muffle the noises from his tools, equipment and workmen to not more than 80dBA.
- The contractor shall upon completion of working, remove and clear away all plant, rubbish and unused materials and shall leave the whole site in a clean and tidy state to the satisfaction of the Proponent. He shall also remove from the site all rubbish and dirt as it is produced to maintain the tidiness of the premises and its immediate environs.
- No blasting shall be permitted without the prior approval of the proponent and the local authorities.
- Borrow pits will only be allowed to be opened up on receipt of permission from the proponent
- The standard of workmanship shall not be inferior to the Kenya Bureau of Standards and/or current British codes of practice where existing. No materials for use in the permanent incorporation into the works shall be used for any temporary works or purpose other than that for which it is provided. Similarly, no material for temporary support may be used for permanent incorporation into the works.
- The contractor shall maintain good working relationship with the community and implement the stakeholder engagement plan and the grievance redress mechanism.

8.5 AUDITING AND MONITORING

The structure of the Environmental and Social Management Plan and areas of concentration to be addressed is outlined in the table below.

Table 10: ESMP Structure

Parameter	Indicators	Impacts	Frequency of Monitoring	Means of Verification	Mitigation Measures	Responsibility	Cost estimates
Air Quality	• Construction related dust levels within the project area • Exhaust fumes from construction machines/trucks/vehicles • Deviation from air quality standards	• Fugitive dusts and exhaust fumes emissions	Every 2months	• Visibility of fugitive dusts/exhaust fumes • Frequency of watering deviations • Air quality parameters are within permissible Limits	• Sprinkling of water to limit dusts • Vehicles will be serviced regularly • Buying fuel efficient machines/trucks	Contractor	
Soils	• Bear land • Sediments and debris build up • Increased turbidity of nearby water sources or pockets of pond water around • Public Complaints on storm water	• Soil erosion/Loss of top soil	Weekly	• Number of constructed drainage structures	• Confining project operations such as earthworks, excavations and bush clearing to avoid exposing adjacent soils to agents of soil erosion • Proper installation of drainage structures to channel storm water to the nearest natural	Contractor	

Parameter	Indicators	Impacts	Frequency of Monitoring	Means of Verification	Mitigation Measures	Responsibility	Cost estimates
					catchments. • Stabilizing road embankments and progressive re-vegetation of developed sections and areas cleared unintentionally	Contractor	
	• Visible demarcation of vehicles and equipment limit zone	• Soil Compaction due to movement of vehicles to site and stacking of heavy-duty equipment	Weekly	• Observed hard pans of soils	• Heavy machines/truck movements that may cause soil compaction will be restricted within permitted working corridor. • Drivers /operators will be sensitized on sustainable machine operations such as keeping off vegetation within project corridor and access roads to material sites.		

Parameter	Indicators	Impacts	Frequency of Monitoring	Means of Verification	Mitigation Measures	Responsibility	Cost estimates
	• Leaking oil/diesel from machines/trucks • Intrusion of oil/diesel into the soil.	• Soil degradation due to oil/diesel spillage	Weekly	Change in soil colour and texture	• Ensure fastening of loose parts (bolts, nuts) to prevent leakages	Contractor	
Noise and Vibrations	• Noise levels • Intensity of machine vibrations	• Noise pollution and Excessive vibrations	Weekly	• No. of complaints from public • Noise above maximum permissible levels (75 dB(A) day time, 65 dB(A) Night)	• Procuring machines/trucks that meet internationally recognized noise emission standards • Machine operators /truck drivers to be sensitized on safe driving to avoid unnecessary braking or hooting. • Aligning the road away from humans' settlements/homestead • Tress along the traverse not within carriage will not be cut as they will act as sound absorbers	Contractor/NEMA	

Parameter	Indicators	Impacts	Frequency of Monitoring	Means of Verification	Mitigation Measures	Responsibility	Cost estimates
Terrestrial Environment	• Change in vegetation cover • Disappearance of Fauna	• Vegetation Clearance • Habitat destruction leading to displacement of Fauna	Weekly	• Records of cleared acreages • Plans for green corridor programs	• Unnecessary bush clearing will be avoided • Progressive re-vegetation completed sections shall be carried out • Compensatory tree planting will be done to establish green corridor • Biological Stabilization of road embankments using native's species will be enforced	Contractor	
Solid and Liquid Wastes	Type of wastes generated	• Change in water, air and soil quality	Daily	• Volume of wastes generated • Frequency of collections	• Adoption of waste management hierarchy • Enforcement of EMCA 38(waste management) regulations ,2006		
Surface and Groundwater Resources	• Public complaints • Intense water scarcity	• Increased utilization/depletion of water resources • Water use conflicts	Weekly	Cases of reported water-use conflict	• Providing alternative means like drilling boreholes to supply water needed for construction	Contractor, RE, WRA	

Parameter	Indicators	Impacts	Frequency of Monitoring	Means of Verification	Mitigation Measures	Responsibility	Cost estimates
					works. • Avoidance of abstracting water from community fresh water resources in addition to drilling some boreholes for exclusive use by host communities.		
Water Quality	Change in water quality parameters	• Contamination of surface water by spillage (Oil, diesel, bituminous) wash- offs	Fortnight	Water quality analysis	• Establishing spillage containment units where there is likelihood of spillage Wash-offs • Using biodegradable absorbers to absorb spillages at workshop/garage	Contractor, WRA	
Social Characteristics	• Complaints on high noise levels	• Noise nuisance to nearby residential areas and communities	Weekly	• Number of complaints	• Schedule construction activities within official working hours	Contractor	

Parameter	Indicators	Impacts	Frequency of Monitoring	Means of Verification	Mitigation Measures	Responsibility	Cost estimates
	• Number of immigrants • Cultural deviations	• Loss of cultural heritage	Every 3months	• Level of interactions between immigrants and local communities	• Sensitization of communities on appropriate interactions with immigrants focusing on pros and cons of their interactions	Contractor	
	• Trends in STDs e.g. HIV/AIDS cases along the corridor	• Spread of sexually transmitted diseases e.g. HIV/AIDs	Every 3 months	• No. of awareness campaigns conducted	• Awareness campaigns to prevent spread of STIs • Contracting HIV/AIDS integration Consultant	Contractor, KENHA, National AIDS Control Council (NACC)	
	• Number of Males and females employed	• Gender inequality /discriminatio n in workforce	After every recruitment exercise	• Gender distribution of the workforce	• Enforcement of Kenya's two thirds gender rule and other relevant regulations/gui delines	Contractor, KeNHA, Labour agencies	
	• Case of Gender Based violence	• Gender based violence	Every 3 months	• No. of reported cases of Gender Based conflicts	• All workers to sign code of conduct	Contractor, KENHA	

Parameter	Indicators	Impacts	Frequency of Monitoring	Means of Verification	Mitigation Measures	Responsibility	Cost estimates
	• Incidences of child abuse	• Child abuse		• Reported cases of child Vices e.g. molestation, child labour, defilement etc.	• Enforcement of laws protecting rights and safety of children • All workers must sign code of conduct agreement		
Occupational Health and Safety	• Complaints from workers	• Exposure to health risks such as respiratory disorders due to fugitive dusts and exhausts fumes.	After every 3 months	• Number of complaints, incidences of respiratory ailments	• Provision of face masks and appropriate PPEs to workers as per level of activity undertaken	Contractor	
	• Accidents	• Accidents involving pedestrians	Daily	• Conducted pedestrian road safety trainings	• Contractor(s) education and training on pedestrian safety • Restrict access of non-project personnel to work areas	Contractor	

Parameter	Indicators	Impacts	Frequency of Monitoring	Means of Verification	Mitigation Measures	Responsibility	Cost estimates
	• Cases of Ergonomic Accidents	• Varying degrees of Ergonomic injuries resulting from slips, traps and falls	Daily	• The enforcement of mitigation measures • Installation of safety signage/barriers	• Workers will be provided with appropriate PPEs as per OSH act,2007 • Occupation Health and safety officer will be employed and safety committee formed • Work safety trainings will be conducted	Contractor	

CHAPTER 9.0: ANALYSIS OF PROJECT ALTERNATIVES

This chapter describes and by comparison evaluate a feasible range of potentially logical alternatives to Lamu Port Access road that would feasibly attain project objectives and avoid or substantially lessen the significant project impacts to people and environment within Hindi/Magogoni, Mokowe and entire Lamu County. The analysis considered the proposed road alignment, technological design and No project alternative along with their impacts to various component of the environment. The summary of analysis has been presented in the Table below;

Table 11: Analysis of Alternatives

No.	Component	Alternatives		Remarks
		Proposed Lamu Access Port	**No Project**	
1.	Physiography and Geology	LTS with Mitigation	Existing condition would remain	• Mitigation measures will be enforced as outlined in ESMP.
2.	Air Quality	LTS with Mitigation	Existing condition would remain	• Dust and exhaust emissions will be temporary during construction phase. • Ground damping during dry spell will be effective in mitigating fugitive dust and particulate matter emissions.
3.	Soils	LTS with Mitigation	Existing condition would remain	• Mitigation measures will be enforced as outlined in ESMP.
4.	Surface and Groundwater Resources	LTS with Mitigation	Existing condition would remain	• Mitigation measures will be enforced as outlined in ESMP.

No.	Component	Alternatives		Remarks
		Proposed Lamu Access Port	No Project	
5.	Terrestrial Habitats, Flora, and Fauna	LTS with Mitigation	Existing condition would remain	• Mitigation measures will be enforced as outlined in ESMP.
6.	Land Resources	LTS with Mitigation	Existing condition would remain	• Change in land use will be temporary for campsites, storage facilities but construction activities such as quarrying of borrow pits is likely to cause major land use changes. • Major or moderate impacts will be effectively mitigated as specified in ESMP and borrow pit management plan.
7.	Archaeological, Historical and Cultural Sites	Existing condition would remain	Existing condition would remain	• There are no Archaeological, Historical and Cultural Sites of importance within project corridor.
8.	Visual Aesthetics	LTS with Mitigation	Existing condition would remain	• Mitigation measures will be enforced as outlined in ESMP.
9.	Noise and Vibrations	LTS with Mitigation	Existing condition would remain	• Mitigation measures will be enforced as outlined in ESMP.
10	Solid and Liquid Wastes	LTS with Mitigation	Existing condition would remain	• Mitigation measures will be enforced as outlined in ESMP.
11	Social Characteristics	LTS with Mitigation	Existing condition would remain	• Mitigation measures will be enforced as outlined in ESMP.

No.	Component	Alternatives		Remarks
		Proposed Lamu Access Port	No Project	
12	Economic Characteristics	LTS without Mitigation	Existing condition would remain	• Host communities and other stakeholders are going to benefit from the project substantially in terms employment, trade and commerce.
13	Occupational Health and Public Safety	LTS with Mitigation	Existing condition would remain	• There shall be enforcement of Effective and Efficient Environment, Health and Safety Plans that will reduce the impacts to insignificant level to protect host communities and workers.
14	Social Characteristics	LTS with Mitigation	Existing condition would remain	• Robust safeguard strategies will be effective in controlling impacts.
15	Human settlements	LTS without Mitigation	Existing condition would remain	• Proposed alignment traverses away from human settlements. • People of Hindi/Magogoni and Mokowe locations will not be involuntarily displaced from their homes, lands and livelihoods.
16	Public security	LTS without Mitigation	Existing condition would remain	• The security of the area will be improved more than the existing situation, the contractor will make necessary security arrangements with government security organs within Lamu County

LTS means: Less than significant

9.1 No project Alternative

Impacts of not upgrading the Lamu Access road was evaluated to ascertain impacts that would occur. The analysis showed that even though the existing environmental and social conditions would remain the same, the project objectives would not be achieved under such circumstance. Meaning the Lamu Port will not have bituminous dual carriage road connectivity to enhance free, smooth and easy movement of cargo from and to the port. Residents of Hindi/Magogoni, Mokowe and entire Lamu County will continue suffering due to the current poor condition of the road. During Public consultations, it was revealed that the current state of the road is adversely affecting local communities in many was ways. These impacts are;

- Lack of heavy vehicles for transportation of commodities because of poor condition;
- Inaccessibility although it's a short trench to the new port area;
- Some sections are swampy/muddy/silting/cutting/slippery and ponds during rainy seasons hampering transportation activities;
- Difficulty in movement at night due to poor visibility;
- Wildlife attack such as buffaloes;
- Existing road is narrow and there are no passable detour routes to cater for alternative passage;
- No job opportunities due to poor state of the road;
- Frequent breakdown of vehicles leading to high maintenance cost; and
- Insecurity cases since it's bushy (hide out for criminals) and rough with potholes lowering speed during travel, there is also delayed response to emergency security calls by the security personnel within Lamu KDF Barracks.

Therefore, the project should be approved because proper remedial and corrective measures for significant impacts have been proposed and will be implemented. If the condition and capacity of the access road is enhanced, there will be;

- Easy evacuation of cargo from Lamu Port once operational;
- Creation of business opportunities that will improve the local economy;
- Increased Economic Activities and Employment Creation;
- Transfer of Skills;
- Improved Access to Essential goods and Services;
- Improved Road Safety; and

- Achievement of government development agenda e.g. Vision 2030 and Big Four initiative among others.

CHAPTER 10.0 ENVIRONMENTAL, HEALTH AND SAFETY REQUIREMENTS

10.1 GENERAL EHS PLANS REQUIREMENTS IN CONSTRUCTION PROJECTS

The following auxiliary plans to ESMP have been developed to enhance environmental, social and safety performance of the project activates to mitigate errors or omissions in ESMP.

10.1.1 Borrow Pit Management Plan

10.1.1.1 Material investigation

Material investigations were carried out whereby samples were collected and tested to determine their appropriateness for road construction. The investigations were focused on existing alignment soils for gravel, hard stone and sand for concrete works. No suitable hard stone sources were identified within Lamu County during materials investigations and hard stone aggregates for road works will have to be obtained from commercial quarries in kwale County.

One material site was identified within Hindi/Magogoni Phase 2 settlement scheme, it has been proposed for gravel source. The land owner agreed to give out 5acres out 10 acres he owns under free hold tenure system. Currently the land is under productive agricultural land use with mixed crops being grown. Cotton is the major cash grown with citrus plants such mango trees. Other crops grown are capsicum, spinach, kales and green peas among others. Portion of the land had been leased to a contractor for Lamu Port construction.



Plate 10.1: Trial pits excavated to determine suitability of gravel for road construction

There are other borrow pits located within the Hindi Magogoni Settlement scheme Phase 2 currently leased to H Young construction company to obtain materials for construction of Lamu – Witu – Garsen (C112) road. They can be used to obtain material for construction of Access road with the consent of the owner.



Plate 17 Borrow pit leased to H young for construction of Lamu –Garissa (C112) road



Figure 10.1: Map showing the location of proposed Borrow pit and 2 borrow pit leased by H young Co. Company

10.1.1.2 Environmental Concerns and Mitigation Techniques

The table below presents summarized environmental and social concerns that might arise from material site operations and their proposed mitigation measures.

Table 12: Material site environmental and social concerns

Development stage	Site operations	Anticipated impacts	Mitigation measures
Site layout or preparation	Vegetation removal Top soil /overburden removal	Soil erosion Habitat loss /fragmentation.	• Maintenance of natural drainage systems • Sites will be located in well drained areas • Stockpiling of overburden for restoration of borrow pit • Construction of ditches/cut off drains to direct storm water to nearest natural catchments. • Retaining vegetation to maintain slope stability • Maintaining vegetation buffer zone to protect water bodies
Operation	Quarrying Stockpiling Loading Maintenance of access road	Soil erosion and sediment deposition	• Using overburden as edge fence to control silt movements • Use of rip rap as reinforcement to edges of drainage channels • Re-vegetation to stabilize pit embankments where necessary
		Change in water quality due to silt, fuel and oil pollutants	• use of proper fuel containment, handling methods and spillage containment to control pollution of water resources

Development stage	Site operations	Anticipated impacts	Mitigation measures
		Water ponding	• Diverting surface water away to limit source of input water • Limiting the depth of quarrying
		Dust emissions	• Ground damping/spraying water
		Conflicts with host communities due to water ponding(hazard) noise and air pollution	• Fugitive dust emission will be controlled by ground damping • Borrow site activities will be carried out during official working hours • The sites will be located away from human settlements.
		Accidental falls causing injuries to human beings and livestock	• Perimeter safeguard fence will be constructed in all borrow pits

10.1.1.3 Ideal Borrow Pit Management Plan

The contractor awarded the construction contract will prepare a detailed management plan before they start excavation. The contractor will comply with the provisions given in NEMA Integrated National Land Use Guidelines (2011) among other relevant regulations. Ideal borrow pit management plan will cover;

a. **Site layout and boundaries with the following provisions:** Maintaining safe distance (buffer Zone-500m to any aerodromes/landing ground, 100m to any shopping Centre, school and hospital, 50m to any house irrespective of consent from the owner, 40m to any river edge, road reserve or rail), estimates of the resources to be extracted, refueling station with appropriate containment (if required), stockpiling location, dust and noise consideration, waste management, site operating procedures; and spill response procedures.
b. **Monitoring**: the following will be examined: Site wall stability (for deep excavations), wildlife and domestic animas interactions or sightings; and contingencies if changes to the original development scenario are required.
c. **Reclamation**: Valued environmental components such as air quality, terrestrial wildlife, water resources, health and safety of the host communities will be considered and impacts of quarrying investigated. The restoration activities will be aimed at restoring the disturbed areas to an acceptable post quarrying state, ensuring that all areas are stable, and there is no risk of erosion, invasion of alien species; and ensuring that all areas are free draining (no ponding water) and non-polluting/hazardous. Progressive restoration is recommended for all the borrow pits and every borrow pit will have its own restoration plan based on demands of land owner, community health and safety. The excavated sites will be restored to self-sustaining productive ecosystem near their original trajectory. General reclamation operations to be undertaken include: overburden replacement for site grading and re-contouring, reclamation of natural drainage, slope reconstruction (if needed), removal of all garbage, debris and all temporary storages/structures/equipment;
d. **Closure:** Before the close of the project, completion of quarrying operations will be followed by decommissioning procedures which will be as per the approved decommissioning plan. Decommissioning operations will include removing construction materials, equipment and infrastructure to approved destination for sustainable management (reuse, recycling, recovery and disposal).

10.1.2 Traffic Management Plan (TMP)

This plan establishes procedures and protocols for site access, traffic routing and Management in relation to vehicle and employee transportation during the upgrading of Lamu Port Access road. The road safety of public, employee / construction workers will be considered during construction period to ensure there is no or minimal inconvenience, delay, injuries or losses.

The road in current state has low traffic volume mostly used by KDF vehicles, Boda Boda operators and local motorists and it is expected to continue during construction phase, the only additional traffic volume will be the construction vehicles.

General rules

- In the interest of site security and public safety, access to borrow pit quarrying and sections of the road where work will be in progress will be restricted to authorized construction workers and guests.
- Access routes to material sites will have appropriate road safety signage placed to caution road users.
- Environmental sustainability will be enhanced by optimal use of existing trails and disturbed areas to avoid opening up additional routes or corridor that might cause unnecessary disturbance to valued environmental components such as soils and terrestrial flora and fauna.
- Safety Signage will be posted near all construction sites
- Prior communication will be made to the public of impending road closure and detour routs in time.
- Speed limit will be 40 km/hr. during construction period.
- Provisions in occupational health safety, 2007 shall be complied with to enhance general safety.

Incidence reporting

- Safety officer will be in charge of keeping incident register to keep records of accidents/crashes or near misses on site, reporting accidents to area DOSH and local traffic police within 24 hours of crash after briefing both the site agent and resident engineer.
- Construction drivers and plant operators will be educated/trained on safety including traffic protocols and speed limits during mandatory orientations.

10.1.3 Spills Prevention and Response Plan

The contractor will prepare a plan of managing, handling, and storing hazardous or regulated substances whose spill may cause environmental degradation. The plan will minimize the risks of a spill and mitigate potential effects to construction personnel and the environment if a spill does occur on site during the construction period. Before approving the plan, KeNHA will scrutinize if the proposed plan is cable of preventing and responding to spills to control pollutant runoff from construction facility or spilled area to the surrounding.

Even with the best preventative efforts, spills may still occur. When they do, the facility personnel will respond as quickly as possible and effectively to clean up the spilled material or notify qualified personnel.

Spill Prevention

All hazardous substances, including chemical wastes, bitumen, will be managed in a way that prevents release. The following general requirements will be complied with;

a. **Container Management:**

- All hazardous substance containers will be kept in good condition and compatible with the materials stored within.
- All hazardous substance containers will be accessible and spacing between containers will provide sufficient access for periodic inspections and response to spills.
- Empty hazardous substance containers will have all markers and labels removed and the container marked with the word 'empty'.
- Any spills on the exterior of the container will be cleaned immediately.
- Flammable materials such as fuels will be stored or dispensed from underground bunded drums/tanks.

b. **Good Housekeeping:**

- All hazardous substances will be stored inside buildings or under cover;
- All chemicals (oils/fuels) that are transferred from larger to smaller containers will be transferred by use of a funnel.
- All hazardous substance containers will be closed while not in use;
- Drip pans or other collection devices to contain drips or leaks from dispensing containers or equipment will be used;
- preventative maintenance activities to reduce the potential for release from equipment will be implemented;
- Small spills or leaks will be cleaned up immediately and properly managed;
- Periodic inspections for equipment and hazardous substance storage areas will be conducted to ensure leaks or spills are not occurring;
- Signage will be used to identity hazardous substance storage or waste collection areas; and
- All work areas and hazardous substance storage areas will be kept clean and in good general condition.

c. Secondary containment:

Bulk chemicals e.g. fuels will be stored in appropriate secondary containment, or any sized chemical if there is a potential for release to the environment.

Secondary containment will be checked periodically, and any spills identified in secondary containment will be immediately cleaned up and disposed appropriately.

d. Marking/labeling:

- All hazardous substances, including chemical wastes, will be properly marked and labeled in accordance with relevant regulations or guidelines.
- Hazardous substances being transferred to small containers will be clearly marked with the chemicals name (example-diesel) and hazard (example- "Flammable").

Response

Will be enforced whenever there is spill incident threatening workers, public safety or the valued components of the environment. The response strategy shall be reviewed and immediately amended as necessary.

In the event of a hazardous substance spill or release, the concerned or responsible personnel will consider the following strategies to contain the spillage from entering nearby environment while taking into account personal safety first.

a. Stopping, containing, and cleaning up the spillage if:

- The spilled chemical and its hazardous properties have been identified;
- The spill is small and easily contained;
- Responder is aware of the chemicals' hazardous properties.

b. If a spill cannot be controlled or injuries have occurred due to the release, the following procedures will be implemented:

- Summon help or alert others of the release;
- Evacuate immediate area, and provide care to the injured, call emergency response number;
- If potential fire or explosion hazards exist/ initiate immediate evacuation procedures;
- Respond defensively to any uncontrolled spills by use of appropriate PPEs, shutting off the source of spillage and using adsorbent to protect drainage systems;
- Notify onsite emergency contact(s);
- Notify other trained staff to assist in spill response and cleanup activities;
- Be prepared to provide MSDS information to fire department, construction safety management team, hospital or physician; and
- Notify appropriate agency such as NEMA if a release has entered the environment.

c. Evacuation Procedures:

In the event of a hazardous substance release that has the potential for fire, explosion or other human health hazards, the following procedures will be implemented;

- Facility staff will be notified of evacuation;
- Notification for emergency services will be performed;
- Facility staff will follow predetermined evacuation routes and assemble at designated areas. Evacuation maps will be displayed throughout the facility;

- Individuals responsible for coordinating evacuations will confirm if the premise has been completely evacuated;
- Facility staff will be made familiar with evacuation procedures during new employee orientation, and annual trainings thereafter; and
- Designated emergency response contacts will coordinate all activities with outside emergency personnel.

d. Spill Cleanup and Disposal:

The spilled substance will be appropriately characterized to determine if it designates as dangerous waste. The designated onsite safety officer, with the assistance of NEMA licensed waste handler will determine waste status and ultimate disposal.

10.1.4 Emergency Response Plans (ERP)

KeNHA as the proponent will ensure that the contractor awarded the construction work institute and maintain procedures that document clear protocols to ascertain and respond to environmental incidents and emergency situations, and for averting or mitigating risks and impacts resulting from the construction works. The emergency response plan will address the following;

- Hazard identification/assessment;
- Emergency resources;
- Communication systems;
- Administration of the plan;
- Emergency response procedure;
- Communication of the procedure; and
- Debriefing and post-traumatic stress procedures.

The contractor's emergency response plan will have to be approved by KENHA before the commencement of construction works. Part of the environmental awareness plan will be devoted to ensuring that all of the Contractor's workforce is competent in terms of skills and experience in environmental emergency response.

Hazard identification/assessment

The contractor will have to identify potential hazard/risks through review of;

- Transportation, materials handling, hoisting, equipment or product installation, temporary structures, material storage, start-up, and commissioning activities
- Environmental and social concerns.
- Consultation with the workers, supplier's suppliers and other stakeholders to regarding potential hazards regarding scope of work and supplied machines, equipment or materials;
- Resources such as material safety data sheets to determine potential hazards from on-site materials
- Proximity of construction site/work area to traffic, human settlements and other social gathering areas.

Emergency resources

The contractor will set aside contingency resources necessary for an appropriate emergency response. This may include:

- Emergency call telephone number
- Fire extinguishers
- Spills containment equipment
- First aid kits
- Personnel e.g. resident medical staff workers and safety officer
- Emergency evacuation equipment
- Incident register etc.

Communication systems

The contractor will set up communications system that will relay accurate information for quick response. The communication systems will be accurate, reliable with defined procedure of communication and trained staff. The communication systems will have back up system put in place in case the system is rendered useless by the emergency. The communication systems will cover;

- Hazard information such as safety data sheets;
- Training, monitoring and drills;
- Procedures for controlling incidents and undertaking remediation work; and

- Internal and external responsibilities for the follow-up investigation and remediation.

Administration of the Emergency Response Plan

There will be safety officers tasked with administering and organizing the plan to ensure that every worker understands their roles and responsibilities within the emergency response plan. The safety officer will also be monitoring and evaluating the availability of emergency resources, whether people or equipment, are kept at adequate levels in step with the progress of the project.

Emergency response procedure

The emergency calls may come from any source within the project area where construction activity /activities will be taking place. The contractor will develop response procedure depending on the scope of work. In general, the following basic and essential response procedures will be adopted during an emergency;

- Staying calm;
- Assessing the situation;
- Taking command;
- Providing protection;
- Aiding and managing;
- Maintaining contacts; and
- Guiding emergency services.

Communication of the Procedure

To be effective, an Emergency Response Procedure will be clearly communicated to all construction workers. The following activities will be undertaken;

- Reviewing the procedure with new site subcontractors and new workers to ensure that it covers their activities adequately;
- Reviewing the procedure with suppliers to ensure that it covers any hazards that might occur due to storage or delivery of their materials;
- Reviewing new work areas in operating plants with owner/client to ensure that new hazards are identified and covered in the procedure;
- Reviewing the procedure with joint Health and Safety Committee or Health and Safety Representative on a regular basis to address new hazards or significant changes in site conditions; and

- Post the procedure in a conspicuous location.

10.1.5: Environmental Awareness Plan

To ensure that the ESMP is effectively implemented, the project implementation team at all levels of management will be responsible for ensuring that all personnel reporting to them are aware of the requirements of ESMP. The Environmental and Social Safeguard teams from both the supervising Engineer and the contractor will coordinate and manage environmental conservation awareness programs. Excellent environmental awareness plan will include measures for;

Environmental induction

All personnel, including sub-contractors, will be required to attend a compulsory site induction that includes an environmental component prior to commencement on-site. Environmental and Social Safeguard teams will conduct the environmental component of the site induction. The environmental component will include an overview of:

- Relevant details of the ESMP including purpose and objectives
- key environmental issues, i.e. protection of the sensitive areas, dust and noise management
- Conditions of environmental licenses, permits and approvals
- Specific environmental management requirements and responsibilities
- Mitigation measures for the control of environmental issues
- Incident response and reporting requirements, and
- Information relating to the location of environmental constraints

The contractor's environmentalist in consultation with supervising Engineer's environmentalist will authorize amendments to the induction where required to address Project modifications, legislative changes or changes to ESMP or emerging environmental concerns. They will also l review and endorse the induction program and monitor its implementation.

Toolbox talks, training and awareness

Toolbox talks will be used to raise awareness and educate personnel on construction related environmental issues to enhance safe working environment. The safety meetings will be used to ensure environmental awareness continues during construction. Toolbox talks will include details of Environmental Work Method Statements. Toolbox talks will be addressing specific environmental issues such as;

- Erosion, dust and sedimentation control;
- Hours of work;
- Emergency and spill response;
- Cultural heritage;
- Wildlife conservation/protection within project corridor;
- Vegetation protection and weed management;
- Noise;
- Housekeeping and waste management;
- Concrete washout and bitumen wash offs; and
- Conservation of water resources.

Toolbox attendance will be compulsory to all construction staff and attendees of toolbox talks will be required to sign an attendance form and the records maintained.

Tailor made environmental awareness training will be provided to individuals or groups of workers with a specific authority or responsibility for environmental management or those undertaking an activity with a high risk of environmental impact.

Environmental awareness camping materials, in the form of posters, booklets or similar will be developed and distributed to construction officials such as site engineer, foreman and others with a responsibility for managing specific work locations or activities. Awareness notes will be also be distributed to the broader workforce at daily pre-start meetings or made available in campsites and other places frequently visited by workers.

Daily pre-start meetings

The pre-start meeting will be used as a tool for informing the workforce of the day's activities, safe work practices, environmental protection practices and work area restrictions.

The environmental component of pre-starts meetings will include any environmental issues that could potentially be impacted by, or impact on, the day's activities. All attendees will be required to sign on to the pre-start and acknowledge their understanding of the issues explained-start topics, dates delivered and a register of attendees will be recorded and the records maintained.

CHAPTER 11.0: CONCLUSION AND RECOMMENDATIONS

11.1 CONCLUSION

On the basis of the analysis of potential impacts and the recommended mitigation measures in this environmental and social impact assessment report, overall, the Proposed upgrading of the Lamu Access port to bitumen standard is not likely to impose significant negative impacts on the environment and existing social set up within Hindi/Magogoni and Mokowe locations and Lamu County as whole. The majority of envisaged negative impacts are negligible or minor in nature.

The potentially moderate or major negative effects have been identified and mitigation measures proposed to reduce them to less significant level. There will be effective enforcement of those measures with regular monitoring and evaluation for possible review to ensure sustainable construction of the access road. Based on environmental, social and economic viability, the project is feasible and should be implemented.

11.2 RECOMMENDATIONS

- Confining project operations such as earthworks, excavations and bush clearing to the road corridor only to avoid exposing adjacent soils to agents of soil erosion
- Proper installation of drainage structures to channel storm water to the nearest natural catchments.
- Stabilizing road embankments and progressive re-vegetation of developed sections and areas cleared unintentionally
- Use of wet crushing technology at quarries, scarifying with water at borrow pits and diversions /detour spots to be sprayed (damping) with water to combat dusts emissions.
- Use of machines/trucks efficient in fuel consumption, no idling of machinery and vehicles.
- Spillages or leakages of oil will be remediated immediately using appropriate absorbent material to prevent their entry into water resources.
- Machine operators /truck drivers to be sensitized on safe driving to avoid unnecessary braking or hooting.
- Tress along the traverse not within carriage should not be cut as they will act as sound absorbers.
- Provision of PPEs (ear muffs) to operators working with noise machines

CHAPTER 12.0: REFERENCES

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CHAPTER 13.0: APPENDICIES

13.1 Attendance List

Kenya National Highways Authority
Quality Highways, Better Connections

Blue Shield Towers, Hospital Road, Upper Hill, P. O. Box 49712-00100, Nairobi.
Tel: 020-8013642 Email: nhgk@kenha.co.ke Website: www.kenha.co.ke

UPGRADING OF THE ACCESS ROAD LINKING THE LAMU PORT TO LAMU-WITU – GARSEN (C112) ROAD TO BITUMEN STANDARDS

ENVIRONMENT AND SOCIAL IMPACT STUDIES

CONSULTATIVE MEETING

VENUE: _____ **DATE:** 3/9/2018

NO.	NAME	DESIGNATION	LOCATION/ORGANISATION	PHONE NO.	SIGNATURE
1.	William M. Magiri	A.C.C HWD1	INTEGRICO	0708582707	
2.	Jamal Kea Hamsi	CHIEF HWD1	INTEGRICO	0700688555	
3.	A. no Lopesi	S/Accts Clerk	INTEGRICO	0726803435	
4.	Lorna Omeno	ECGTR)	KENHA	0708520997	
5.	Eng. John Otike	ADE(GTR)	KENHA	0720747642	
6.	Omondi Ogutu	IE-SS	KENHA	0728417477	
7.	Rachael Nthiamo	IS-SS	KENHA	0708537942	
8.	Adams Muriithi	ADE(ESS)	KENHA	0722202348	
9.	Lucy Wairimu	SS-ESS	KENHA	0727 746167	
10.					

We are in the Kenya Highways Authority committed to quality, safe and serviceable roads.
Mkiendi To tuutoke: ane mu tope nothoni i ani nkaai Ketha ya Kenya ne ya Ajentina ne Kenya ni

ISO 9001 :2008 Certified

13.2 Courtency Call with ACC-Hindi Division

Kenya National Highways Authority
Quality Highways, Better Connections
Blue Shield Towers, Hospital Road, Upper Hill, **P. O. Box** 49712-00100, Nairobi.
Tel: 020-8013842 **Email:** dg@kenha.co.ke **Website:** www.kenha.co.ke

NEW LAMU PORT ACCESS ROAD

A COURTENCY CALL WITH THE LOCAL ADMINISTRATION AT ASSISTANT COUNTY COMMISSIONER'S OFFICE, HINDI DIVISION, LAMU COUNTY ON 3RD SEPTEMBER, 2018.

List of participants

No.	Name	Organization
1.	William Magiri	Interior; ACC- Hindi
2.	Jamal Kea Hamisi	Interior; Chief Hindi Location
3.	A.M. Lausi	Interior; Senior Assistant Chief
4.	Eng. Joan Otike	KeNHA; AD -Structures
5.	Adams Muriithi	KeNHA; AD-ESS
6.	Lucy Wainaina	KeNHA;SE-ESS
7.	Oguta Evance	KeNHA; IE-ESS
8.	Lorna Otieno	KeNHA; IE-Structures
9.	Rachael Mithamo	KeNHA; IS-ESS

MIN	DISCUSSIONS	ACTION
Min. 1/3/ 9/ 2018	**INTRODUCTION**	
	The meeting began by self-introduction where by members present introduced themselves. Thereafter, the ACC welcomed the KeNHA officials and the Area Chiefs. The ACC acknowledged that the KeNHA has been engaging his office more so the Survey and material investigation teams which had been on the ground .The ACC went further to pledge full support and cooperation with ESIA study team particularly on security concerns and public participation.	
Min. 2/3/ 9/ 2018	**Presentations**	
	Briefing from KeNHA Officials The members were informed that the activity was being conducted to enable the compilation of detailed design, ESIA study report and other necessary tender documents	Info

MIN	DISCUSSIONS	ACTION
	for the proposed upgrading of Lamu Port Access Road, In that regard, the local administration was recognized as a key stakeholder during design, implementation and maintenance government projects within their jurisdiction. The KeNHA team was sub- divided depending of area of specialization into Engineers and Environment and Social safeguards officers. The courtesy call was aimed at informing the area administration of the government's intention through KeNHA to upgrade the Lamu Port Access road to bituminous dual carriage road. The area administration ministration was asked if they had concerns/issues that they would want to be incooperted in the design to enhance environmental sustainability and social acceptance of the proposed project. The local administration was further reminded that KeNHA is obligated to involving the public as per the constitution of Kenya 2010, EMCA Cap 387 and Environmental Impact and Audit Regulations 2003 during the ongoing ESIA study process. The area administration was asked the best collaborative way of involving the host communities during project implementation phase.	
Min. 3/3/ 9/ 2018	**ACC, Chief and Snr. Asst. Chief response** The ACC noted that the construction of Access road would enhance development of the Hindi division and Lamu county at large. He added that the existing Access road serve as a boarder between Mokowe and Hindi administrative locations. The officer informed members that the residents who were considered for relocation during preparation and design works of the LAPPSET project we compensated. The majority of those were compensated had relocated and very few had remained. The road traverse was noted to have very low population/ residents.	

MIN	DISCUSSIONS	ACTION
	The Chief said that there was a section of the road that had been flooded because of heavy rains that had been experienced. The section was said to be swampy and had accumulated rain water from seasonal streams. He clarified that the water was not from the adjacent India Ocean. He proposed construction of a bridge and raising of the road pavement to avoid destruction of the road once completed. The ACC added that having done the compensation, involvement of the local community would be of importance more so in sensitization of road safety. They proposed involvement of the key stakeholders as they would guide in the implementation process. The community could be engaged through employment of the locals and CRS of the social amenities that were lacking is the area. To curb insecurity, more security personnel will be deployed during the implementation phase.	
Min. 4/3/ 9/ 2018	**Closing remarks**	
	The ACC retaliated with appreciating the team for visiting his office for brief and participation in ESIA reporting. He pledged his support in relation to tightening security and public engagement during ESIA study process. The KeNHA team thanked the leaders for their participation and informed them of intention to continuously engage them to enable smooth implementation of proposed project.	

13.3 Courtency Call with DCC-Lamu West

Kenya National Highways Authority
Quality Highways, Better Connections
Blue Shield Towers, Hospital Road, Upper Hill, **P. O. Box** 49712-00100, Nairobi.
Tel: 020-8013842 **Email:** dg@kenha.co.ke **Website:** www.kenha.co.ke

PROPOSED CONSTRUCTION OF AN ACCESS ROAD TO NEW LAMU PORT

A COURTENCY CALL WITH THE LOCAL ADMINISTRATION AT DEPUTY COUNTY COMMISSIONER'S OFFICE, LAMU COUNTY ON 10TH SEPTEMBER, 2018.

List of participants

No.	Name	Organization
10.	Louis Ronoh	DCC- Lamu west sub- county
11.	Adams Muriithi	KeNHA
12.	Lucy Wainaina	KeNHA
13.	Oguta Evance	KeNHA
14.	Rachael Mithamo	KeNHA

MIN	DISCUSSIONS	ACTION
Min. 1/10/ 9/ 2018	**INTRODUCTION**	
	The meeting began by self-introduction by all members thereafter; the DCC welcomed the KeNHA officials.	Info
Min. 2/10/9/ 2018	**Presentations**	
	Project brief **By KeNHA officials** He was informed that KeNHA team was in the field for design preparation exercise of the proposed Access road to New Lamu port. In regard, the local administration was a key component before, during and after implementation process of any government project. The KeNHA team was sub- divided depending of area of specialization into Engineers, and Environment and Social safeguards officers. The courtesy call aimed to inform the administration of the intended construction of the Access road to the new port and to source their feedback on the proposed	Info

MIN	DISCUSSIONS	ACTION
	design. The Access road would serve as a linking road between the Lamu- Garsen road and the port. In addition, the Environment and Social Impact Assessment exercise require involvement of the local administration office to give feedback on likely impacts of the proposed project. Also the office was to be informed on the best way to go about in involvement of the immediate community in project implementation phase.	
Min. 3/10/ 9/ 2018	**DCC's response** The DCC noted that the construction of Access road would enhance development of the Hindi division and Lamu county at large. He appreciated the intention to upgrade the Access road to New Lamu port. He noted that the road project area was remote which characterised it with insecurity cases and lack of heavy vehicles for transportation of commodities because of poor roads. In regard, he pointed a number of expected benefits to the community once the road is constructed that include; easy transportation of cargo from Lamu to other areas in the country, opening up of Lamu County for new investors and reduction of prices for commodities since transportation cost will be lower. He suggested that the immediate community be engaged through employment of unskilled and skilled labour as well as outsourcing construction materials from the host communities.	Info
Min. 4/10/ 9/ 2018	**Closing remarks**	
	The DCC appreciated the KeNHA team for their continuous engagement with the key stakeholders more so the local administration. He pledged his support during the implementation process of the proposed road. On the other hand, KeNHA team appreciated the DCC for his time. He was informed of intention to have continuous engagement with the local administration in all phase of the proposed project.	Info

13.4 Questionnaires

Kenya National Highways Authority

Quality Highways, Better Connections

DEPUTY COUNTY COMMISSIONER LAMU WEST SUB-COUNTY P.O.BOX 41-80500 LAMU

DCC Lamu West.

QUESTIONNAIRE FOR ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT PROJECT REPORT: UPGRADING OF THE ACCESS ROAD LINKING THE LAMU PORT TO LAMU-WITU – GARSEN (C112) ROAD TO BITUMEN STANDARDS

Kenya National Highways Authority plans to upgrade the access road linking the Lamu Port to Lamu-Witu – Garsen (C112) Road to bitumen standards to enable easy evacuation of cargo from the new port once completed. EMCA, 1999 and Environmental Impact and Audit Regulations 2003, public consultation is an important aspect to effective and adequate Environmental and Social Impact Study process. In order to carry out a proper Environmental Impact Assessment for the above project, we would like to capture your views as regards to the project on the questions below. Please note that your name and information therein will ONLY be used for the stated purpose in this particular project.

NAME Louis Ronoh ID No: 9886870

Occupation: DCC (Deputy County Commissioner) Company/Organization: INTERIOR.

Tel No: 0724758431 Location/Area of residence LAMU

1. Are you aware of this project? (Tick one) Yes [✓] No [ ]
2. Do you believe this project will be of any benefit to your area Yes [ ] No [ ]?

   If yes, what will be the benefits to you and the community?

   (1) It will ease the transport from LAPSET to other areas like Malindi and Mombasa.

   (2) It will make the area open for investors which will bring the prices of goods down.

3. What are the problems/issues related to the current state of the Access Road?

   (1) Insecurity.

   (2) No heavy vehicles to transport goods.

4. What are some of the negative environmental or socio-economic concerns/issues that could result from the upgrading of the Access Road?

   Nil.

5. How would you like the concerns/issues that will impact from the project to be addressed?

N/A.

6. How would you like the local community/institution/association to be involved in the project?

- To be part of the project implementors

7. Any other comments/proposals/ concerns about the road project?

The road project is long overdue it should be constructed immediately to pave way for quick development.

For more information please contact us at +254-020-801342. Thank you for your cooperation

Kenya National Highways Authority

Quality Highways, Better Connections

QUESTIONNAIRE FOR ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT PROJECT REPORT: UPGRADING OF THE ACCESS ROAD LINKING THE LAMU PORT TOLAMU -WITU – GARSEN (C112) ROAD TO BITUMEN STANDARDS

Kenya National Highways Authority plans to upgrade the access road linking the Lamu Port to Lamu-Witu – Garsen (C112) Road to bitumen standards to enable easy evacuation of cargo from the new port once completed. EMCA, 1999 and Environmental Impact and Audit Regulations 2003, public consultation is an important aspect to effective and adequate Environmental and Social Impact Study process. In order to carry out a proper Environmental Impact Assessment for the above project, we would like to capture your views as regards to the project on the questions below. Please note that your name and information therein will ONLY be used for the stated purpose in this particular project.

NAME JAMAL KEA ID No: 22607229

Occupation: CHIEF Company/Organization: INTIGRION

Tel No: 0700688555 Location/Area of residence HINDI

CHIEF
HINDI/MAGOGONI LOCATION
P.O. Box 41 - 80500, LAMU
Tel: 0700 688 555

1. Are you aware of this project? (Tick one) Yes [✓] No [ ]
2. Do you believe this project will be of any benefit to your area Yes [✓] No [ ]?

   If yes, what will be the benefits to you and the community?

- TRASPORTION OF CARGO FROM LAMU PORT WILL BE EASIER.
- JOB OPPORTUNITIES TO THE COMMUNITY BY THE CONTRACTOR.

3. What are the problems/issues related to the current state of the Access Road?

- THE ROAD IS TOO ~~TH~~ SMALL. AND SHOULD BE TARMACED.

4. What are some of the negative environmental or socio-economic concerns/issues that could result from the upgrading of the Access Road?

- BECAUSE THERE IS SO DUST IN THE ROAD IT SHOULD BE WATERED.

5. How would you like the concerns/issues that will impact from the project to be addressed?

- THROUGH ADMINISTRATION OFFICE AND KENHA OFFICER.

6. How would you like the local community/institution/association to be involved in the project?

- BE GIVEN JOB OPPORTUNITIES BY THE CONTRACTORS.

7. Any other comments/proposals/ concerns about the road project?

- DONT FORGET TO POT BUMPS.
- ALSO ROAD FOR CATTLES.

For more information please contact us at +254-020-801342. Thank you for your cooperation

Kenya National Highways Authority

Quality Highways, Better Connections

QUESTIONNAIRE FOR ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT PROJECT REPORT: UPGRADING OF THE ACCESS ROAD LINKING THE LAMU PORT TO LAMU-WITU – GARSEN (C112) ROAD TO BITUMEN STANDARDS

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NAME Ahmed Mc Lamsi ID No: 5354737

Occupation: Assi Chief Company/Organization: Interior

Tel No: 0726803165 Location/Area of residence Hindi

SNR. ASSISTANT CHIEF HINDI SUB LOCATION P.O. Box 41 - 80502 LAMU

1. Are you aware of this project? (Tick one) Yes [✓] No [ ]
2. Do you believe this project will be of any benefit to your area Yes [ ]No [✓]?

   If yes, what will be the benefits to you and the community?

   Job Opportunities and alot of business

3. What are the problems/issues related to the current state of the Access Road?

   My opinion. the road is very thin it needs expansion.

4. What are some of the negative environmental or socio-economic concerns/issues that could result from the upgrading of the Access Road?

   Some accident will happen.

5. How would you like the concerns/issues that will impact from the project to be addressed?

It is through Chief / Asst. Chiefs Office

6. How would you like the local community/institution/association to be involved in the project?

for the local community to give them small employments eg Labourers etc

7. Any other comments/proposals/ concerns about the road project?

Dont forget to put bumps.

For more information please contact us at +254-020-801342. Thank you for your cooperation

Kenya National Highways Authority

Quality Highways, Better Connections

QUESTIONNAIRE FOR ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT PROJECT REPORT: UPGRADING OF THE ACCESS ROAD LINKING THE LAMU PORT TO LAMU-WITU – GARSEN (C112) ROAD TO BITUMEN STANDARDS

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NAME ALEX KARISA ID No: 12728500

Occupation: MASON Company/Organization: _____

Tel No: 0729703518 Location/Area of residence HINDI

1. Are you aware of this project? (Tick one) Yes [✓] No [ ]
2. Do you believe this project will be of any benefit to your area Yes [✓] No [ ]?

   If yes, what will be the benefits to you and the community?

- Creation of employment opportunities
- Improved transportation
- The area will be more developed
- Improved security

3. What are the problems/issues related to the current state of the Access Road?

   Pot holes, muddy with some sections becoming swampy during rains.

4. What are some of the negative environmental or socio-economic concerns/issues that could result from the upgrading of the Access Road?

   Dust during construction, reduced accidents unless due to careless driving, spread of STDs

5. How would you like the concerns/issues that will impact from the project to be addressed?

Spraying water to reduce dust emissions during Construction phase, STDs Prevention awareness Campaigns.

6. How would you like the local community/institution/association to be involved in the project?

Both the skilled and non skilled youth to be given priority when recruiting workforce.

7. Any other comments/proposals/ concerns about the road project?

The Contructor should have better working Conditions interms of employees welfare.

For more information please contact us at +254-020-801342. Thank you for your cooperation

Kenya National Highways Authority

Quality Highways, Better Connections

QUESTIONNAIRE FOR ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT PROJECT REPORT: UPGRADING OF THE ACCESS ROAD LINKING THE LAMU PORT TO LAMU-WITU – GARSEN (C112) ROAD TO BITUMEN STANDARDS

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NAME JOHNSON BALOZI ID No: 11374517

Occupation: MASON Company/Organization: _____

Tel No: 0725234654 Location/Area of residence KIONGONI

1. Are you aware of this project? (Tick one) Yes [✓] No [ ]
2. Do you believe this project will be of any benefit to your area Yes [✓] No [ ]?

   If yes, what will be the benefits to you and the community?

   Convinient, Cheap and faster transportation
   Booming of businesses
   The area of Kiongoni will be more developed

3. What are the problems/issues related to the current state of the Access Road?

   Cutting of road during rains Muddy/Silting during rainy season, Difficulty in moving at night, Wild life like buffalo attack

4. What are some of the negative environmental or socio-economic concerns/issues that could result from the upgrading of the Access Road?

5. How would you like the concerns/issues that will impact from the project to be addressed?

6. How would you like the local community/institution/association to be involved in the project?

Employment Opportunity should be accorded to local youth/women.

7. Any other comments/proposals/ concerns about the road project?

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Kenya National Highways Authority

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QUESTIONNAIRE FOR ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT PROJECT REPORT: UPGRADING OF THE ACCESS ROAD LINKING THE LAMU PORT TO LAMU-WITU – GARSEN (C112) ROAD TO BITUMEN STANDARDS

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NAME ABIO ISMAIL ID No: 35280567

Occupation: Chief Company/Organization: _____

Tel No: 0797912876 Location/Area of residence HINDI

1. Are you aware of this project? (Tick one) Yes [✓] No [ ]
2. Do you believe this project will be of any benefit to your area Yes [✓] No [ ]?

   If yes, what will be the benefits to you and the community?

   Transportation of Cargo from Lamu port will be Employment Job opportunity

3. What are the problems/issues related to the current state of the Access Road?

   The road is for small. and should the tarmac road

4. What are some of the negative environmental or socio-economic concerns/issues that could result from the upgrading of the Access Road?

   The road is so just.

5. How would you like the concerns/issues that will impact from the project to be addressed?

6. How would you like the local community/institution/association to be involved in the project?

7. Any other comments/proposals/ concerns about the road project?

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NAME EDWARD NGALLA ID No: 23445439

Occupation: MANAGER Company/Organization: SUBIRA GUEST HSE

Tel No: 0743730110 Location/Area of residence HINDI

1. Are you aware of this project? (Tick one) Yes [Y] No [ ]
2. Do you believe this project will be of any benefit to your area Yes [Y] No [ ]?

   If yes, what will be the benefits to you and the community?

   Improved trade / Commerce
   Enhanced and convinient transportation of goods & services
   Reduced crime rates as motorists/cyclists will be moving at high speeds.

3. What are the problems/issues related to the current state of the Access Road?

   The road is rough, has pot holes, muddy and silting during wet weather. The ~~bushness~~ bushyness encourages crime as criminals hide in bushes along the road.

4. What are some of the negative environmental or socio-economic concerns/issues that could result from the upgrading of the Access Road?

5. How would you like the concerns/issues that will impact from the project to be addressed?

6. How would you like the local community/institution/association to be involved in the project?

Catering facilities / Services related to the project should be outsourced from the nearby hotels.

7. Any other comments/proposals/ concerns about the road project?

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NAME MOSES NJUKUNA ID No: 22780484

Occupation: BUSINESS MAN Company/Organization: _____

Tel No: 0714228163 Location/Area of residence HINDI

1. Are you aware of this project? (Tick one) Yes [✓] No [ ]
2. Do you believe this project will be of any benefit to your area Yes [✓] No [ ]?

   If yes, what will be the benefits to you and the community?

   Easy transportation of goods

3. What are the problems/issues related to the current state of the Access Road?

4. What are some of the negative environmental or socio-economic concerns/issues that could result from the upgrading of the Access Road?

5. How would you like the concerns/issues that will impact from the project to be addressed?

6. How would you like the local community/institution/association to be involved in the project?

7. Any other comments/proposals/ concerns about the road project?

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NAME Lylian Manga ID No: 25309447

Occupation: Cook Company/Organization: _____

Tel No: 0704662479 Location/Area of residence Kililana A

1. Are you aware of this project? (Tick one) Yes [Y] No [ ]
2. Do you believe this project will be of any benefit to your area Yes [Y] No [ ]?

   If yes, what will be the benefits to you and the community?

   Faster / easy transport
   Save time
   More business Opportunities

3. What are the problems/issues related to the current state of the Access Road?

   Mud during rainy season
   Swampy / water flooding on road section
   land owners against trespassing during rainy

4. What are some of the negative environmental or socio-economic concerns/issues that could result from the upgrading of the Access Road?

   - Spread of STDs
   - Tree cutting

5. How would you like the concerns/issues that will impact from the project to be addressed?

Trees to be planted along the traverse
STDs awareness campaign

6. How would you like the local community/institution/association to be involved in the project?

- youth & women to be employed
- To carry out business opportunities.

7. Any other comments/proposals/ concerns about the road project?

Bushes / wildlife enchroachment should be contained. Vet Livestock crossing should be provided.

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NAME Peter mwaura. ID No: 0164487

Occupation: Snr/Headmaster Company/Organization: Administration

Tel No: 0726572443 Location/Area of residence Kibokoni/H/Location

1. Are you aware of this project? (Tick one) Yes [✓] No [ ]
2. Do you believe this project will be of any benefit to your area Yes [✓] No [ ]?

   If yes, what will be the benefits to you and the community?

   easy Travelling and Job Apotunities and creat-business opoluniti es

3. What are the problems/issues related to the current state of the Access Road?

   The Road is narrow it should be Two/ways (To & Flow)

4. What are some of the negative environmental or socio-economic concerns/issues that could result from the upgrading of the Access Road?

   Accidents will happen because it is Knew for the Least Time Then never

5. How would you like the concerns/issues that will impact from the project to be addressed?

Through chief office Hudi Or Mokowe chief's office.

6. How would you like the local community/institution/association to be involved in the project?

Jobs creation for youngones.

7. Any other comments/proposals/ concerns about the road project?

Bumps should not be forgotten so as to creat awaness of truck Drivers.

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NAME KIPLAGAT K STEPHEN ID No: 33676904

Occupation: ADMINISTRATION POLICE OFFICER. Company/Organization: KPS

Tel No: 0790286682 Location/Area of residence LAMU

1. Are you aware of this project? (Tick one) Yes [✓] No [ ]
2. Do you believe this project will be of any benefit to your area Yes [✓]No [ ]?

   If yes, what will be the benefits to you and the community?

   Improved Trade within the area.
   Creation of Job opportunities to area Youths.
   The area will be Residential area due to Road network and Economic Impact within Lamu area.

3. What are the problems/issues related to the current state of the Access Road?

   Insecurity – Recent Alshabaab attacks in area deserve the security to be boosted while the road is on Plan to ease labours hired effectively Conduct the Project.

4. What are some of the negative environmental or socio-economic concerns/issues that could result from the upgrading of the Access Road?

   Illitracy level – The majority youth in the area are illitrate of using machines designed for the

exercise Thus, the administration should be much vigilant to employ Qualified human labour ~~Manpower~~ To avoid deaths.

5. How would you like the concerns/issues that will impact from the project to be addressed?

The locals should be awared during barazas and Public Participation Moves during chief' meetings to accept and never to hinder the project all all levels for it is of benefit to residents.

6. How would you like the local community/institution/association to be involved in the project?

The locals should be involved to report anything they deserve from the Government Concerning Compensation if neccesary.

7. Any other comments/proposals/ concerns about the road project?

- In Urban areas the locals deserve Compensation if their business area (incase) is disrupted so as to bring Justice way to locals.
- All institutions close to road access to be tarmaced to easily link road, thus its a benefit to locals.

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NAME Steven Masha ID No: 26180059

Occupation: Cleaner Company/Organization: _____

Tel No: 0718216651 Location/Area of residence Kililana 'A'

1. Are you aware of this project? (Tick one) Yes [✓] No [ ]
2. Do you believe this project will be of any benefit to your area Yes [✓] No [ ]?

   If yes, what will be the benefits to you and the community?

- easen transport
- More business opportunity
- Improved standard of living - Fair pricing

3. What are the problems/issues related to the current state of the Access Road?

- muddy / sliding during rainy season
- Busy resulting into poor visibility

4. What are some of the negative environmental or socio-economic concerns/issues that could result from the upgrading of the Access Road?

Trees will be cut during bush clearing

5. How would you like the concerns/issues that will impact from the project to be addressed?

Compesatory tree planting

6. How would you like the local community/institution/association to be involved in the project?

Able locals to be given Job Opportunity locals to be allowed to do business / renting.

7. Any other comments/proposals/ concerns about the road project?

N/A

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NAME BAKARI ID No: _____

Occupation: Agriculture Company/Organization: Tana County

Tel No: 0724393270 Location/Area of residence Hindi

1. Are you aware of this project? (Tick one) Yes [✓] No [ ]
2. Do you believe this project will be of any benefit to your area Yes [✓] No [ ]?

   If yes, what will be the benefits to you and the community?

   - Transporting farm produce to other destination to access better prices
   - Improve business.
   - Bring investors to the community
   -

3. What are the problems/issues related to the current state of the Access Road?

   - Portholes- frequent vehicle breakdown. leading to high maintenance costs.
   - Wide road will lead to some tree (coffee tree) fallen down

4. What are some of the negative environmental or socio-economic concerns/issues that could result from the upgrading of the Access Road?

   - Accidents increase due to over-speeding.

5. How would you like the concerns/issues that will impact from the project to be addressed?

- Traffic Police.
- Compensate those affected.

6. How would you like the local community/institution/association to be involved in the project?

- Jobs to be given first consulted priority to the community

7. Any other comments/proposals/ concerns about the road project?

Increase speed to completion of the road. Community have suffered for many years.

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NAME Evans Kamindi ID No: 27053182

Occupation: Mason Company/Organization: CCCC

Tel No: 0729468120 Location/Area of residence Hindi

1. Are you aware of this project? (Tick one) Yes [✓] No [ ]
2. Do you believe this project will be of any benefit to your area Yes [✓] No [ ]?

   If yes, what will be the benefits to you and the community?

- Quick travel to longer destinations
- Reduced crimes (robbery with violence) as motorcyclists will be moving at high speed.
- Improved transport as more fleet will come.
- Enhanced business opportunities.

3. What are the problems/issues related to the current state of the Access Road?

- Rough road, dusty during dry spell, muddy during rains, etc

4. What are some of the negative environmental or socio-economic concerns/issues that could result from the upgrading of the Access Road?

5. How would you like the concerns/issues that will impact from the project to be addressed?

6. How would you like the local community/institution/association to be involved in the project?

priority to be given to local community when recruiting workforce.

7. Any other comments/proposals/ concerns about the road project?

The contractor given the work should offer better salary. Workers welfare and rights to be considered.

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NAME THOMAS MUTHAMBI ID No: 9207555

Occupation: Agricultural Officer Company/Organization: Agriculture & Irrigation

Tel No: 0718196728 Location/Area of residence Hindi Town.

1. Are you aware of this project? (Tick one) Yes [✓] No [ ]
2. Do you believe this project will be of any benefit to your area Yes [✓] No [ ]?

   If yes, what will be the benefits to you and the community?

   Business development, income generation to the farming Community through sale of farm produce.
   Accessibility to other towns will be easy hence opening links with other centres.

3. What are the problems/issues related to the current state of the Access Road?

   Poor transportation of farm produce leading to decay of the produce.
   Unability of Brokers/Agents to reach farmers in the process of marketing/buying farm produce.

4. What are some of the negative environmental or socio-economic concerns/issues that could result from the upgrading of the Access Road?

   Mushrooming of bars, Spirit and wine joints in towns (Hindi & Mokowe) leading to Spreading of Aids.

Prostitution will ~~be~~ increase due to high population necessited by drivers, truckboys and other Kenyans attracted to the area.

5. How would you like the concerns/issues that will impact from the project to be addressed?

- Sensitization of the Community on the sensitive issues.
-

6. How would you like the local community/institution/association to be involved in the project?

- ~~Employment Creation of job opportunities to the locals~~
- Employment of the locals.
- Involve locals in creating the awareness.

7. Any other comments/proposals/ concerns about the road project?

Other Access roads be upgraded e.g. Hindi - Kumga road.

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NAME SAMUEL MWANGI NJUGUNA ID No: 32605295

Occupation: _____ Company/Organization: _____

Tel No: 0717951250 Location/Area of residence _____

1. Are you aware of this project? (Tick one) Yes [✓] No [ ]
2. Do you believe this project will be of any benefit to your area Yes [✓] No [ ]?

   If yes, what will be the benefits to you and the community?

   - Cheap transportation cost.
   - Support provision of job opportunities.
   - Reduce travelling duration/time.
   - Reduction of insecurity
   - Improvement of businesses
3. What are the problems/issues related to the current state of the Access Road?

   - Emission of dust
   - Maintenance cost of boda boda & vehicles is high
   -
4. What are some of the negative environmental or socio-economic concerns/issues that could result from the upgrading of the Access Road?

   - Increase of accident cases.
   -

5. How would you like the concerns/issues that will impact from the project to be addressed?

- Erection/construction of speed bumps.

6. How would you like the local community/institution/association to be involved in the project?

- Provision of employment to local residents.
- Compensation of affected properties

7. Any other comments/proposals/ concerns about the road project?

- prioritize job creation to locals.
- Also improve road safety to users.
- Construction of boda boda shed if there tree will be cut

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NAME Joseph Nasalia Wawera ID No: 29572773

Occupation: Farmer. Company/Organization: Hindi - Mangongoni scheme

Tel No: 0726816161 Location/Area of residence Hindi - Sabasaba Phase 1.

1. Are you aware of this project? (Tick one) Yes [ ] No [ ]
2. Do you believe this project will be of any benefit to your area Yes [✓] No [ ]?

   If yes, what will be the benefits to you and the community?

   - Valuation
   - Improvement of land value.
   - Good Market for agricultural produce.
   - Decrease of Insecurity
3. What are the problems/issues related to the current state of the Access Road?

   - Pot holes on road & roughness during rainy season.
4. What are some of the negative environmental or socio-economic concerns/issues that could result from the upgrading of the Access Road?

   - Increase of accidents.

5. How would you like the concerns/issues that will impact from the project to be addressed?

- Awareness/sensitization campaigns on road safety

6. How would you like the local community/institution/association to be involved in the project?

- Creation of job opportunities to locals.

7. Any other comments/proposals/ concerns about the road project?

- Favourable terms of leasing contracts to land owners by the Contractor.

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NAME MILCAH WANJIRU ID No: 11625074

Occupation: FARMER Company/Organization: —

Tel No: 0714543604 Location/Area of residence HINDI

1. Are you aware of this project? (Tick one) Yes [✓] No [ ]
2. Do you believe this project will be of any benefit to your area Yes [✓] No [ ]?

   If yes, what will be the benefits to you and the community?

   (i) Easier Network
   (ii) Easier transportation of goods & services
   (iii) Introduction of other projects in the area
   (iv) Creation of employments & improving standards of living.

3. What are the problems/issues related to the current state of the Access Road?

   (i) Insecurity
   (ii) High prices of fuel
   (iii) High rate of accidents

4. What are some of the negative environmental or socio-economic concerns/issues that could result from the upgrading of the Access Road?

   (i) Rising of death cases in the area, because of illitracy of the area peoples

On roads Precautions, Knowhow.

5. How would you like the concerns/issues that will impact from the project to be addressed?

- Holding Seminars, by inviting areas Peoples & teach them uses & precautions of the road.
- Schools Children should be lectured about road safety

6. How would you like the local community/institution/association to be involved in the project?

very much Because this will help the area people to improve their standard of livings eg education, businesses improvement,
(ii) Farming Products will increase because the area people rely on farming.

7. Any other comments/proposals/ concerns about the road project?

(i) improvement of businesses in the area.
(ii) Creation of Jobs
(iii) The government will be able to increase high security in the area.

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NAME NURU CHIMVATISI NYIRO ID No: 34240400

Occupation: BUSSINESS Company/Organization: Gulf Energy.

Tel No: 0721753100. Location/Area of residence Kiongoni

1. Are you aware of this project? (Tick one) Yes [✓] No [ ]
2. Do you believe this project will be of any benefit to your area Yes [✓] No [ ]?

   If yes, what will be the benefits to you and the community?

   - Reduce insecurity.
   - Improve socio-economic activities of residents.
   - Increase of customers in petrol station.
3. What are the problems/issues related to the current state of the Access Road?

   - Muddy roads during rainy season.
   - Few number of customers because of poor access road to the petrol station.
   - Presence of dust in petrol station
4. What are some of the negative environmental or socio-economic concerns/issues that could result from the upgrading of the Access Road?

   NIL

5. How would you like the concerns/issues that will impact from the project to be addressed?

N/A.

6. How would you like the local community/institution/association to be involved in the project?

- provision of jobs to locals as a priority.

7. Any other comments/proposals/ concerns about the road project?

- Construction of road ~~to~~ be faster
- Creation of diversions
- Creation of road safety awareness

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Kenya National Highways Authority

Quality Highways, Better Connections

QUESTIONNAIRE FOR ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT PROJECT REPORT: UPGRADING OF THE ACCESS ROAD LINKING THE LAMU PORT TO LAMU-WITU – GARSEN (C112) ROAD TO BITUMEN STANDARDS

Kenya National Highways Authority plans to upgrade the access road linking the Lamu Port to Lamu-Witu – Garsen (C112) Road to bitumen standards to enable easy evacuation of cargo from the new port once completed. EMCA, 1999 and Environmental Impact and Audit Regulations 2003, public consultation is an important aspect to effective and adequate Environmental and Social Impact Study process. In order to carry out a proper Environmental Impact Assessment for the above project, we would like to capture your views as regards to the project on the questions below. Please note that your name and information therein will ONLY be used for the stated purpose in this particular project.

NAME SAID BANKW ID No: 31290922

Occupation: Supervisor Company/Organization: GULF

Tel No: 0714102163 Location/Area of residence Makowe

1. Are you aware of this project? (Tick one) Yes [✓] No [ ]
2. Do you believe this project will be of any benefit to your area Yes [✓] No [ ]?

   If yes, what will be the benefits to you and the community?

   Improved business opportunities
   Enhanced transport to the port

3. What are the problems/issues related to the current state of the Access Road?

   Swamping on some of the sections as it may
   happen Human-wildlife Conflicts

4. What are some of the negative environmental or socio-economic concerns/issues that could result from the upgrading of the Access Road?

   Accidents due to speed

5. How would you like the concerns/issues that will impact from the project to be addressed?

- Speed bumps to created

6. How would you like the local community/institution/association to be involved in the project?

- land owners to be Compensated to avoid Complaints
- Youth to be employed.

7. Any other comments/proposals/ concerns about the road project?

Fishermen to be provided with enhanced fishing gear for deep sea fishing.

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NAME CHIMERA MWACHIDULU ID No: 23947461

Occupation: OPERATOR Company/Organization: RB

Tel No: 0701230525 Location/Area of residence _____

1. Are you aware of this project? (Tick one) Yes [ ] No [ ]
2. Do you believe this project will be of any benefit to your area Yes [ ]No [ ]?

   If yes, what will be the benefits to you and the community?

   - Cheap transportation and ease in transportation.
   - Improvement of socio-economic activities.
   - Low maintenance cost of vehicles.

3. What are the problems/issues related to the current state of the Access Road?

   - Insecurity of road users. because of bush.
   - Presence of dust.

4. What are some of the negative environmental or socio-economic concerns/issues that could result from the upgrading of the Access Road?

5. How would you like the concerns/issues that will impact from the project to be addressed?

6. How would you like the local community/institution/association to be involved in the project?

- Provision of local labour to both skilled & unskilled.

7. Any other comments/proposals/ concerns about the road project?

- Sprinkling of water during construction.
- Provision of CSR such as schools & hospitals to the residents.
- provision of local labour

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NAME DAMARIS WANJIRU ID No: 36204195

Occupation: HINDI Company/Organization: Gulf Energy

Tel No: 0700831903 Location/Area of residence Hindi

1. Are you aware of this project? (Tick one) Yes [✓] No [ ]
2. Do you believe this project will be of any benefit to your area Yes [✓]No [ ]?

   If yes, what will be the benefits to you and the community?

- will be able to access more customers who will be travelling to port.
- Boost security
- Increase of Business activities.

3. What are the problems/issues related to the current state of the Access Road?

- poor access road more so around swampy area which is impassible.
- Transportation is expensive.
-

4. What are some of the negative environmental or socio-economic concerns/issues that could result from the upgrading of the Access Road?

- Accidents to road users.
- Pollution of environment eg dumpsites, gas, & noise.
- Effect to agricultural activities because of population influx.

5. How would you like the concerns/issues that will impact from the project to be addressed?

- Speed bumps & signage on road.
- Road safety awareness campaign.
- Location of dumpsite outside current residential area.
-

6. How would you like the local community/institution/association to be involved in the project?

- First consideration in jobs/employment.
- Compensation of affected property e.g land.
- Sensitize residents on road safety
-

7. Any other comments/proposals/ concerns about the road project?

- Short construction timelines.

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NAME THAMAA KAZUNGU ID No: 33875456

Occupation: _____ Company/Organization: _____

Tel No: 0714293860 Location/Area of residence HINDI

1. Are you aware of this project? (Tick one) Yes [✓] No [ ]
2. Do you believe this project will be of any benefit to your area Yes [ ] No [ ]?

   If yes, what will be the benefits to you and the community?

   Expansion of trade
   Improved security
   Creation of Job Opportunities

3. What are the problems/issues related to the current state of the Access Road?

   Dust & has pot holes
   Muddy / swampy during rains

4. What are some of the negative environmental or socio-economic concerns/issues that could result from the upgrading of the Access Road?

5. How would you like the concerns/issues that will impact from the project to be addressed?

6. How would you like the local community/institution/association to be involved in the project?

The youths should be given Job Opportunities as per their abilities

7. Any other comments/proposals/ concerns about the road project?

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NAME PERER OCHIENG ID No: 28741397

Occupation: MASON Company/Organization: CCCC

Tel No: 0748215343 Location/Area of residence HINDI

1. Are you aware of this project? (Tick one) Yes [✓] No [ ]
2. Do you believe this project will be of any benefit to your area Yes [✓]No [ ]?

   If yes, what will be the benefits to you and the community?

- Transport
- Job opportuties
-

3. What are the problems/issues related to the current state of the Access Road?

- Accidents
- Robery

4. What are some of the negative environmental or socio-economic concerns/issues that could result from the upgrading of the Access Road?

- Accidents
-

5. How would you like the concerns/issues that will impact from the project to be addressed?

- Speed bumps
- Signage
-

6. How would you like the local community/institution/association to be involved in the project?

- local labour given to residents.
-

7. Any other comments/proposals/ concerns about the road project?

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NAME CHANGAWA MWAGANDI ID No: 13486104

Occupation: FARMER Company/Organization: _____

Tel No: 0741891990 Location/Area of residence HINDI

1. Are you aware of this project? (Tick one) Yes [X] No [ ]
2. Do you believe this project will be of any benefit to your area Yes [X] No [ ]?
   If yes, what will be the benefits to you and the community?

Faster transportation
Reduced fare rates
Improved security
Creation of employment opportunity

3. What are the problems/issues related to the current state of the Access Road?

pot holes, swampy during rains

4. What are some of the negative environmental or socio-economic concerns/issues that could result from the upgrading of the Access Road?

5. How would you like the concerns/issues that will impact from the project to be addressed?

6. How would you like the local community/institution/association to be involved in the project?

The indigenous people to be given chance when employing workers

7. Any other comments/proposals/ concerns about the road project?

Land owners to be Compensated.

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NAME ABDALLA AHMED ID No: 28463466

Occupation: pump Attendant Company/Organization: GULF ENERGY

Tel No: 0714451603 Location/Area of residence MOKOWE

1. Are you aware of this project? (Tick one) Yes [ ] No [✓]
2. Do you believe this project will be of any benefit to your area Yes [✓] No [ ]

   If yes, what will be the benefits to you and the community?

- Improved business due to more sales
- Expansion of centres
- Easy transport

3. What are the problems/issues related to the current state of the Access Road?

- pot holes, muddy during rainy season, roughness, dusty

4. What are some of the negative environmental or socio-economic concerns/issues that could result from the upgrading of the Access Road?

- Trees will be cut

5. How would you like the concerns/issues that will impact from the project to be addressed?

land owners to be compensated for trees
Compensatory tree planting

6. How would you like the local community/institution/association to be involved in the project?

Local Community members to be given priority during recruitment of labourers

7. Any other comments/proposals/ concerns about the road project?

The project to be implimented with speed for more development.

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