GOVERNMENT OF THE REPUBLIC OF KENYA

MINISTRY OF LANDS PUBLIC WORKS, HOUSING AND URBAN DEVELOPMENT
State Department of Housing and Urban Development

SECOND KENYA INFORMAL SETTLEMENT IMPROVEMENT PROJECT (KISIP 2)

Financed by:

IDA International Development Association WORLD BANK GROUP

AFD AGENCE FRANÇAISE DE DÉVELOPPEMENT

CONTRACT NUMBER: KE-MOTI-298199-CS-QCBS

CONSULTANCY SERVICES FOR RESETTLEMENT ACTION PLAN (RAP) AND ENVIRONMENTAL AND SOCIAL IMPACT ASSESSEMENT (ESIA) REPORTS AND SUPERVISION OF CONSTRUCTION WORKS IN SELECTED INFORMAL SETTLEMENTS (MOKOWE) IN LAMU COUNTY

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT REPORT FOR MOKOWE SETTLEMENT IN LAMU COUNTY

DATE: JULY 2024

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CERTIFICATION AND DOCUMENT AUTHENTICATION

This document has been prepared in accordance with the Environmental (Impact Assessment and Audit) Regulations of 2003 amended 2019 of the Kenya Gazette Supplement No.56 of 13th June 2003, Legal Notice No. 101, and the World Bank OP 4.12 on involuntary settlement, 4.01 on environmental assessment, OP 4.11 on physical cultural resources, OP 4.10 on indigenous people and World Bank Safeguard Policy OP 17.50, 2001 among other World Bank policies.

This report is prepared for and on behalf of:

The Proponent

The County Government of Lamu, Ministry of Transport, Infrastructure, Housing and Urban Development, State Department of Housing and Urban Development.

P.O. Box 30113-00100

Nairobi - Kenya.

Designation ----------

Name ----------

Signature ----------

Date ----------

Lead Expert

I, **Charles Muyembe Lwanga, Lead Expert, License Number 6417** submit this Environmental and Social Impact Assessment (ESIA) Study of the infrastructure upgrading plans, detailed engineering designs and preparation of procurement documents, Resettlement Action Plan (RAP) and Environmental and Social Impact Assessment (ESIA) reports, and Vulnerable and Marginalised groups plan (VMGP), where applicable, and supervision of construction works in selected informal settlements for Mokowe settlement Upgrade Project.

Signed at …… on this ……day of **July 2024**

Signature: ……

Designation: ESIA/AUDIT LEAD EXPERT REGISTRATION. NO 6417

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LIST OF ACRONYMS

AfD	Agence Francaise Developement
ARAP	Abbreviated Resettlement Action Plan
BoQ	Bill of Quantities
EHS	Environment Health and Safety
EA	Environmental Assessment
ESAAP	Environment and Social Audit Action Plan
ESIA	Environmental and Social Impact Assessment
ESMMP	Environment and Social Management & Monitoring Plan
EMCA	Environmental Management and Coordination Act
IDA	International Development Association
LAWASCO	Lamu Water and Sewerage Company
GoK	Government of Kenya
GDP	Gross Domestic Product
GHG	Green House Gases
HSP	Health and Safety Plan
MTIH&UD	Ministry of Transport, Infrastructure Housing and Urban Development
MTP	Medium Term Plan
MDG	Millennium Development Goal
MSF	Sustainable Development Goals
NEC	National Environment Council
NEP	National Environment Policy
NEMA	National Environment Management Authority
NGO	Non-Governmental Organization
PCR	Physical Cultural Resources
PCT	Project Committee Team
PDO	Project Development Objectives
PRSP	Poverty Reduction Strategy Paper
RAP	Resettlement Action Plan
OP	Operation Policy
OSHA	Occupational Health and Safety
SDH&UD	State Department of Housing and Urban Development
SDG	Sustainable Development Goals
SUP	Socially Uplifting Project
WB	World Bank

EXECUTIVE SUMMARY

Background Information

The Government of Kenya with support from the World Bank and Agence Francaise Developement (AFD)is implementing the Kenya Informal Settlements Improvements Project II (KISIP 2) to consolidate the gains made under KISIP I and enhance the benefits of the project to more people in informal settlements. This Second phase of the Kenya Informal Settlements Project (KISIP 2) will build on the successes and lessons learned from KISIP I, but also introduce new interventions to deepen its overall impact. It will support the interventions that have been successful under KISIP I, namely: tenure regularization, infrastructure upgrading, and institutional strengthening. Unlike KISIP I, however, the proposed project will include new approaches and new activities to strengthen its impact on the participating communities.

Second Kenya Informal Settlement Improvement Project (KISIP 2) follows the lessons learnt from the success of KISIP I.

The ESIA was conducting in line with the guidelines of both World Bank operating policy and the Environmental Management and Coordination Act 2015 Environmental EIA regulations of 2019.

Project objective

Mokowe Old Town settlement is characterized by poorly planned infrastructures that is struggling to accommodate its rapidly growing population that's evidenced by its location as a divisional headquarters

The Objective of the proposed project in Mokowe Old Town informal settlement is to upgrade the unpaved identified road networks to bitumen with associated conventional drainage system, improve security through installation of High Mast lighting and introduce solid collection points and disposal points to manage environmental degradation within the settlement.

Objectives of the Comprehensive Project Report.

The CPR like any other Environmental & Social Impact Assessment (ESIA) is expected to achieve the following objectives:

- To identify all potential significant environmental and social impacts of the proposed Project and recommend measures for mitigation.
- To assess and predict the potential impacts during site preparation, construction, operational and decommissioning stages of the Project.
- To verify compliance with environmental regulations.
- To generate baseline data for monitoring and evaluation of how well the mitigation measures will be implemented during the Project cycle.
- To allow for public participation.
- To prepare an Environmental and Social Management Plan to mitigate the identified impacts so as to ensure sustainability of the proposed Projects.
- To recommend cost effective measures to be implemented to mitigate against the negative impacts.

ESIA Approach and Methodology

Environmental and Social Screening; This step was conducted through legal review and desktop studies to assess whether there will be a need for an environmental and social impact assessment, and what level of assessment is necessary. This was done using a screening checklist in reference to requirements of the EMCA, 1999, and specifically the second schedule. The proposed projects are listed as medium risk projects in Legal

Notice 31&32 of EMCA and under the World Banks framework, as Category B – Projects with potential limited adverse environmental and social risks and/or impacts that are few in number, generally site-specific, largely reversible and readily addressed through mitigation measures.

The project screening report indicating the Environmental and Social Management Framework checklist as well as the Resettlement Policy Framework checklist have been annexed in the report below.

Environmental and Social Scoping; The scoping process, through an ESIA scoping checklist, was conducted to help narrow down onto the most critical issues requiring attention during the assessment. Environmental issues were categorized into physical, natural/ecological and social, economic and cultural aspects. It also included discussions with key stakeholders, managers and design engineers as well as interviews with local communities. Data from secondary sources was used to outline the bio-physical features, socio-economic characteristics of the residents, the existing infrastructure services and the forms of land tenure.

Desktop Study; Desktop study included document review on the nature of the proposed activities, project documents, designs, policy and legislative framework as well as the environmental setting of the area among others.

Site Assessment; Field visits were made for physical inspections of the areas around the project site and the environmental status of the surrounding areas to determine the anticipated impacts.

Public Participation; Public participation meetings were conducted specifically the project area. Random surveys and Focused Group Discussions (FGDs) were conducted in the smaller groups of residents located along the road corridor. To ensure adequate public participation in the ESIA process, questionnaires were administered to the local communities, and the information gathered was subsequently synthesized and incorporated into the ESIA Comprehensive Project Report (CPR). Additionally, the consultant incorporated the concerns and views of all stakeholders and the affected people.

General questionnaires; Questionnaires were structured to gather data from respondents on various subjects. Typically, they began with an introduction outlining the purpose; followed by sections for demographic information such as age, gender, education, and occupation. The main body of the questionnaire comprises clear and specific questions, including both closed-ended (multiple-choice, yes/no) and open-ended formats, organized logically to address the primary objectives. Additional sections allow for detailed feedback or exploration of specific topics. Before deployment, questionnaires undergo review and pilot testing to ensure clarity, relevance, and accuracy.

Key informants' interviews; Following this, background information is gathered from the informant, including details about their expertise or experience. The main body of the interview consists of focused questions designed to elicit detailed insights or perspectives on specific aspects of the topic, with the interviewer probing further and seeking clarification where necessary. Towards the end of the interview, the interviewer may summarize key points discussed, inviting the informant to reflect on additional insights. The interview concludes with gratitude for participation and a reminder of any follow-up steps. Subsequently, the conversation is transcribed and analyzed to extract relevant themes and insights. Key informant interviews served as invaluable tools for obtaining rich qualitative data, offering nuanced perspectives that complement quantitative research methods. Some of the key informants came from members of the youth, people with disabilities, women, public facility institutions and religious leaders

Socio-economic surveys; Socioeconomic surveys are comprehensive data collection efforts aimed at understanding the social and economic characteristics of a population or specific groups within it. These surveys began with the careful selection of a representative sample using various sampling techniques to ensure accuracy and reliability. A structured questionnaire is then developed to gather information on demographics,

income, education, employment, housing, health, and access to services. Trained surveyors administered the questionnaire through face-to-face interviews, adhering to standardized protocols to maintain data quality.

Interactive meetings; These meetings were characterized by active engagement, with participants encouraged to contribute their insights, ask questions, and provide feedback. Through interactive tools such as brainstorming sessions, group discussions, and breakout activities, attendees had the opportunity to explore topics in depth, share diverse perspectives, and generate innovative solutions. Facilitators/consultants played a crucial role in guiding the discussions, ensuring that all voices are heard, and maintaining a constructive and inclusive environment. By fostering meaningful interaction and collaboration, interactive meetings led a better decision-making, and largely informed the consultants on proposed projects.

Data Analysis, Reporting and Documentation; Data was quantitatively and qualitatively analyzed in terms of themes. The Environmental Social Impact Assessment Study Report was compiled from the findings in accordance with the guidelines issued by NEMA for such works and prepared and submitted by the proponent for consideration and approval. The Consultant ensured constant briefing of the client during the exercise.

Project Location

The proposed project is the comprehensive upgrade of roads in Mokowe Old Town Settlement Marram road to bitumen standards, construction of storm water drainage, and the installation of high-mast lights in Mokowe Old Town settlement, situated within the Municipality of Lamu West, Lamu County. The need for this infrastructure enhancement arises from the growing importance of the area, coupled with the pressing demand for improved connectivity and urban development. Mokowe Old Town settlement, it is a critical locale within the Lamu County and the existing road network has become inadequate to support the evolving socio-economic activities and population growth in the area since it became the official Lamu County headquarters.

Mokowe Old Town is located in Mkomani Ward, Mkomani Location, Mokowe Sub-location, Lamu West constituency in Lamu county. It is 8m above sea level and if the sea rises two meters above, nearby areas are affected. It is the last town on the mainland. Mokowe is located along the Garsen -Witu highway and it is 120 km East of Garsen.

The proposed project is situated within the vibrant municipality of Lamu, which is part of Lamu County. The geographical coordinates of the project's starting point are approximately 2°23'12.85"S latitude and 40° 8'61.26"E longitude. The elevation at the initiation of the road is recorded at 4 – 10 meters above sea level, providing a crucial reference point for the project's topographical considerations.

Project Description

The project's geographical scope extends from Mokowe Hospital to Tumbo La Kati, covering an approximate distance of 849 meters. Also, there are other 4No feeder roads, joining the main road. The road, characterized by its current suboptimal condition, is in need of a comprehensive overhaul to accommodate increased traffic, enhance safety, and support the burgeoning economic activities in the town. In addition, the existing road needs to be upgraded to merge with the design of Mokowe – Witu Road drainage design system which currently is causing flood in most parts of Mokowe by being higher than the existing roads and drainage system.

Furthermore, the installation of high-mast lights aims to address issues of inadequate lighting along the road, contributing to increased safety for pedestrians and motorists, especially during night-time. The storm water drainage component is integral to managing potential water- flood issues, ensuring that the upgraded road system is resilient to adverse weather conditions and minimizing environmental impacts.

Proposed Scope of Works

Table A- 1: Proposed project Summary description

Proposed Projects	Description			
	No of Footpaths	**Widths**	**Total lengths**	**Nature of upgrade**
1. Roads	2	6m	849m	Upgrade to bitumen standard with side pavements, culverts and crossing paths.
2. Drainage system	**Description**			
	Construction of Lined up open drains and infiltration pits with No culverts no crossing points			
3. Street Lighting-Installation off High Mast lighting	**Description**			
	No of High Mast lighting		**Height**	**Luminous Radius (Coverage)**
	1		30m	150m
4. Solid Waste Management Systems	**Description**			
	Introduction of Waste collection exercise at Household level, Transport to Transfer station for sorting into recyclables and non-Recyclables by non-motorist means for instance cart. Treatment of non- recyclables and disposal to authorised approved site done by County Government of Lamu			

Roads and Drainage System

Table A- 2: Roads and drainage system

Road Number	Drawing Reference Name	Road Length (Metres)	Width (m)
Road 1	**KISIP 2/LAMU/PP/MOKOWE ROAD 01**	**602**	**6**
Road 2	**KISIP 2/LAMU/PP/MOKOWE ROAD 02**	**247**	**6**
Total		**849**	

The works entail:

Walkways/Footpaths:

- 60mm concrete blocks surfacing
- 50mm Sand/ Quarry dust layer course
- 100mm Natural Gravel base
- 150mm Natural Gravel Subbase

The Drainage system construction works shall include;

- Lined open drains
- Infiltration pits

Street Lighting Works

The **Street Lighting works** shall comprise of installation of 1No. High Mast Solar light with a 30 m high steel tower and 3000mm by 3000mm concrete foundation. Radius of illumination is 150m.

Project Budget

Table A- 3: Roads and Drainage Cost

BILL No.	DESCRIPTION	AMOUNT
	MOKOWE ROADS	
4.00	SITE CLEARANCE AND TOPSOIL STRIPPING	261,063.01
5.00	EARTHWORKS	15,930,598.58
8.00	CULVERT & DRAINAGE WORKS	17,368,188.19
9.00	PASSAGE OF TRAFFIC	1,452,774.59
12.00	NATURAL MATERIAL FOR SUBBASE AND BASE	4,244,631.60
14.00	CEMENT AND LIME TREATMENT	1,394,856.87
16.00	BITUMINOUS MIXES/WEARING COURSE	15,848,511.60
20.00	ROAD FURNITURE	7,992,255.49
	SUB - TOTAL 1	**64,492,879.93**

Table A- 4: High Mast Street lighting cost

BILL No.	DESCRIPTION	AMOUNT
1.0	FLOODLIGHTING AND OTHER SERVICES	**5,984,200.00**
2.0	CIVIL AND STRUCTURAL WORKS	**2,266,200.00**
	SUB TOTAL	**8,250,400.00**

Social Economic and Environmental baseline

Lamu County has two constituencies namely; Lamu West and Lamu East. Within the two constituencies, there are 10 County Assembly Wards. Of these, Lamu West constituency has seven wards comprising Sheila, Mkomani, Hindi, Mkunumbi, Hongwe, Witu and Bahari. Lamu East constituency on the other hand as County Assembly Wards comprising Wiyoni, Matondoni Old Town and Busuba.

Mokowe Old Town is located in Mkomani Ward, Mkomani Location, Mokowe Sublocation, Lamu West constituency in Lamu county. It is 8m above sea level and if the sea rises two meters above, nearby areas are affected. It is the last town on the mainland. Mokowe is located along the Garsen -Witu highway and it is 120 km East of Garsen.

The geographical coordinates of the project's starting point are approximately 2°23'12.85"S latitude and 40° 8'61.26"E longitude.

In Mokowe area people use tapped water from Lamu Water and Sewerage Company Limited. Lamu Municipality has several water sources which include;

- Shella Sand dunes aquifer
- Chomo Hindi aquifer
- Belebele Hindi aquifer

The population of the Republic of Kenya is approximately 43 million and Lamu is the least populated county in Kenya. The population of Lamu County is 143,920 including 76,103 males and 67,813 females. (*Source KNBS 2019 Kenya Population and Housing Census*)

Since the population of Lamu County is increasing fairly rapid, the total population is estimated to reach 184,800 by 2027.

The settlement has an area of 20Ha and a population of about 5780 people (As per 2019 Census) is one of the fastest growing towns of Lamu County. It serves as Lamu County Headquarters and has several bank branches, a post office and a police station. There is a jetty which serves as an entry point from Lamu and other islands. The main economic activity of people living in Mokowe settlement is tourism and fishing.

Generally, Lamu County has both Muslims and Christians and a few Hindus, however Muslims lead at more 71,786. In Mokowe settlement, majority of the residents still stand out to be Muslims.

In accordance with the findings from the draft settlement and upgrading plan committee, a series of consultations with stakeholders, and thorough feasibility studies conducted by the settlement committee, priority infrastructures were identified and subsequently validated. The county housing and urban planning committee, in collaboration with KISIP and the Consultant, critically reviewed the feasibility of the proposed infrastructures.

Roads and Drainage: Access to places of residence is by unpaved roads. Since Mokowe houses the County Government headquarters, major and minor collector roads are improved to bitumen standard with lined open drains. Mokowe Old Town is densely populated and the existing road reserve is highly encroached by permanent and semi-permanent structures.

There is no conventional storm water drainage system in the settlement and some of the existing ground levels are slightly lower than the ocean levels leading to drainage problems and instances of flooding during heavy rains.

Solid waste disposal: There are no solid waste collection or disposal points in the settlement and residents dump their waste at open landfills which are either close to homesteads or by the roads which is against NEMA regulations.

Lamu East Town features a tropical dry savannah climate, tending towards semi-arid conditions and characterized by two distinct rainy seasons annually. The long rains typically span from April to July, while the short rains manifest between October and November. The region experiences diverse annual rainfall, ranging from 900 mm to 1,100 mm, influenced by topography and the impact of monsoon winds. Rainfall intensity diminishes noticeably as one moves inland.

The climate in Lamu East is generally characterized by consistent heat and humidity throughout the year. Mean annual temperatures range between 21°C and 30°C, contributing to a warm climate. Coastal areas maintain an average relative humidity of 65%, gradually decreasing as one moves towards the hinterland.

Lamu East Sub-County is situated within the Coastal Plains; the settlement is a positioned below an elevation of 5m above sea level. The settlement is characterized by three distinct landscape units: (i) the "beach," (ii) the "coral landscape," and (iii) the "plateau."

In Mokowe, the month with the most daily hours of sunshine is February with an average of 8.26 hours of sunshine. In total there are 256.19 hours of sunshine throughout February. The month with the fewest daily hours of sunshine in Mokowe is January with an average of 6.82 hours of sunshine a day. In total there are 211.54 hours of sunshine in January. Around 2726.21 hours of sunshine are counted in Mokowe throughout the year. On average there are 89.7 hours of sunshine per month.

The average hourly wind speed in Mokowe experiences significant seasonal variation over the course of the year. The windier part of the year lasts for 5 months, from May 19 to October 18, with average wind speeds of more than 8.9 miles per hour. The windiest month of the year in Mokowe is August, with an average hourly wind speed of 11.4 miles per hour. The calmer time of year lasts for 7.0 months, from October 18 to May 19. The calmest month of the year in Mokowe is March, with an average hourly wind speed of 6.4 miles per hour.

Lamu County's geological structure is predominantly shaped by Quaternary to Recent sediments, mainly characterized by limestone and coral reef stones. Embedded within this framework are sandstone formations that evolved across different eras, spanning from the Permo-Carboniferous era to the Tertiary period, categorized into four sequences with variations in grain sizes, porosity, permeability, compaction, shaliness, and cementation.

This geological layout significantly influences groundwater presence and accessibility. The hydrological behavior of the region is closely tied to its topography and geology. Rivers flow southeastward, perpendicular to the Indian Ocean coastline, while intermittent streams contribute to groundwater reserves by draining into limestone karsts. Lamu Island and much of the coastal zone are covered by sand dunes, acting as groundwater collection areas that supply freshwater to settlements like Lamu Town. This groundwater source mainly relies on replenishment from direct rainfall and seasonal runoff.

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 too 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 fairly alkalinic with pH 8.26.

There are three types of soil found in Mokowe town Sandy loams; Brown Sandy clay loams; coastal sands. Sandy loams are found in large parts of the town. Coastal sands are found along Koleni Mangrove.

Forests: Lamu County is home to several forests. 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).

Grasslands*:* Palm-bushed grassland areas tend to be found in sandy well drained bottomland areas. The grasslands present are chiefly natural and pristine.

Wetlands: Lamu County has wetlands and swampy areas, particularly around rivers and streams. These wetlands support unique plant communities adapted to waterlogged conditions, including sedges, reeds, and aquatic plants like mangrove. 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.

Agricultural crops: Some of the lands are under agriculture where different types of crops (cow beans, finger millet, maize, black beans) and agro forestry-based trees such cashew nuts, casuarina, and mangoes are grown. Other sites have been colonized by castor plant cashew nut trees, Indigofera sp, Crotaralia sp.

Due to the disturbed nature of the project area only a few mammal species are found around the project site. Mongooses are also common as indicated by the presence of their scant. The area also hosts a vast bird species.

Policy, Legal and Administrative Framework

The ESIA Report preparation was guided by provision of relevant policies, legislation and institutional frameworks that guide preparation of ESIA in Kenya and the international standards, including the World Bank Safeguard Policies. These instruments are presented as follows:

National Laws and Regulations

- The Environmental Management and Co-ordination Act, (EMCA) 1999 and amended in 2015 and subsequent Regulations.
- The Environmental (Impact Assessment and Audit) (Amendment) Regulations, 2003 amended 2019.
- Environmental Management and Coordination, (Water Quality) Regulations 2006
- Environmental Management and Co-ordination (Waste Management) Regulations, 2006
- Environmental Management and Co-ordination (Air Quality) Regulations, 2022
- Environmental Management and Coordination (Wetlands, River Banks, Lake Shores and Sea Shore Management) Regulation, 2009
- Environmental Management and Coordination (Noise and Excessive Vibration Pollution) (Control) Regulations, 2009
- The Kenya Roads Act, 2007
- Public Roads and Roads of Access Act 1972 revised 2010 Cap 399
- The Traffic Act Cap 403 of 2013
- Occupational Health and Safety Act 2007 CAP 514
- The Public Health Act 1986 revised 2012 (Cap 242)
- The Physical and Land Use Planning Act, (PLUPA) 2019
- County Government Act No.17 of 2012
- Urban Areas and Cities (Amendment) Act, 2017.
- National Construction Authority ACT No. 41 of 2011
- Sustainable Waste Management Act 2021
- Children Act (2001), revised 2016
- Employment Act, 2007
- Sexual Offences Act (2006)
- The Constitution of Kenya, 2010
- County Laws and Regulation
- Lamu County Climate Change Act 2022
- National Policy Framework
- Kenya Vision 2030
- The National Environmental Action Plan (NEAP) 1994
- Policy Paper on Environment and Development 2014
- The National Water Resources Management Policy (1999)
- HIV and AIDS Policy 2009

- Gender Policy 2011
- National Housing policy 2016
- Sessional Paper No. 7 of 2005 on National Employment Policy and Strategies for Kenya
- County Policy Framework
- Lamu County integrated development goals 2023-2027

The Sustainable Development Goals

- SDG Goal 1: No poverty; Through the development of the informal settlement it enhances economic opportunities, improving living conditions, and empowering communities.
- SDG Goal 2: Zero Hunger; Road Upgrade improves and other project developments improve access to food, resilience to climate change, environmental sustainability, and social inclusion.
- SDG Goal 3: Good health & well Being; The project contributes to the improved health and productivity through the provision of a safe and clean environment.
- SDG Goal 4: Quality education; Not Applicable
- SDG Goal 5: Gender equality; By considering the specific needs and priorities of women and girls in these communities during the project phases
- SDG Goal 6: clean water and sanitation; infrastructure improvement within the settlement can contribute to advancing the broader objectives of sustainable water management, sanitation access.
- SDG Goal 7: Affordable and clean energy; The project entails the sustainable usage of energy to power the high mass lights and other operations of the project.
- SDG Goal 8: Decent work and economic growth; Employment creation that will contribute to reducing the proportion of youth not in employment.
- SDG Goal 9: Industry, Innovation and infrastructure; Through infrastructure development of the settlement it promotes resilience, inclusivity, sustainable development, and innovation within the community.
- SDG Goal 10: Reduced inequalities; Services provided by each project infrastructure is intended to be accessible to all for example the roads constructed.
- SDG Goal 11: Sustainable cities and communities; The proposed project plans to improve/develop informal settlements of Mokowe, Lamu County.
- SDG Goal 12: Responsible consumption and production; Its indirectly applicable through considerations such as waste management, pollution prevention, and Use of resources sustainably impacts on coastal communities.
- SDG Goal 13: Climate action; Integrating climate action principles into the informal settlement upgrade project aligns with SDG Goal 13's objectives by mitigating climate change.
- SDG Goal 14: Life below water ; The drainage of the storm water puts into consideration the aquatic life.
- SDG Goal 15: Life on land; Implementing Sustainable development and environmental conservation into the design and implementation of infrastructure projects in informal settlements helps achieve SDG 15.
- SDG Goal 16: Peace justice and strong institutions; Through the development of the informal settlement it enhances economic opportunities, improving living conditions, and empowering communities.
- SDG Goal 17: Partnerships for the goals; Road Upgrade improves and other project developments improve access to food, resilience to climate change, environmental sustainability, and social inclusion.

International Safeguard Policies and Standards

- World Bank OP 4.01 on Environment Assessment
- World Bank Group Environment, Health and Safety Guidelines

Other international instruments used included AfDB Integrated Safeguard System, International Finance Cooperation (IFC) Performance Standard, Labour and Working Conditions, and other applicable international conventions and treaties were also reviewed.

Multilateral Environmental Agreements

Kenya is signatory to several international conventions and treaties that would need to be adhered to in implementing this project and are geared towards environmental protection and conservation. Some of these include;

- ILO Conventions ratified by Government of Kenya
- Safety and Health in Construction Recommendation, 1988
- United Nations Framework Convention on Climate Change
- United Nations Convention on Biological Diversity (UNCBD)

Comments obtained during the public consultation meetings

The assessment involved consultations with relevant stakeholders in target Project area. The aim of stakeholder consultations was to give a platform for information sharing and opinion gathering in relation to the proposed Project. Consultations were done in form of public meetings, focused group discussion, and key informant interviews. The issues were than analyzed and presented to design team for finalization of Project designs and planning on how best to implement the Project. The main meetings were held in the month of February 2024.

Table A- 5:Meeting schedule

Date	Meeting Venue	Stakeholder Consulted	Number of Meeting Attendance	Gender
21st February 2024	Chief's Camp	County and Local Administration {Lamu West Constituency; Location) and Public from the respective villages sub-Locations	12	Male; 8 Female; 4

Summary of Stakeholder Consultation Issues

Table A- 6: Summary of stakeholder consultation issues

ISSUE	RESPONSE
Residents wanted to know how soon the project would begin	EIA team assured the residents that the project had reached advanced stages and that a bunch of approvals such as NEMA were still under processing.

Area chief acknowledge the positive impacts of the project and inquired if employment would include women	Team was assured of women inclusivity in job employment with a 2/3 gender rule.
Residents wanted to know whether high-masts security lights will be sufficient	Residents were informed that the radius coverage of the lighting was 150m which would cover a greater area within the settlement
Residents wanted to know if the contractor will source workforce from the area during construction	EIA team informed residents that during construction the contractor will source some responsible youth and women from the area as casuals to supplement his permanent staff. Residents with relevant skills and training can also present their certificates to be considered for employment opportunities if need arises.
A resident had fears over delay, just like other projects in the past.	EIA Team informed members that the project was going on and that the most primary phases were near completion.
Residents gave an outcry on the poor solid waste disposal which is mostly ocean dumped at the sea front	The project team explained that the current project was scoped for provision of improved walkways, drainage and high-masts security lighting. Therefore, the problem had been addressed adequately.
Fear over storm water causing high-risk flooding and water stagnation. High floods reach a depth of an adult's waist and floods last more than a week.	The residents were assured that the drainage system will eliminate flooding and reduce stagnation in the area. As such, the project will address public health concerns like water-borne diseases and malaria which is caused by mosquitoes breeding in still waters.
Safety risks of existing drainage, its overflow during heavy rains emerged.	EIA team informed the residents that drainage specialists will be employed to inspect and evaluate the safety status of the existing infrastructure as per WB's Environmental and Social Operational Safeguard Policy

Stakeholders concerns

The following is a summary of concerns that were raised by the consulted stakeholders regarding implementation of the proposed project;

Positive Comments made by the Stakeholders

The following section provides details on the positive impacts of the proposed project as expressed by the stakeholders who interviewed:

- Creation of Employment Opportunities
- Increased Business Opportunities
- Cheap and Faster Means of Transport
- Easy and Fast Movement of People
- Transfer of Skills
- Negative Concerns of the Stakeholders
- Noise pollution
- Dust Generation
- Loss of Vegetation Cover
- Road Accidents
- Increase in the spread of STD, HIV and AIDS

Project Implementation

Given the immense benefits that the proposed project will produce, the community members urged the proponent to hasten so that the community can start benefitting from it. Those living in towns are especially very keen on the transportation aspect on their environment on storm wastewater management, and street lighting.

Project acceptance and support

There was a near unanimous support for the proposed project. This was as a result of clear explanation of what is proposed and the way forward in the implementation process. The community understood that the project is feasible in all aspects. In addition, the project will spur growth in the area. The local administration indicated that he and the entire community would support the project as long as it promoted development in the area. The community has no objections for the project since there are similar projects in other parts of the country that have benefited the residents.

Potential Positive Impacts for Road Upgrade and Storm Water Drainage Construction

- Creation of employment opportunities for maintenance and operation crew.
- Creation of faster means of transport for passengers and bulk cargo within the municipality
- Reduced cost of public transportation.
- Increased security.
- Increased property value
- Improvement of quality of life
- Reduced risk of accidents on the roads.
- Contribution of revenue to the municipality, county, national and regional governments.
- Reduction in Flooding

Potential Positive Impacts for Installation of High Mast Lights

- Enhanced Visibility
- Improved Safety
- Increased Security
- Reduced Crime Rates
- Enhanced Aesthetic Value

Potential Negative Impacts for Road Upgrade

- Environmental Disturbance
- Noise and Excessive Vibrations.
- Air Pollution
- Potential for Construction Accidents
- Generation of Solid Wastes
- Emergence and Spread of Social Vices

Potential Negative Impacts for Storm Water Drainage Construction

- Disturbance to Local Ecology
- Potential Water Contamination
- Disruption to Surrounding Land Use
- Temporary Inconvenience
- Alteration of Natural Drainage Patterns

Potential Negative Impacts on Installation of High Mast Lights

- Energy Consumption
- Disturbance to Nocturnal Wildlife
- Glare and Visual Discomfort

ESMMP

ESMMP for Preconstruction Stage

ESMMP for Roads, footpaths

Environmental impact	Impact level	Proposed Mitigation Measures	Monitoring Indicators	Responsibility	Performance	Frequency	Estimated Cost
	Environmental						
Approval from NEMA and other Agencies for ESIA report	Medium	The Proponent shall ensure that all pertinent permits, certificates, and licenses have been obtained prior to any activities commencing on- site and are strictly adhered to.	Environment licenses Degree of completion of set of required approvals/ permits issued	County Government of Lamu Contractor	EIA/ Number of EIA Permits obtained	Project Cycle	250,000.00
Clearance of Corridors	Medium	In line with the provisions of the RPF, prepare and effectively implement a plan for managing the land-related impacts. Facilitate all affected persons and address all grievances prior to commencing works.	Displacements Number of facilitated PAPs	County Government of Lamu Consultant KISIP	Visibly marked road reserve	During designing time and construction	242,000.00
	Social impacts						
Divided opinion on project implementations	Medium	Conduct extensive public participation and consultation with key stakeholders	Public opinion, Satisfaction to the relevant authority	Consultant GRC SEC KISIP	-Total project support by all	Throughout all stages from onset	200,000.00
Risk of excluding some beneficiaries due to unfriendly infrastructure designs	Low	The implementation of the infrastructure assumed universal design. Disseminate this information to the beneficiaries through public participation forums.	Number of public participation forums held.	KISIP Contactor Consultant GRC EC	SEC/GRC meetings	During designing Stage	250,000.00

ESMMP for Drainages

Environmental impact	Impact level	Proposed Mitigation Measures	Monitoring Indicators	Responsibility	Performance	Frequency	Estimated Cost
Environmental							
Approval from NEMA and other Agencies for ESIA report	Medium	The Proponent shall ensure that all pertinent permits, certificates, and licenses have been obtained prior to any activities commencing on- site and are strictly adhered to.	Environment licenses Degree of completion of set of required approvals/ permits issued	County Government of Lamu Contractor	EIA/ Number of EIA Permits obtained	Project Cycle	250,000.00
Clearance of Corridors	Medium	In line with the provisions of the RPF, prepare and effectively implement a plan for managing the land-related impacts. Facilitate all affected persons and address all grievances prior to commencing works.	Displacements Number of facilitated PAPs	County Government of Lamu Consultant KISIP	Visibly marked road reserve	During designing time and construction	242,000.00
Social impacts							
Divided opinion on project implementations	Medium	Conduct extensive public participation and consultation with key stakeholders	Public opinion, Satisfaction to the relevant authority	Consultant GRC SEC KISIP	-Total project support by all	Throughout all stages from onset	200,000.00
Risk of excluding some beneficiaries due to unfriendly infrastructure designs	Low	The implementation of the infrastructure assumed universal design. Disseminate this information to the beneficiaries through public participation forums.	Number of public participation forums held.	KISIP Contactor Consultant GRC EC	SEC/GRC meetings	During designing Stage	250,000.00

ESMMP for Streetlights

Environmental impact	Impact level	Proposed Mitigation Measures	Monitoring Indicators	Responsibility	Performance	Frequency	Estimated Cost

Environmental							
Approval from NEMA and other Agencies for ESIA report	Medium	The Proponent shall ensure that all pertinent permits, certificates, and licenses have been obtained prior to any activities commencing on- site and are strictly adhered to.	Environment licenses Degree of completion of set of required approvals/ permits issued	County Government of Lamu Contractor	EIA/ Number of EIA Permits obtained	Project Cycle	250,000.00
Clearance of Corridors	Medium	In line with the provisions of the RPF, prepare and effectively implement a plan for managing the land-related impacts. Facilitate all affected persons and address all grievances prior to commencing works.	Displacements Number of facilitated PAPs	County Government of Lamu Consultant KISIP	Visibly marked road reserve	During designing time and construction	242,000.00
Social impacts							
Divided opinion on project implementations	Medium	Conduct extensive public participation and consultation with key stakeholders	Public opinion, Satisfaction to the relevant authority	Consultant GRC SEC KISIP	-Total project support by all	Throughout all stages from onset	200,000.00
Risk of excluding some beneficiaries due to unfriendly infrastructure designs	Low	The implementation of the infrastructure assumed universal design. Disseminate this information to the beneficiaries through public participation forums.	Number of public participation forums held.	KISIP Contactor Consultant GRC EC	SEC/GRC meetings	During designing Stage	250,000.00

ESMMP for Construction Phase

ESMMP for Roads and footpaths

Possible Impact	Impact Rating level	Management Actions	Monitoring Indicators	Target Areas and Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
Environmental						

Possible Impact	Impact Rating level	Management Actions	Monitoring Indicators	Target Areas and Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
Noise pollution and Excessive Vibrations	Moderate	Enforce EMCA 1999, Revised 2015 (Noise and Excessive Vibrations Regulations of 2009) Maintain noise level within acceptable limits (55 Decibels during the day and 35 Decibels during the night) and construction activities shall, where possible, be confined to normal working hours in the residential areas Hospitals and other noise sensitive areas such as schools shall be notified by the Contractor at least 5 days before construction is due to commence in their vicinity Undertake Noise and Excessive Vibration Assessments Effective use of appropriate PPE (earmuffs) for exposed	Reported complaints from neighbour community and institutions Records of machine and vehicle maintenance Availability and use of Ear Muffs	Environmental Consultants Contractor	Continuous	400,000.00

Possible Impact	Impact Rating level	Management Actions	Monitoring Indicators	Target Areas and Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
		workers. Proper maintenance of machines. Record and communicated to the Supervising Engineer all noise and excess vibration complains for appropriate action.				
Air pollution	Moderate	Maintain a speed limit of 20km/h within the site during construction phase to reduce dust particles emission. Use of environmentally friendly fuels such as Low Sulphur diesel. Regular maintenance and service of construction machinery and equipment in accordance to manufacturer specifications to minimize the generation of hazardous gases. Providing PPEs such as nose masks to the	Cases of respiratory complication at nearby health centre. Records of machine and vehicle maintenance Low dust generation during construction Availability and use of Nose Masks	Environmental Consultants Contractor	Continuous	300,000.00

Possible Impact	Impact Rating level	Management Actions	Monitoring Indicators	Target Areas and Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
		workers in dusty areas on the site. Maintain regular training of all personnel on methods for minimizing air quality impacts during construction. Ensure a strict schedule plan for all equipment to avoid unnecessary trips and minimize idling of engines. Enforce of EMCA 2015 (Air Quality Regulations 2014) Avoid carrying out dust generating activities especially during strong winds Use of covered trucks for material delivery to avoid spills and windblown dust Communicate air quality monitoring results to the public and address				

Possible Impact	Impact Rating level	Management Actions	Monitoring Indicators	Target Areas and Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
		concerns proactively. Monitor air quality in the construction area and surrounding neighborhood. Spraying of all earthwork's areas within 200 meters of human settlement to reduce dust.				
Water Pollution	Low	Implement best management practices for construction activities to prevent runoff contamination. Ensure al machineries are serviced at a dedicated service bay to avoid spillages of oil and other fluids Implement erosion control measures to prevent soil runoff into water bodies. Regularly monitor water quality in nearby water bodies during construction and implementing corrective	Water Quality Reports Records of machine and vehicle	Environmental Management Team Water Quality Experts	Throughout Project	500,000.00

Possible Impact	Impact Rating level	Management Actions	Monitoring Indicators	Target Areas and Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
		measures. Collaborate with local water authorities to ensure compliance with water quality standards				
Soil pollution / Erosion	Low	Implement soil erosion control measures to prevent the release of contaminants during construction. Regularly monitor soil quality in construction areas and implement corrective measures. Collaborate with environmental agencies to ensure compliance with soil quality standards.	Ground cover in Constructed areas	Environmental Management Team/consultant Contractor	Monthly	400,000.00
Waste Generation	Moderate	Implement a waste management plan, including proper disposal and recycling of construction waste. Educate construction workers on responsible waste disposal	Clean, Organized, Neat Site Presence of waste collection receptacle Contract with NEMA Registered	Environmental Management Contractor	Throughout Project	500,000.00

Possible Impact	Impact Rating level	Management Actions	Monitoring Indicators	Target Areas and Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
		practices. Monitor waste generation and disposal practices to ensure compliance with the waste management plan. Practice waste recycling, re use and reduction of waste generation	Waste Disposal Firm			
Social Risks						
Sexual Exploitation and Abuse	Low Medium	Implement an awareness and prevention program for project workers and the local community. Provide access to HIV testing and counselling services, ensuring confidentiality and non-discrimination. Establish a support system for individuals living with HIV/AIDS, promoting inclusivity and reducing stigma. Alias with local	HIV/AIDS awareness trainings Availability of VCT facilities Social awareness and trainings	Sociologists Environmental and Safety Management Manager Contractor	Throughout Project	300,000.00

Possible Impact	Impact Rating level	Management Actions	Monitoring Indicators	Target Areas and Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
		security administration for insecurity management				
Occupational Safety and Health issues	Moderate	Enforce strict safety protocols and provide regular training for all construction personnel. Conduct routine safety inspections and audits to identify and address potential hazards. Establish an emergency response plan to handle accidents promptly and efficiently. Provide all workers with appropriate full protective gear. These include working boots, overalls, helmets, earmuffs, masks, and gloves. Make available a fully equipped First aid kit that is manageable by a trained qualified first aider. Use of	Accidents occurrence incidences recorded in the Incidence Book Workers have Safety Gear(PPEs) Emergency contacts for Hospital and Police available	Environmental and Safety Management Manager Contractor	Weekly	300,000.00

Possible Impact	Impact Rating level	Management Actions	Monitoring Indicators	Target Areas and Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
		signage's at work construction site for communication to non-workers and other road users Conduct regular training Document all near misses, incidents and accidents. Conduct risk assessments for all general, standard and high risk jobs Engage only qualified personnel on operating or conducting high risk jobs Issue work permits after risk assessment is successfully and all workers verified to be fit for work Conduct physical fitness test regularly for all worker Report all work related injuries and health concerns for action to be				

Possible Impact	Impact Rating level	Management Actions	Monitoring Indicators	Target Areas and Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
		taken				
Child Exploitation and Abuse	Medium	Ensure each employee signs a code of conduct that covers child protection ensuring no children are employed on site in accordance with national labour laws. Ensure that any child sexual relations offenses among contractors' workers are promptly reported to the police. Employ workers who are 18 years and above, and with a valid national ID at the time of hire. Implement and monitor the employment register regularly. Comply with the national labor laws and	List of workers that does not contain underage persons	SEC GRC Contractor	Daily	200,000.00

Possible Impact	Impact Rating level	Management Actions	Monitoring Indicators	Target Areas and Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
		labour management practices. Put visible signage on site "No Jobs for children."				
Increased Crime and Insecurity	Very High	Contractor and Supervision Team to liaise regularly with the Local Administration and Police Service to address any security and crime arising during project implementation. Contractor to provide 24 hours' security to Workforce Camps, Yards, Stores and to the Supervising Team's Offices	Availability of security officers Number of security concerns reported.	Environmental and Safety Management Manager Lamu County Traffic Department Officials	Daily	900,000.00
Inadequate stakeholder Engagement and Exclusion of disadvantaged and vulnerable groups	Medium high	Share project information widely and in a timely manner through diverse, feasible and accessible channels of communication e.g., public forums. Introduce measures for affirmative action that	Number of stakeholders involved and proof of their support.	Contractor SEC and GRC County Government officials, Department of Traffic management Environmental And Safety Management Manager	Throughout Project	250,000.00

Possible Impact	Impact Rating level	Management Actions	Monitoring Indicators	Target Areas and Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
		would ensure especially persons with disability, the elderly and women have access to job opportunities. Undertake recruitment transparently, while ensuring the inclusion of disadvantaged groups. Develop and implementation of a stakeholder engagement plan. Engage stakeholders throughout the project phase as guided by the approved stakeholder engagement plan.				
Gender-Based Violence and Sexual Exploitation and Abuse (SEA) and Sexual Harassment (SH)	Low Medium	Develop and implement a plan to manage the risk of SEA/SH. Map the GBV referral pathways and create awareness among women and men on the risk of SEA/SH. Ensure the GRM is	Number of GBV cases reported and solved. GBV Awareness trainings	SEC GRC Contractor Lamu County Governmen t Officials	Throughou t Project	150,000.0 0

Possible Impact	Impact Rating level	Management Actions	Monitoring Indicators	Target Areas and Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
		SEA/SH-responsive				
Disruption to Public Services	Low Medium	Coordinate with relevant public service providers to adapt services during construction. Communicate service disruptions in advance to minimize inconvenience for residents. Establish a hotline or platform for residents to report service disruptions and address concerns.	Number of complaints from community due to lack of certain services	Environmental and Safety Management Manager Contractor Relevant County Government department with help of KISIP County coordinator	Throughout Project	100,000.00
Risk of excluding some beneficiaries due to unfriendly infrastructure designs	High	The implementation of the infrastructure assumed universal design. Disseminate this information to the beneficiaries through public participation forums	Number of beneficiaries engaged during the public participation meetings	KISIP Contactor Consultant	Initial and Ongoing	200,000.00

ESMMP for Drainages

Possible Impact	Impact Rating level	Management Actions	Monitoring Indicators	Target Areas and Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
Environmental						
Noise pollution and Excessive Vibrations	Moderate	Enforce EMCA 1999, Revised 2015 (Noise and Excessive Vibrations Regulations of 2009) Maintain noise level within acceptable limits (55 Decibels during the day and 35 Decibels during the night) and construction activities shall, where possible, be confined to normal working hours in the residential areas Hospitals and other noise sensitive areas such as schools shall be notified by the Contractor at least 5 days before construction is due to commence in their vicinity Undertake Noise and Excessive Vibration Assessments	Reported complaints from neighbour community and institutions Records of machine and vehicle maintenance Availability and use of Ear Muffs	Environmental Consultants Contractor	Continuous	400,000.00

Possible Impact	Impact Rating level	Management Actions	Monitoring Indicators	Target Areas and Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
		Effective use of appropriate PPE (earmuffs) for exposed workers. Proper maintenance of machines. Record and communicated to the Supervising Engineer all noise and excess vibration complains for appropriate action.				
Air pollution	Moderate	Maintain a speed limit of 20km/h within the site during construction phase to reduce dust particles emission. Use of environmentally friendly fuels such as Low Sulphur diesel. Regular maintenance and service of construction machinery and equipment in accordance to manufacturer specifications to minimize the generation of hazardous	Cases of respiratory complication at nearby health centre. Records of machine and vehicle maintenance Low dust generation during construction Availability and use of Nose Masks	Environmental Consultants Contractor	Continuous	300,000.00

Possible Impact	Impact Rating level	Management Actions	Monitoring Indicators	Target Areas and Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
		gases. Providing PPEs such as nose masks to the workers in dusty areas on the site. Maintain regular training of all personnel on methods for minimizing air quality impacts during construction. Ensure a strict schedule plan for all equipment to avoid unnecessary trips and minimize idling of engines. Enforce of EMCA 2015 (Air Quality Regulations 2014) Avoid carrying out dust generating activities especially during strong winds Use of covered trucks for material delivery to avoid spills and windblown dust				

Possible Impact	Impact Rating level	Management Actions	Monitoring Indicators	Target Areas and Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
		Communicate air quality monitoring results to the public and address concerns proactively. Monitor air quality in the construction area and surrounding neighborhood. Spraying of all earthwork's areas within 200 meters of human settlement to reduce dust.				
Water Pollution	Low	Implement best management practices for construction activities to prevent runoff contamination. Ensure al machineries are serviced at a dedicated service bay to avoid spillages of oil and other fluids Implement erosion control measures to prevent soil runoff into water bodies. Regularly monitor water quality in	Water Quality Reports Records of machine and vehicle	Environmental Management Team Water Quality Experts	Throughout Project	500,000.00

Possible Impact	Impact Rating level	Management Actions	Monitoring Indicators	Target Areas and Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
		nearby water bodies during construction and implementing corrective measures. Collaborate with local water authorities to ensure compliance with water quality standards				
Soil pollution / Erosion	Low	Implement soil erosion control measures to prevent the release of contaminants during construction. Regularly monitor soil quality in construction areas and implement corrective measures. Collaborate with environmental agencies to ensure compliance with soil quality standards.	Ground cover in Constructed areas	Environmental Management Team/consultant Contractor	Monthly	400,000.00
Waste Generation	Moderate	Implement a waste management plan, including proper disposal and recycling of construction	Clean, Organized, Neat Site Presence of waste collection	Environmental Management Contractor	Throughout Project	500,000.00

Possible Impact	Impact Rating level	Management Actions	Monitoring Indicators	Target Areas and Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
		waste. Educate construction workers on responsible waste disposal practices. Monitor waste generation and disposal practices to ensure compliance with the waste management plan. Practice waste recycling, re use and reduction of waste generation	receptacle Contract with NEMA Registered Waste Disposal Firm			
Social Risks						
Sexual Exploitation and Abuse	Low Medium	Implement an awareness and prevention program for project workers and the local community. Provide access to HIV testing and counselling services, ensuring confidentiality and non-discrimination. Establish a support system for individuals living with HIV/AIDS, promoting	HIV/AIDS awareness trainings Availability of VCT facilities Social awareness and trainings	Sociologists Environmental and Safety Management Manager Contractor	Throughout Project	300,000.00

Possible Impact	Impact Rating level	Management Actions	Monitoring Indicators	Target Areas and Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
		inclusivity and reducing stigma. Alias with local security administration for insecurity management				
Occupational Safety and Health issues	Moderate	Enforce strict safety protocols and provide regular training for all construction personnel. Conduct routine safety inspections and audits to identify and address potential hazards. Establish an emergency response plan to handle accidents promptly and efficiently. Provide all workers with appropriate full protective gear. These include working boots, overalls, helmets, earmuffs, masks, and gloves. Make available a fully equipped First aid kit that is manageable	Accidents occurrence incidences recorded in the Incidence Book Workers have Safety Gear(PPEs) Emergency contacts for Hospital and Police available	Environmental and Safety Management Manager Contractor	Weekly	300,000.00

Possible Impact	Impact Rating level	Management Actions	Monitoring Indicators	Target Areas and Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
		by a trained qualified first aider. Use of signage's at work construction site for communication to non-workers and other road users Conduct regular training Document all near misses, incidents and accidents. Conduct risk assessments for all general, standard and high risk jobs Engage only qualified personnel on operating or conducting high risk jobs Issue work permits after risk assessment is successfully and all workers verified to be fit for work Conduct physical fitness test regularly for all worker				

Possible Impact	Impact Rating level	Management Actions	Monitoring Indicators	Target Areas and Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
		Report all work related injuries and health concerns for action to be taken				
Child Exploitation and Abuse	Medium	Ensure each employee signs a code of conduct that covers child protection ensuring no children are employed on site in accordance with national labour laws. Ensure that any child sexual relations offenses among contractors' workers are promptly reported to the police. Employ workers who are 18 years and above, and with a valid national ID at the time of hire. Implement and monitor the employment register regularly. Comply with the national labor laws and	List of workers that does not contain underage persons	SEC GRC Contractor	Daily	200,000.00

Possible Impact	Impact Rating level	Management Actions	Monitoring Indicators	Target Areas and Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
		labour management practices. Put visible signage on site "No Jobs for children."				
Increased Crime and Insecurity	Very High	Contractor and Supervision Team to liaise regularly with the Local Administration and Police Service to address any security and crime arising during project implementation. Contractor to provide 24 hours' security to Workforce Camps, Yards, Stores and to the Supervising Team's Offices	Availability of security officers on site	Environmental and Safety Management Manager Lamu County Traffic Department Officials	Daily	900,000.00
Inadequate stakeholder Engagement and Exclusion of disadvantaged and vulnerable groups	Medium high	Share project information widely and in a timely manner through diverse, feasible and accessible channels of communication e.g., public forums. Introduce measures for affirmative action that	Number of stakeholders involved and proof of their support.	Contractor SEC and GRC County Government officials, Department of Traffic management Environmental And Safety Management Manager	Throughout Project	250,000.00

Possible Impact	Impact Rating level	Management Actions	Monitoring Indicators	Target Areas and Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
		would ensure especially persons with disability, the elderly and women have access to job opportunities. Undertake recruitment transparently, while ensuring the inclusion of disadvantaged groups. Develop and implementation of a stakeholder engagement plan. Engage stakeholders throughout the project phase as guided by the approved stakeholder engagement plan.				
Gender-Based Violence and Sexual Exploitation and Abuse (SEA) and Sexual Harassment (SH)	Low Medium	Develop and implement a plan to manage the risk of SEA/SH. Map the GBV referral pathways and create awareness among women and men on the risk of SEA/SH. Ensure the GRM is	Number of GBV cases reported and solved. GBV Awareness trainings	SEC GRC Contractor Lamu County Governmen t Officials	Throughou t Project	150,000.0 0

Possible Impact	Impact Rating level	Management Actions	Monitoring Indicators	Target Areas and Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
		SEA/SH-responsive				
Disruption to Public Services	Low Medium	Coordinate with relevant public service providers to adapt services during construction. Communicate service disruptions in advance to minimize inconvenience for residents. Establish a hotline or platform for residents to report service disruptions and address concerns.	Number of complaints from community due to lack of certain services	Environmental and Safety Management Manager Contractor Relevant County Government department with help of KISIP County coordinator	Throughout Project	100,000.00
Risk of excluding some beneficiaries due to unfriendly infrastructure designs	High	The implementation of the infrastructure assumed universal design. Disseminate this information to the beneficiaries through public participation forums	Number of beneficiaries engaged during the public participation meetings	KISIP Contactor Consultant	Initial and Ongoing	200,000.00

ESMMP for Streetlights

Possible Impact	Impact Rating level	Management Actions	Monitoring Indicators	Target Areas and Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
Environmental						
Waste Generation	Moderate	Implement a waste management plan, including proper disposal and recycling of construction waste. Educate construction workers on responsible waste disposal practices. Monitor waste generation and disposal practices to ensure compliance with the waste management plan. Practice waste recycling, re use and reduction of waste generation	Clean, Organized, Neat Site Presence of waste collection receptacle Contract with NEMA Registered Waste Disposal Firm	Environmental Management Contractor	Throughout Project	500,000.00
Social Risks						
Sexual Exploitation and Abuse	Low Medium	Implement an awareness and prevention program for project workers and the local community. Provide access	HIV/AIDS awareness trainings Availability of VCT facilities	Sociologists Environmental and Safety Management Manager Contractor	Throughout Project	300,000.00

Possible Impact	Impact Rating level	Management Actions	Monitoring Indicators	Target Areas and Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
		to HIV testing and counselling services, ensuring confidentiality and non-discrimination. Establish a support system for individuals living with HIV/AIDS, promoting inclusivity and reducing stigma. Alias with local security administration for insecurity management	Social awareness and trainings			
Occupational Safety and Health issues	Moderate	Enforce strict safety protocols and provide regular training for all construction personnel. Conduct routine safety inspections and audits to identify and address potential hazards. Establish an emergency response plan to handle accidents promptly and efficiently. Provide all	Accidents occurrence incidences recorded in the Incidence Book Workers have Safety Gear(PPEs) Emergency contacts for Hospital and Police available	Environmental and Safety Management Manager Contractor	Weekly	300,000.00

Possible Impact	Impact Rating level	Management Actions	Monitoring Indicators	Target Areas and Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
		workers with appropriate full protective gear. These include working boots, overalls, helmets, earmuffs, masks, and gloves. Make available a fully equipped First aid kit that is manageable by a trained qualified first aider. Use of signage's at work construction site for communication to non-workers and other road users Conduct regular training Document all near misses, incidents and accidents. Conduct risk assessments for all general, standard and high risk jobs Engage only qualified personnel on operating or conducting				

Possible Impact	Impact Rating level	Management Actions	Monitoring Indicators	Target Areas and Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
		high risk jobs Issue work permits after risk assessment is successfully and all workers verified to be fit for work Conduct physical fitness test regularly for all worker Report all work related injuries and health concerns for action to be taken				
Child Exploitation and Abuse	Medium	Ensure each employee signs a code of conduct that covers child protection ensuring no children are employed on site in accordance with national labour laws. Ensure that any child sexual relations offenses among contractors' workers are promptly reported to the police. Employ workers who	List of workers that does not contain underage persons	SEC GRC Contractor	Daily	200,000.00

Possible Impact	Impact Rating level	Management Actions	Monitoring Indicators	Target Areas and Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
		are 18 years and above, and with a valid national ID at the time of hire. Implement and monitor the employment register regularly. Comply with the national labor laws and labour management practices. Put visible signage on site "No Jobs for children."				
Inadequate stakeholder Engagement and Exclusion of disadvantaged and vulnerable groups	Medium high	Share project information widely and in a timely manner through diverse, feasible and accessible channels of communication e.g., public forums. Introduce measures for affirmative action that would ensure especially persons with disability, the elderly and women have access to job opportunities.	Number of stakeholders involved and proof of their support.	Contractor SEC and GRC County Government officials, Department of Traffic management Environmental And Safety Management Manager	Throughout Project	250,000.00

Possible Impact	Impact Rating level	Management Actions	Monitoring Indicators	Target Areas and Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
		Undertake recruitment transparently, while ensuring the inclusion of disadvantaged groups. Develop and implementation of a stakeholder engagement plan. Engage stakeholders throughout the project phase as guided by the approved stakeholder engagement plan.				
Gender-Based Violence and Sexual Exploitation and Abuse (SEA) and Sexual Harassment (SH)	Low Medium	Develop and implement a plan to manage the risk of SEA/SH. Map the GBV referral pathways and create awareness among women and men on the risk of SEA/SH. Ensure the GRM is SEA/SH-responsive	Number of GBV cases reported and solved. GBV Awareness trainings	SEC GRC Contractor Lamu County Government Officials	Throughout Project	150,000.00
Disruption to Public Services	Low Medium	Coordinate with relevant public service providers to adapt services	Number of complaints	Environmental and Safety Management Manager	Throughout Project	100,000.00

Possible Impact	Impact Rating level	Management Actions	Monitoring Indicators	Target Areas and Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
		during construction. Communicate service disruptions in advance to minimize inconvenience for residents. Establish a hotline or platform for residents to report service disruptions and address concerns.	from community due to lack of certain services	Contractor Relevant County Government department with help of KISIP County coordinator		
Risk of excluding some beneficiaries due to unfriendly infrastructure designs	High	The implementation of the infrastructure assumed universal design. Disseminate this information to the beneficiaries through public participation forums	Number of beneficiaries engaged during the public participation meetings	KISIP Contactor Consultant	Initial and Ongoing	200,000.00

ESMMP for Operational Phase

ESMMP for Roads and footpaths

Possible Impact,	Impact Rating Level	Management Actions	Monitoring Indicators	Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
Gender-Based Violence and Sexual Exploitation and Abuse (SEA) and Sexual Harassment (SH)	Medium high	Develop and implement a plan to manage the risk of SEA/SH. Map the GBV referral pathways and create awareness among women and men on the risk of SEA/SH. Ensure the GRM is SEA/SH-responsive.	Number of GBV cases reported and solved. GBV Awareness trainings	County Government of Lamu; Department of Traffic management, KISIP	Throughout Project	No additional cost
Ineffective Grievance Management	Very High	Constitute a Local Grievances Committee in consultation with all community segments and incorporate the existing local dispute resolution mechanisms. Implement a workers' grievances mechanism. Create awareness on the culturally appropriate and	Awareness trainings conducted Grievance complaints documentation Availability of a GRM and SEC committee	County Government of Lamu, KISIP, Contractor	Throughout Project	No additional cost

Possible Impact,	Impact Rating Level	Management Actions	Monitoring Indicators	Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
		accessible GRM to all community segments including vulnerable individuals and households and CSOs. Log, date, process, resolve, and close-out all reported grievances in a timely manner. Ensure proportionate representation of disadvantaged persons in the local grievances committee. Enable the GRM to provide for confidential reporting of particularly sensitive social aspects such as GBV, as well as anonymity.				
Water Pollution/Contamination	Very Low	Prioritize integrated water management approaches that address both the root causes and symptoms of	Water quality standards and tests	SEC, GRC, KISIP	Ongoing	No additional cost

Possible Impact,	Impact Rating Level	Management Actions	Monitoring Indicators	Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
		pollution. Investing in infrastructure for safe drinking water supply, wastewater treatment, and solid waste management Promoting sustainable agricultural practices to reduce runoff and pollution Strengthening regulatory frameworks and enforcement mechanisms to prevent industrial pollution, and raising awareness about the importance of water conservation and pollution prevention among community members. Taking proactive measures to protect water resources				
Inadequate stakeholder Engagement and Exclusion of disadvantaged and	Medium high	Share project information widely and in a timely manner	Number of stakeholders involved and proof of their support.	SEC, GRC, KISIP	Monthly	200,000.00

Possible Impact,	Impact Rating Level	Management Actions	Monitoring Indicators	Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
vulnerable groups		through diverse, feasible and accessible channels of communication e.g., public forums. Introduce measures for affirmative action that would ensure especially persons with disability, the elderly and women have access to job opportunities. Undertake recruitment transparently, while ensuring the inclusion of disadvantaged groups. Develop and implementation of a stakeholder engagement plan. Engage stakeholders throughout the project phase as guided by the approved stakeholder engagement plan.				

ESMMP for Drainages

Possible Impact,	Impact Rating Level	Management Actions	Monitoring Indicators	Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
Gender-Based Violence and Sexual Exploitation and Abuse (SEA) and Sexual Harassment (SH)	Medium high	Develop and implement a plan to manage the risk of SEA/SH. Map the GBV referral pathways and create awareness among women and men on the risk of SEA/SH. Ensure the GRM is SEA/SH-responsive.	Number of GBV cases reported and solved. GBV Awareness trainings	County Government of Lamu; Department of Traffic management, KISIP	Throughout Project	No additional cost
Ineffective Grievance Management	Very High	Constitute a Local Grievances Committee in consultation with all community segments and incorporate the existing local dispute resolution mechanisms. Implement a workers' grievances mechanism. Create awareness on the culturally appropriate and accessible GRM to all community	Awareness trainings conducted Grievance complaints documentation Availability of a GRM and SEC committee	County Government of Lamu, KISIP, Contractor	Throughout Project	No additional cost

Possible Impact,	Impact Rating Level	Management Actions	Monitoring Indicators	Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
		segments including vulnerable individuals and households and CSOs. Log, date, process, resolve, and close-out all reported grievances in a timely manner. Ensure proportionate representation of disadvantaged persons in the local grievances committee. Enable the GRM to provide for confidential reporting of particularly sensitive social aspects such as GBV, as well as anonymity.				
Water Pollution/Contamination	Very Low	Prioritize integrated water management approaches that address both the root causes and symptoms of pollution. Investing in	Water quality standards and tests	SEC, GRC, KISIP	Ongoing	No additional cost

Possible Impact,	Impact Rating Level	Management Actions	Monitoring Indicators	Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
		infrastructure for safe drinking water supply, wastewater treatment, and solid waste management Promoting sustainable agricultural practices to reduce runoff and pollution Strengthening regulatory frameworks and enforcement mechanisms to prevent industrial pollution, and raising awareness about the importance of water conservation and pollution prevention among community members. Taking proactive measures to protect water resources				
Inadequate stakeholder Engagement and Exclusion of disadvantaged and vulnerable groups	Medium high	Share project information widely and in a timely manner through diverse, feasible and	Number of stakeholders involved and proof of their support.	SEC, GRC, KISIP	Monthly	200,000.00

Possible Impact,	Impact Rating Level	Management Actions	Monitoring Indicators	Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
		accessible channels of communication e.g., public forums. Introduce measures for affirmative action that would ensure especially persons with disability, the elderly and women have access to job opportunities. Undertake recruitment transparently, while ensuring the inclusion of disadvantaged groups. Develop and implementation of a stakeholder engagement plan. Engage stakeholders throughout the project phase as guided by the approved stakeholder engagement plan.				
Alteration of Natural Drainage Patterns	Very Low	Conduct detailed hydrological studies to understand natural		SEC, GRC, KISIP	Quarterly	200,000.00

Possible Impact,	Impact Rating Level	Management Actions	Monitoring Indicators	Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
		drainage patterns. Design drainage systems that mimic natural flow to reduce environmental impact				

ESMMP for Streetlights

Possible Impact,	Impact Rating Level	Management Actions	Monitoring Indicators	Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
Gender-Based Violence and Sexual Exploitation and Abuse (SEA) and Sexual Harassment (SH)	Medium high	Develop and implement a plan to manage the risk of SEA/SH. Map the GBV referral pathways and create awareness among women and men on the risk of SEA/SH. Ensure the GRM is SEA/SH-responsive.	Number of GBV cases reported and solved. GBV Awareness trainings	County Government of Lamu; Department of Traffic management, KISIP	Throughout Project	No additional cost
Ineffective Grievance Management	Very High	Constitute a Local Grievances Committee in consultation with all community segments and incorporate the existing local dispute resolution mechanisms. Implement a workers' grievances mechanism. Create awareness on the culturally appropriate and	Awareness trainings conducted Grievance complaints documentation Availability of a GRM and SEC	County Government of Lamu, KISIP, Contractor	Throughout Project	No additional cost

Possible Impact,	Impact Rating Level	Management Actions	Monitoring Indicators	Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
		accessible GRM to all community segments including vulnerable individuals and households and CSOs. Log, date, process, resolve, and close-out all reported grievances in a timely manner. Ensure proportionate representation of disadvantaged persons in the local grievances committee. Enable the GRM to provide for confidential reporting of particularly sensitive social aspects such as GBV, as well as anonymity.	committee			
Energy Consumption	Low Medium	A programmable timer shall control exterior lights. Generator should be provided as a full backup energy source throughout the development. Install and routine maintenance of energy efficient appliances e.g. LED bulbs etc. Monitor energy use during construction and set reasonable	Reduced and conservative use of energy	County Government of Lamu, KISIP, Contractor	Throughout Project	300,000.00

Possible Impact,	Impact Rating Level	Management Actions	Monitoring Indicators	Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
		limit. Put off all lights immediately when not in use or are not needed. The water booster set will contain inverter pumps for energy saving and precise control of flow and pressure rate. Turn off machinery and equipment when not in use. Use of solar energy as an alternative source of energy at contractor's camp sites.				
Inadequate stakeholder Engagement and Exclusion of disadvantaged and vulnerable groups	Medium high	Share project information widely and in a timely manner through diverse, feasible and accessible channels of communication e.g., public forums. Introduce measures for affirmative action that would ensure especially persons with disability, the elderly and women have access to job opportunities. Undertake recruitment transparently, while ensuring the inclusion of disadvantaged	Number of stakeholders involved and proof of their support.	SEC, GRC, KISIP	Monthly	200,000.00

Possible Impact,	Impact Rating Level	Management Actions	Monitoring Indicators	Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
		groups. Develop and implementation of a stakeholder engagement plan. Engage stakeholders throughout the project phase as guided by the approved stakeholder engagement plan.				
Light and Visual discomfort	Medium High	Properly design and angle light fixtures to minimize glare. Consider installing light shields or diffusers to control light direction. Seek aviation lighting design principles Use shielded fixtures and directional lighting to minimize light spillage. Implement curfew times for non-essential lighting. Educate the community on responsible lighting practices.		SEC, GRC, KISIP	Throughout Project	No additional cost
Disturbance to Nocturnal Wildlife	Very Low	Install motion sensors or timers to reduce lighting intensity during periods of low activity.		SEC, GRC, KISIP	Throughout Project	No additional cost

Possible Impact,	Impact Rating Level	Management Actions	Monitoring Indicators	Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
		Choose warm-coloured lights that are less disruptive to wildlife.				

ESMMP for Decommissioning Phase

ESMMP for Roads and footpaths

Possible Impact	Impact Level	Management Actions	Monitoring Indicators	Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
Disruption of Services	Low Medium	Implement phased decommissioning to minimize disruption to services. Provide alternative routes or transportation options for affected commuters. Schedule decommissioning activities during off-peak hours to reduce impact on traffic flow.	Number of services affected Duration of service disruptions. Percentage of planned versus unplanned disruptions.	SEC, GRC, KISIP, County Government of Lamu	Throughout Decommissioning	No additional cost
Environmental Disturbance	Low Medium	Conduct thorough environmental impact assessments prior to decommissioning. Implement erosion and sediment control measures to	Compliance with environmental regulations and permits. Inspection frequency and compliance with erosion control practices	Environmental Management Team/Consultant, KISIP	Throughout Decommissioning	To be established

Possible Impact	Impact Level	Management Actions	Monitoring Indicators	Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
		prevent soil erosion and water pollution. Replant native vegetation and restore habitats affected by decommissioning activities.	Survival rates of replanted native vegetation			
Waste Generation	*Low Medium*	Implement recycling and reuse programs for materials like concrete and asphalt. Properly dispose of hazardous materials in accordance with regulations. Encourage contractors to minimize waste generation through efficient construction and decommissioning practices.	Adoption rate of recycled materials in new construction projects Compliance with hazardous waste disposal regulations Implementation of practices to reduce packaging waste, excess materials, and unnecessary disposal.	Environmental Management Team/Consultant, KISIP	Throughout Decommissioning	250,000.00
Economic Loss	Low Medium	Provide support and incentives for local businesses affected by decommissioning. Offer compensation or assistance programs to mitigate financial losses.	Service disruption metrics and traffic flow management. Compliance with environmental regulations and effectiveness of restoration efforts. Quantity of recycled	KISIP,SEC,GRC	Throughout Decommissioning	100,000.00

Possible Impact	Impact Level	Management Actions	Monitoring Indicators	Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
		Develop alternative economic opportunities or infrastructure projects to offset any negative economic impacts.	materials, hazardous waste disposal compliance, and waste reduction. Number of businesses supported, financial assistance effectiveness, and economic diversification progress.			
Health and Safety Concerns	Medium	Enforce strict safety regulations and provide adequate training for workers. Implement dust and noise control measures to minimize pollution and disturbance to nearby residents. Communicate potential risks to the public and provide guidance on safety precautions.	Adherence to safety regulations and incident rates. Monitoring dust and noise levels, and compliance with pollution limits. Public awareness and feedback on risk communication effectiveness.	KISIP,SEC,GRC	Throughout Decommissioning	200,000.00
Environmental Disturbance	Low Medium	Conduct thorough environmental impact	Completion and compliance of environmental	Environmental Management Team/Consultant, KISIP	Throughout Decommissioning	300,000.00

Possible Impact	Impact Level	Management Actions	Monitoring Indicators	Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
		assessments prior to decommissioning. Implement erosion and sediment control measures to prevent soil erosion and water pollution. Replant native vegetation and restore habitats affected by decommissioning activities.	impact assessments. Effectiveness of erosion and sediment control measures. Success of habitat restoration and native vegetation replanting. Water quality monitoring results. Stakeholder feedback on environmental impacts and restoration efforts. Adherence to environmental regulations and reporting requirements.			

ESMMP for Drainages

Possible Impact	Impact Level	Management Actions	Monitoring Indicators	Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
Disruption of Services	Low Medium	Implement phased decommissioning to minimize disruption to services.	Number of services affected Duration of service	SEC, GRC, KISIP, County Government of Lamu	Throughout Decommissioning	No additional cost

Possible Impact	Impact Level	Management Actions	Monitoring Indicators	Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
		Provide alternative routes or transportation options for affected commuters. Schedule decommissioning activities during off-peak hours to reduce impact on traffic flow.	disruptions. Percentage of planned versus unplanned disruptions.			
Environmental Disturbance	Low Medium	Conduct thorough environmental impact assessments prior to decommissioning. Implement erosion and sediment control measures to prevent soil erosion and water pollution. Replant native vegetation and restore habitats affected by decommissioning activities.	Compliance with environmental regulations and permits. Inspection frequency and compliance with erosion control practices Survival rates of replanted native vegetation	Environmental Management Team/Consultant, KISIP	Throughout Decommissioning	To be established
Waste Generation	*Low Medium*	Implement recycling and reuse programs for materials like concrete and asphalt. Properly dispose of hazardous materials in	Adoption rate of recycled materials in new construction projects Compliance with hazardous waste disposal	Environmental Management Team/Consultant, KISIP	Throughout Decommissioning	250,000.00

Possible Impact	Impact Level	Management Actions	Monitoring Indicators	Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
		accordance with regulations. Encourage contractors to minimize waste generation through efficient construction and decommissioning practices.	regulations Implementation of practices to reduce packaging waste, excess materials, and unnecessary disposal.			
Economic Loss	Low Medium	Provide support and incentives for local businesses affected by decommissioning. Offer compensation or assistance programs to mitigate financial losses. Develop alternative economic opportunities or infrastructure projects to offset any negative economic impacts.	Service disruption metrics and traffic flow management. Compliance with environmental regulations and effectiveness of restoration efforts. Quantity of recycled materials, hazardous waste disposal compliance, and waste reduction. Number of businesses supported, financial assistance effectiveness, and economic diversification progress.	KISIP,SEC,GRC	Throughout Decommissioning	100,000.00
Health and Safety Concerns	Medium	Enforce strict safety regulations and provide	Adherence to safety regulations and incident	KISIP,SEC,GRC	Throughout Decommissioning	200,000.00

Possible Impact	Impact Level	Management Actions	Monitoring Indicators	Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
		adequate training for workers. Implement dust and noise control measures to minimize pollution and disturbance to nearby residents. Communicate potential risks to the public and provide guidance on safety precautions.	rates. Monitoring dust and noise levels, and compliance with pollution limits. Public awareness and feedback on risk communication effectiveness.			
Environmental Disturbance	Low Medium	Conduct thorough environmental impact assessments prior to decommissioning. Implement erosion and sediment control measures to prevent soil erosion and water pollution. Replant native vegetation and restore habitats affected by decommissioning activities.	Completion and compliance of environmental impact assessments. Effectiveness of erosion and sediment control measures. Success of habitat restoration and native vegetation replanting. Water quality monitoring results. Stakeholder feedback on	Environmental Management Team/Consultant, KISIP	Throughout Decommissioning	300,000.00

Possible Impact	Impact Level	Management Actions	Monitoring Indicators	Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
			environmental impacts and restoration efforts. Adherence to environmental regulations and reporting requirements.			

ESMMP for Street lighting

Possible Impact	Impact Level	Management Actions	Monitoring Indicators	Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
Disruption of Services	Low Medium	Implement phased decommissioning to minimize disruption to services. Provide alternative routes or transportation options for affected commuters. Schedule decommissioning activities during off-peak hours to reduce impact on traffic flow.	Number of services affected Duration of service disruptions. Percentage of planned versus unplanned disruptions.	SEC, GRC, KISIP, County Government of Lamu	Throughout Decommissioning	No additional cost
Environmental Disturbance	Low Medium	Conduct thorough environmental impact assessments prior to decommissioning. Implement erosion and sediment control measures to prevent soil erosion and water pollution. Replant native vegetation and restore habitats affected by decommissioning activities.	Compliance with environmental regulations and permits. Inspection frequency and compliance with erosion control practices Survival rates of replanted native vegetation	Environmental Management Team/Consultant, KISIP	Throughout Decommissioning	To be established
Waste Generation	*Low Mediu*	Implement recycling and	Adoption rate of recycled	Environmental Management	Throughout Decommissionin	250,000.00

Possible Impact	Impact Level	Management Actions	Monitoring Indicators	Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
	m	reuse programs for materials like concrete and asphalt. Properly dispose of hazardous materials in accordance with regulations. Encourage contractors to minimize waste generation through efficient construction and decommissioning practices.	materials in new construction projects Compliance with hazardous waste disposal regulations Implementation of practices to reduce packaging waste, excess materials, and unnecessary disposal.	Team/Consultant, KISIP	g	
Economic Loss	Low Medium	Provide support and incentives for local businesses affected by decommissioning. Offer compensation or assistance programs to mitigate financial losses. Develop alternative economic opportunities or infrastructure projects to offset any negative economic impacts.	Service disruption metrics and traffic flow management. Compliance with environmental regulations and effectiveness of restoration efforts. Quantity of recycled materials, hazardous waste disposal compliance, and waste reduction. Number of businesses supported, financial	KISIP,SEC,GRC	Throughout Decommissioning	100,000.00

Possible Impact	Impact Level	Management Actions	Monitoring Indicators	Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
			assistance effectiveness, and economic diversification progress.			
Health and Safety Concerns	Medium	Enforce strict safety regulations and provide adequate training for workers. Implement dust and noise control measures to minimize pollution and disturbance to nearby residents. Communicate potential risks to the public and provide guidance on safety precautions.	Adherence to safety regulations and incident rates. Monitoring dust and noise levels, and compliance with pollution limits. Public awareness and feedback on risk communication effectiveness.	KISIP,SEC,GRC	Throughout Decommissioning	200,000.00
Environmental Disturbance	Low Medium	Conduct thorough environmental impact assessments prior to decommissioning. Implement erosion and sediment control measures to prevent soil	Completion and compliance of environmental impact assessments. Effectiveness of erosion and sediment control measures. Success of habitat restoration	Environmental Management Team/Consultant, KISIP	Throughout Decommissioning	300,000.00

Possible Impact	Impact Level	Management Actions	Monitoring Indicators	Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
		erosion and water pollution. Replant native vegetation and restore habitats affected by decommissioning activities.	and native vegetation replanting. Water quality monitoring results. Stakeholder feedback on environmental impacts and restoration efforts. Adherence to environmental regulations and reporting requirements.			

Conclusions and Recommendations

The ESIA study has determined that the proposed Mokowe upgrade project is a worthwhile venture, expected to significantly bolster the community economic progress. Yet, the study also highlights some adverse impacts linked to the project. Nonetheless, the proponent commits to implement several measures aimed at mitigating these negative environmental, safety, health, and social effects throughout the project's lifespan through implementation of the comprehensive environmental management plan.

The intention is to fully capitalize on the positive outcomes outlined in the report resulting from the project. Given the significant socio-economic and environmental advantages anticipated from the proposed development, the ESIA report indicates no significant adverse impacts.

We recommend that the project moves forward under the condition that the proponent strictly follows the mitigation measures outlined here and fully implements the proposed Environmental Management Plan. The Mokowe settlement currently suffers from inadequate and poor roads and lighting infrastructure because existing systems are not in proper functioning conditions and insufficient. Therefore, the proposed development of infrastructure at the Mokowe settlement will significantly alleviate most of the challenges faced by residents in the area.

1. INTRODUCTION

1.1 Background Information

The Government of Kenya with support from the World Bank and Agence Francaise Developement (AFD) is implementing the Kenya Informal Settlements Improvements Project II (KISIP 2 to consolidate the gains made under KISIP I and enhance the benefits of the project to more people in informal settlements. This Second phase of the Kenya Informal Settlements Project (KISIP 2) will build on the successes and lessons learned from KISIP I, but also introduce new interventions to deepen its overall impact. It will support the interventions that have been successful under KISIP I, namely: tenure regularization, infrastructure upgrading, and institutional strengthening. Unlike KISIP I, however, the proposed project will include new approaches and new activities to strengthen its impact on the participating communities.

A new approach is to support tenure regularization and infrastructure upgrading in the same communities through one integrated planning approach, aimed at saving both money and time and ensuring better coordination between the two interventions. In addition, the project will include activities to link vulnerable people (elderly, orphans, disabled, and others) of informal settlements to government programs aimed at reducing poverty and vulnerability, and to link at-risk youth to programs focused on building skills and creating opportunities for (self-) employment.

KISIP 2 will include activities to prevent crime and violence. KISIP 2 will support the government's housing agenda, one of top four priorities under the current administration. Cross-country experience shows that strengthening security of tenure and investing in infrastructure in informal settlements induces significant private investment in housing and businesses. Indeed, many of the informal settlements that have benefited from upgrading under KISIP 1, have experienced an investment boom, with new multi-story buildings replacing poorly constructed informal housing units.

One noticeable characteristic of developing countries in the Sub-Saharan desert is dense population in urban centres especially in informal settlement, Kenya is not an exception. Informal settlements rise as a result of non-inclusivity into well-structured urban plans and for this reason, without proper mitigation the scenario has a potential of encouraging widespread poverty owing to the fact that there is absence of proper infrastructure to accommodate the high rising populations. For this reason, the Government of Kenya (GoK) in her commitment to support urban development is in consultation with the World Bank for consideration of the Second Kenya Informal Settlements Improvements Project (KISIP 2). This Second phase of the Kenya Informal Settlements Project (KISIP 2) will build on the successes and lessons learned from KISIP I and in addition introduce new interventions to deepen its overall impact. It will support the interventions that have been successful under KISIP I, namely:

- Tenure Regularization
- Infrastructure upgrading and
- Institutional strengthening.

The proposed project shall include new approaches and new activities to strengthen its impact on the participating communities. These approaches include:

- ❖ Supporting tenure regularization and infrastructure upgrading in the same communities through one integrated planning approach, aimed at saving both money and time and ensuring better coordination between the two interventions.
- ❖ Activities to reduce/prevent crime and violence
- ❖ The proposed project will include activities to link:
  - Vulnerable people (elderly, orphans, disabled, and others) of informal settlements to government programs that are aimed at reducing poverty and vulnerability,
  - At-risk youth to programs focused on building skills and creating opportunities for (self-) employment.
- ❖ Support the government's housing agenda, one of top four priorities under the current administration

Cross-country experience shows that strengthening security of tenure and investing in infrastructure in informal settlements induces significant private investment in housing and businesses.

Indeed, many of the informal settlements that have benefited from upgrading under KISIP 1, have experienced an investment boom, with new multi-story buildings replacing poorly constructed informal housing units.

In a tier fund amongst World Bank, Agence Francaise Developement (AFD) and the GoK, Lamu County is one amongst counties considered for the KISIP. Mokowe settlement in Lamu West constituency is one amongst the six settlements identified for the upgrading program and specifically:

1. Footpath/access road improvement and drainage system construction.
2. Installation of High Mast Lighting and
3. Introduction of Solid waste collection points and disposal points.

Proposed Projects is intended to be implemented in Mokowe Old Town, Lamu West Sub County, Lamu County in the North Eastern Coastline of Kenya.

1.2 Project objective

Mokowe Old Town settlement is characterized by poorly planned infrastructures that is struggling to accommodate its rapidly growing population that's evidenced by its location as a divisional headquarters

The Objective of the proposed project in Mokowe Old Town settlement is to upgrade the unpaved identified road networks to bitumen with associated conventional drainage system, improve security through installation of High Mast lighting and introduce solid collection points and disposal points to manage environmental degradation within the settlement.

Upon implementation, the proposed project shall adequately mitigate flooding disasters experienced within the settlement during the heavy rainy seasons that tend to disrupt normal way of life for residents. It is projected that the security of the settlements shall be enhanced especially during the night to encourage longer business working hours and offer lighting to fishermen who operate mostly at night. With the completion of the road networks, the settlement shall realize an improved accessibility and connectivity and also job creations for it's the residents. Eventually this will contribute to the goals of the government's policy development agendas, including;

- Achievement of Sustainable Development Goal (6) which is the new Vision 2030 agenda and expands Millennium Development Goal as guided by resolutions of Rio+20 conference. The goal focuses more on investment in adequate infrastructure like roads and other public amenities.
- The project is a Vision 2030 related project which endeavors to contribute to achievement of the 10% economic growth of the republic of Kenya for the next 25 years, spurred by improved infrastructural development.
- To achieve its vision of creating a world class African metropolis by 2030 by addressing several key challenges facing the metro areas. These challenges include property destruction due to insecurity and poor transportation networks.
- To promote linkages between disaster risk management and sustainable development for reduction of vulnerability to hazards and disasters like flooding.

1.3 Objectives of the Comprehensive Project Report.

The CPR like any other Environmental & Social Impact Assessment (ESIA) is expected to achieve the following objectives:

- To identify all potential significant environmental and social impacts of the proposed Project and recommend measures for mitigation.
- To assess and predict the potential impacts during site preparation, construction, operational and decommissioning stages of the Project.
- To verify compliance with environmental regulations.
- To generate baseline data for monitoring and evaluation of how well the mitigation measures will be implemented during the Project cycle.
- To allow for public participation.
- To prepare an Environmental and Social Management Plan to mitigate the identified impactsso as to ensure sustainability of the proposed Projects.
- To recommend cost effective measures to be implemented to mitigate against the negative impacts.

The ESIA report has been prepared in accordance with the Client Guidelines, the Environmental (Impact Assessment and Audit) Regulations, 2003 (and the amendment Regulations of 2019) and Environmental Management and Coordination Act (EMCA) 1999 amended in 2015).

1.4 Scope of the Study

In order to identify the potential environmental and social impacts, and to come up with the proper mitigation measures for the proposed projects consultant used both conventional and participatory approaches. In conducting this exercise, the consultant.

a) Conducted project site visits, consulting with the local communities, and other relevant key stakeholders.
b) Carried out comprehensive assessment ensuring all environmental concerns and views of all parties/persons likely to be affected by the project are taken into consideration.
c) Reviewed the preliminary designs for the proposed project to get acquainted with environmental issues in the project site vicinity.
d) Schedule time for site visiting activities to be undertaken for the ESIA.
e) Developed an environmental and social management and monitoring plan with mechanisms for evaluating compliance and environmental performance, which include the cost of mitigation measures and the timeframe of implementing the measures.
f) Publicized the project and its anticipated effects by posters in strategic places, publishing a notice in both official and local languages in the Kenyan Gazette and one of the local dailies.
g) Liaising with NEMA for compliance with all mandatory and regulatory requirements relating to the ESIA.

1.5 Terms of Reference (ToR)

In compliance with legal and professional requirements, it is expected that the outputs from this study reflect a consultative process whose presentation will be through modern technology that will form part of digital land information systems for informal settlements being generated by KISIP.

The authenticity requires the consultant to conduct the below tasks

1. Assessment and description of location/site, objectives, scope, nature of the proposed project,
2. Analysis of the proposed project activities during the proposed project cycle; construction, operation, decommissioning phases,
3. Establish the suitability of the proposed project in the proposed location,

4. Review and establish all relevant baseline information as will be required by NEMA (Physical, Biological and Social Cultural and economic) and identify any information gaps,
5. Description and analysis of policy legal and institutional framework including but not limited to Kenyan policies, laws, regulation and guidelines which have a bearing on the proposed project and will also serve as benchmarks for monitoring and evaluation, and future environmental audits,
6. In-depth description of the proposed project and associated works together with the requirements for carrying out the works,
7. Analysis of the designs, technology, procedures and processes to be used, in the implementation of the works,
8. Consultation and Public Participation (CPP): Identify key stakeholders and affected persons; hold a public meeting and provide /collect written evidence i.e. minutes,
9. Identify and analyze proposed project alternatives including but not limited to: Scale and extent; project site alternatives, no project alternatives, design alternatives, material alternatives and technologies alternatives,
10. Identify, predict and carry out in-depth analysis all actual potential and significant impacts on flora, fauna, soils, air, water, the social, cultural and community settings; the direct, indirect, cumulative, irreversible, short-term and long-term effects anticipated to be generated by the proposed project, both positive and negative throughout the project cycle,
11. Recommend sufficient mitigation measures for all the potential negative impacts identified,
12. Analyze occupational health and safety issue associated with the proposed project,
13. Develop an Environmental and Social Management Plan (ESMMP) proposing the measures for eliminating, minimizing or mitigating adverse impacts on the environment, including the cost, timeframe and responsibility to implement the measures.

1.6 Justification of the ESIA

The implementation of the proposed project shall have both socio-economic and environmental impacts on the project area. In order to alleviate any detrimental effects of the project, there is need to assess possible impacts of the development on the environment and the socio-economic attributes of the project area. At first, the proposed project will be evaluated against the framework provided by the Physical Development plan to ensure proper alignment. Then an Environmental Impact Assessment is conducted in accordance with the Client Guidelines, Environmental Management and Co-ordination Act (EMCA), Act, Cap 387, and the Environmental (Impact Assessment and Audit) Regulations, 2009 (and the amendment Regulations of 2019).

Due to the likely socio-economic impacts of the project, our Environmental Specialist and Socio-Economic Specialist have also collected socio-economic data to support the Environmental Impact Assessment and also to be used for Economic Evaluation of the Project. They were assisted by Field Assistants and a group of Enumerators especially in the process of acquiring the primary data in the field.

The execution of the assignment was carried out during the preliminary design of the Project to ensure that the designs produced comply with environmental requirements and take into account socio-economic status in the areas. The outcome of the Environmental Impact Assessment will be used to moderate the Engineers' Designs to ensure that they are in harmony with the environmental and socio-economic attributes of the project area. This approach will enhance the protection of the environment and the local community from negative effects of development.

1.7 Environmental and Social Impact and Assessment Team

Table 1: Summary of EIA Team and Responsibilities

Designation	Name	Responsibilities
Lead Expert	Charles Muyembe	Supervise ESIA field Surveys and Socio economic field surveys' Provide general guidance Review ESIA Reports and Socio Economic Reports
Environmentalist	Muriuki Alex Kashim Oginga Alan Kirombo Michael Morse Saraphina Nasimiyu	Carrying out Field Surveys/Assessments Drafting of ESIA reports
Sociologists	Charity Gathuthi	Conducting Socioeconomic Field assessments Drafting of socioeconomic reports

1.8 Esia Approach Methodology

As stated earlier, the ESIA Study was carried out in compliance with the government of Kenya's Environment Management and Coordination Act of 1999 and the Environmental (Impact Assessment and Audit) Regulations 2003, World Banks Environmental and Social Performance Standards and Equator Principles among other relevant laws, regulations and guideline standards.

The general steps followed during the assessment were as follows:

1. Environmental and social screening, in which the project was identified as among those requiring Environmental and Social Impact Assessment under schedule 2 of EMCA, 1999
2. Environmental scoping that provided the key environmental issues
3. Desktop studies
4. Physical inspection of the area and surrounding areas
5. ESIA Public participation via the use of general questionnaires, key informants' interviews, socio-economic surveys and interactive meetings
6. Data analysis and
7. Report preparation.

1.8.1 Environmental and Social Screening

This step was conducted through legal review and desktop studies to assess whether there will be a need for an environmental and social impact assessment, and what level of assessment is necessary. This was done using a screening checklist in reference to requirements of the EMCA, 1999, and specifically the second schedule. The proposed projects are listed as medium risk projects in Legal Notice 31&32 of EMCA and under the World Banks framework, as

Category B – Projects with potential limited adverse environmental and social risks and/or impacts that are few in number, generally site-specific, largely reversible and readily addressed through mitigation measures.

The project screening report indicating the Environmental and Social Management Framework checklist as well as the Resettlement Policy Framework checklist have been annexed in the report below.

1.8.1.1 Environmental Social Management Framework

An Environmental Social and Management Framework (ESMF) serves as a comprehensive guideline for ensuring that projects adhere to environmental and social sustainability principles.

The Environmental Social and Management Framework (ESMF) outlined the policies, procedures, and guidelines for managing environmental and social risks associated with project implementation. It provided a systematic approach to identify, assess, and mitigate potential environmental and social impacts throughout the project lifecycle.

An ESMF provides a structured approach to managing environmental and social risks associated with project implementation, aligning with the objectives of EMCA to ensure sustainable development and environmental protection. Additionally; World bank's OP 4.01 requires projects to assess and manage environmental and social risks, and an ESMF serves as a tool to fulfil this requirement comprehensively.

1.8.1.2 Relocation Policy framework

Relocation Policy framework screening can be utilized as a methodology in an Environmental Social Impact Assessment (ESIA) to assess the potential impacts of a project on communities and individuals who may be displaced or affected by relocation.

The World Bank's Safeguard Policies provide guidelines for projects it finances to ensure that adverse social and environmental impacts are identified and mitigated. While the World Bank does not have a specific Safeguard Policy dedicated solely to relocation, aspects of relocation are addressed in several of its policies, including:

1. **Involuntary Resettlement (OP/BP 4.12):** This policy outlines measures to address the adverse impacts of involuntary resettlement, including compensation, assistance with relocation, and opportunities for affected people to participate in planning and implementing resettlement programs. It emphasizes avoiding or minimizing displacement whenever possible and improving the livelihoods of affected people.
2. **Environmental Assessment (OP/BP 4.01):** This policy requires projects to assess potential environmental and social impacts, including those related to relocation. It emphasizes the importance of identifying and mitigating adverse impacts on affected communities, including through appropriate resettlement measures.
3. **Labour and Working Conditions (OP/BP 4.11):** This policy includes provisions related to involuntary resettlement, ensuring that affected workers are provided with adequate compensation, assistance with relocation, and opportunities for alternative employment or income-generation activities.
4. **World Bank Group Environment, Health and Safety Guidelines (EHSGs):** The World Bank Group Environment, Health, and Safety Guidelines (EHSGs) provide technical advice and guidance on best practices for managing environmental, health, and safety risks associated with various industries and sectors. These guidelines aim to assist project developers, financiers, and other stakeholders in identifying potential environmental and social impacts, as well as implementing measures to minimize or mitigate these impacts. The EHSGs cover a wide range of topics, including air and water pollution, biodiversity conservation, occupational health and safety, and community health and safety. They are based on international standards and best practices, taking into account the specific circumstances and requirements of different regions and industries. Overall, the EHSGs serve as a valuable resource for promoting sustainable development and responsible business practices across the globe.
5. **Operational Policy (OP 4.07) on Natural Habitats:** aimed at guiding projects financed by the World Bank to effectively manage and conserve natural habitats. This policy emphasizes the importance of protecting

biodiversity and ecosystem services while promoting sustainable development. OP 4.07 outlines principles and standards for assessing and managing potential impacts on natural habitats throughout the project lifecycle. Key aspects covered include the identification of critical habitats, assessment of potential impacts, avoidance and minimization measures, and compensation for residual impacts. The policy also emphasizes the importance of stakeholder engagement, transparency, and accountability in natural habitat conservation efforts. By adhering to OP 4.07, project proponents can ensure that their activities are conducted in a manner that preserves biodiversity and ecosystem integrity, contributing to long-term environmental sustainability.

6. **Operational Policy (OP 4.09) on Water Resources Management**: it guides projects funded by the World Bank in sustainable water management, emphasizing integrated approaches to address water scarcity, pollution, and access challenges. The policy promotes water efficiency, quality protection, and equitable access to safe water and sanitation services. It also prioritizes stakeholder engagement, gender equality, and climate resilience. Adhering to OP 4.09 helps achieve sustainable water management, enhancing water security and livelihoods while protecting ecosystems.

1.8.2 Environmental and Social Scoping

The scoping process, through an ESIA scoping checklist, was conducted to help narrow down onto the most critical issues requiring attention during the assessment. Environmental issues were categorized into physical, natural/ecological and social, economic and cultural aspects. It also included discussions with key stakeholders, managers and design engineers as well as interviews with local communities. Data from secondary sources was used to outline the bio-physical features, socio-economic characteristics of the residents, the existing infrastructure services and the forms of land tenure.

1.8.3 Desktop Study

Desktop study included document review on the nature of the proposed activities, project documents, designs, policy and legislative framework as well as the environmental setting of the area among others. This method was achieved through;

1. Data Collection: The desktop study begun with gathering relevant data from various sources. This includes geological maps, topographical surveys, historical records, land use patterns, environmental reports, and any existing documentation related to Mokowe Settlement.

2. Review of Regulations: Understanding the legal and regulatory framework is essential. This involved studying laws, and environmental regulations, and any other pertinent rules that may influence the project's design and execution.
3. Environmental Analysis: Assessments related to environmental factors such as air quality, water resources, soil composition, and potential hazards (like flood zones or contaminated sites) were conducted based on available data. This helped in identifying potential risks and mitigation measures.
4. Infrastructure Evaluation: The existing infrastructure surrounding the site was evaluated, including transportation networks, utilities (water, electricity, sewage), and telecommunications. This information was crucial for determining project feasibility and integration into the existing infrastructure.
5. Risk Assessment: Potential risks such as natural disasters (earthquakes, floods), environmental hazards (pollution, waste disposal), and socio-economic factors (population density, economic trends) were analyzed to gauge their impact on the project.
6. Stakeholder Analysis: Identification of stakeholders, including local communities, government agencies, NGOs, and other relevant parties, was done to understand their interests, concerns, and potential contributions or obstacles to the project.

1.8.4 Site Assessment

Field visits were made for physical inspections of the areas around the project site and the environmental status of the surrounding areas to determine the anticipated impacts. Site assessment was undertaken through the following;

- Physical Inspection: A site visit was conducted to assess the actual conditions on the ground. This included evaluating terrain features, vegetation, existing structures, drainage patterns, and any visible signs of environmental impact or contamination.
- Surveying: Precise measurements and surveys were carried out to map the site accurately. This involved using tools like GPS, total stations, and other surveying equipment to create detailed topographical maps and layouts.
- Ecological Assessment: This included identifying flora and fauna species, assessing habitat quality, and evaluating potential impacts on ecosystems due to the project's development.
- Archaeological and Cultural Surveys: Archaeological surveys were carried out to identify artefacts or structures of value. Cultural impact assessments were done to ensure project activities respect local heritage and traditions.
- Utility Mapping: Utility lines (such as water pipes, gas lines, electrical cables) were located and mapped to avoid accidental damage during construction and to plan utility relocations if necessary.
- Safety and Accessibility: Evaluating safety hazards on-site and ensuring accessibility for workers, equipment, and emergency services are integral parts of the site assessment. This included assessing risks related to construction activities and implementing safety protocols.

1.8.5 Public Participation

Public participation meetings were conducted specifically the project area. Random surveys and Focused Group Discussions (FGDs) were conducted in the smaller groups of residents located along the road corridor. To ensure adequate public participation in the ESIA process, questionnaires were administered to the local communities, and the information gathered was subsequently synthesized and incorporated into the ESIA Comprehensive Project Report (CPR). Additionally, the consultant incorporated the concerns and views of all stakeholders and the affected people.

1.8.5.1 General questionnaires

Questionnaires were structured to gather data from respondents on various subjects. Typically, they began with an introduction outlining the purpose; followed by sections for demographic information such as age, gender, education, and occupation.

The main body of the questionnaire comprises clear and specific questions, including both closed-ended (multiple-choice, yes/no) and open-ended formats, organized logically to address the primary objectives. Additional sections allow for detailed feedback or exploration of specific topics. Before deployment, questionnaires undergo review and pilot testing to ensure clarity, relevance, and accuracy.

1.8.5.2 Key informants' interviews

Following this, background information is gathered from the informant, including details about their expertise or experience. The main body of the interview consists of focused questions designed to elicit detailed insights or perspectives on specific aspects of the topic, with the interviewer probing further and seeking clarification where necessary.

Towards the end of the interview, the interviewer may summarize key points discussed, inviting the informant to reflect on additional insights. The interview concludes with gratitude for participation and a reminder of any follow-up steps. Subsequently, the conversation is transcribed and analyzed to extract relevant themes and insights.

Key informant interviews served as invaluable tools for obtaining rich qualitative data, offering nuanced perspectives that complement quantitative research methods.

Some of the key informants came from members of the youth, people with disabilities, women, public facility institutions and religious leaders

1.8.5.3 Socio-economic surveys

Socioeconomic surveys are comprehensive data collection efforts aimed at understanding the social and economic characteristics of a population or specific groups within it.

These surveys began with the careful selection of a representative sample using various sampling techniques to ensure accuracy and reliability. A structured questionnaire is then developed to gather information on demographics, income, education, employment, housing, health, and access to services. Trained surveyors administered the questionnaire through face-to-face interviews, adhering to standardized protocols to maintain data quality.

Once data collection was completed, the collected data underwent rigorous analysis, utilizing both descriptive and inferential statistical methods to summarize trends and draw meaningful conclusions.

The findings of the socioeconomic survey were then interpreted and reported, providing valuable insights to inform decisions and program planning,

1.8.5.4 Interactive meetings

These meetings were characterized by active engagement, with participants encouraged to contribute their insights, ask questions, and provide feedback. Through interactive tools such as brainstorming sessions, group discussions, and breakout activities, attendees had the opportunity to explore topics in depth, share diverse perspectives, and generate innovative solutions. Facilitators/consultants played a crucial role in guiding the discussions, ensuring that all voices are heard, and maintaining a constructive and inclusive environment. By fostering meaningful interaction and collaboration, interactive meetings led a better decision-making, and largely informed the consultants on proposed projects.

1.8.5.5 Data Analysis, Reporting and Documentation

Data was quantitatively and qualitatively analyzed in terms of themes. The Environmental Social Impact Assessment Study Report was compiled from the findings in accordance with the guidelines issued by NEMA for such works and prepared and submitted by the proponent for consideration and approval. The Consultant ensured constant briefing of the client during the exercise.

2. PROJECT DESCRIPTION

2.1 Project Location

Lamu County is located at the North coast of Kenya and is one of the six coastal counties of the Republic of Kenya. The County is adjacent to the Indian Ocean, 0-50 m above mean sea level and it boarders Garissa county to the North, Tana River county to the Southwest, Republic of Somalia to the North East and Indian Ocean to the south. Lamu has a coastline of approximately 130 km. The land area of the County is 6,273.1 square kilometers. Lamu county has roughly 65 islands with inhabited ones being Lamu, Manda, Pate, Kiwayu and Ndau.

The proposed project is the comprehensive upgrade of roads in Mokowe Old Town Settlement Marram road to bitumen standards, construction of storm water drainage, and the installation of high-mast lights in Mokowe Old Town settlement, situated within the Municipality of Lamu West, Lamu County. The need for this infrastructure enhancement arises from the growing importance of the area, coupled with the pressing demand for improved connectivity and urban development. Mokowe Old Town settlement, it is a critical locale within the Lamu County and the existing road network has become inadequate to support the evolving socio-economic activities and population growth in the area since it became the official Lamu County headquarters.

Mokowe Old Town is located in Mkomani Ward, Mkomani Location, Mokowe Sublocation, Lamu West constituency in Lamu county. It is 8m above sea level and if the sea rises two meters above, nearby areas are affected. It is the last town on the mainland. Mokowe is located along the Garsen -Witu highway and it is 120 km East of Garsen.

The proposed project is situated within the vibrant municipality of Lamu, which is part of Lamu County. The geographical coordinates of the project's starting point are approximately 2°23'12.85"S latitude and 40° 8'61.26"E longitude. The elevation at the initiation of the road is recorded at 4 – 10 meters above sea level, providing a crucial reference point for the project's topographical considerations.

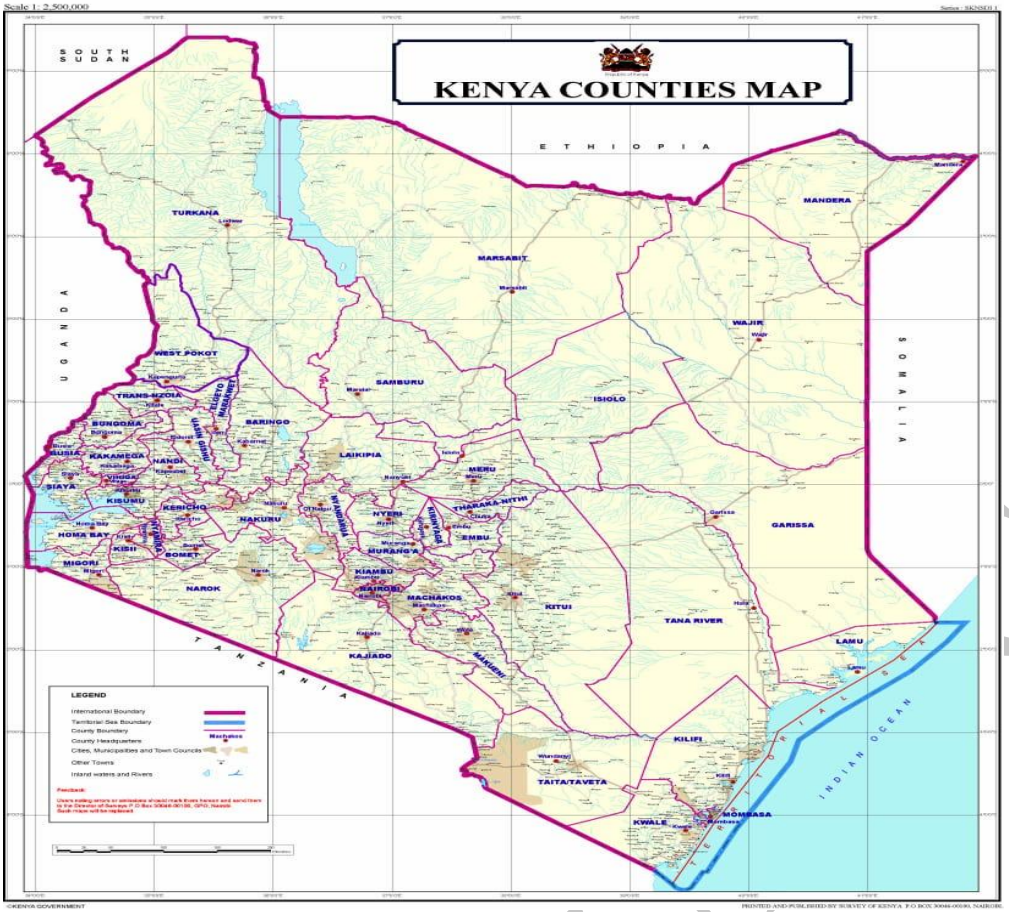

Figure 1: Map of Kenya

Source; Lamu County CIDP

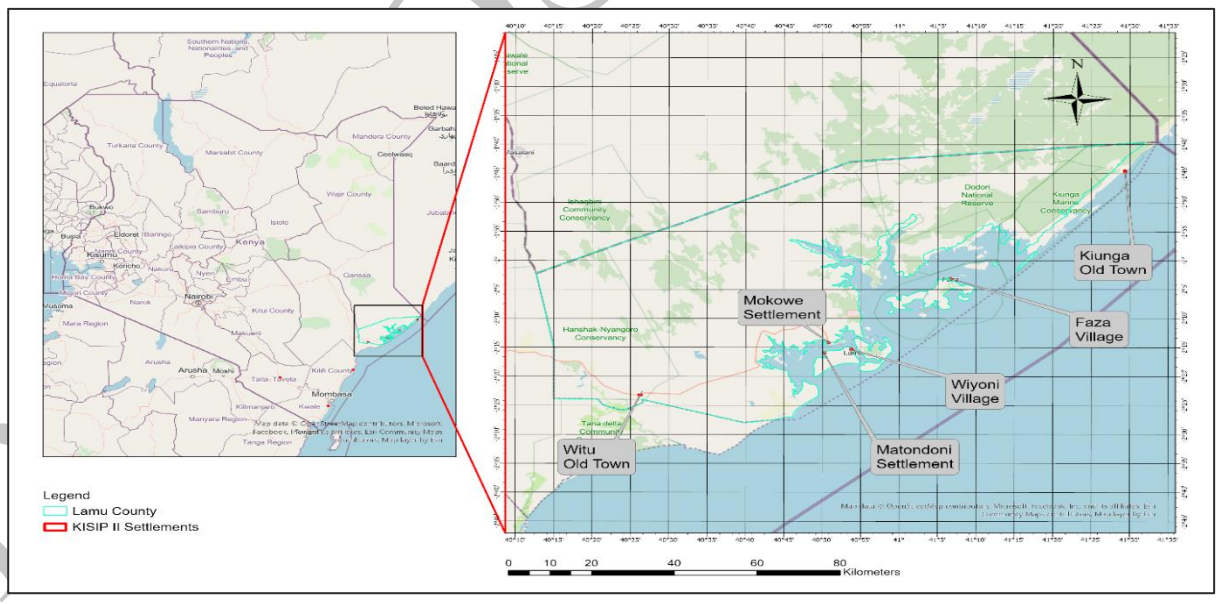

Figure 2: General Location Map

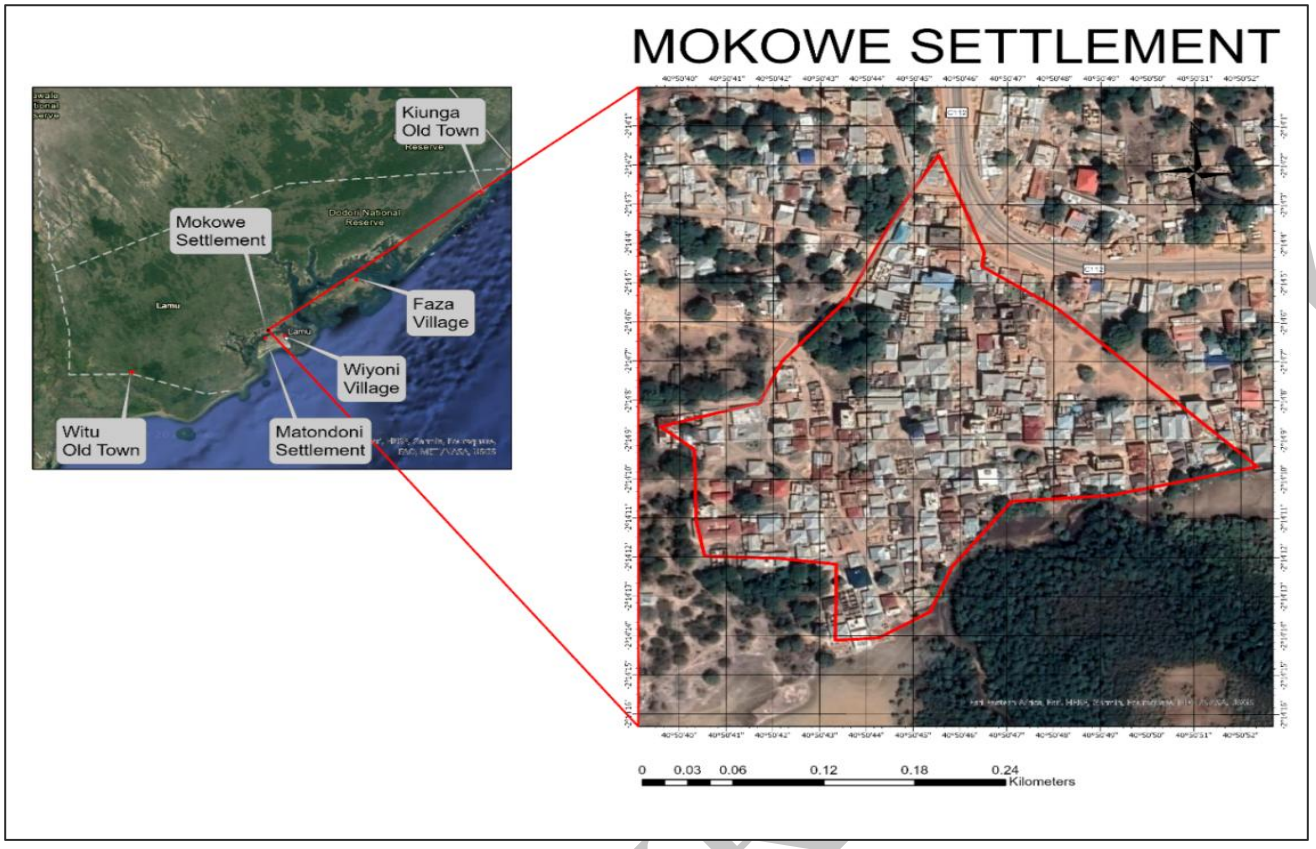

Figure 3: Mokowe Location Map

2.2 Projects description

As the road progresses from Mokowe Hospital road to Tumbo La Kati area, it may encounter variations in elevation. The lowest point's elevation of 4 meters above sea level may experience fluctuations along the route, requiring careful engineering considerations to ensure the road's integrity and stability.

The Mokowe Road Upgrade and Storm-water Drainage Construction project cover a substantial stretch of approximately 0.896 kilometers. This size is indicative of the project's ambition to comprehensively address accessibility challenges within the settlement and promote sustainable urban development practices. The scope encompasses various widths along the road, ranging from 6M to 9M, requiring adaptive design solutions to optimize functionality.

The project's geographical scope extends from Mokowe Hospital to Tumbo La Kati, covering an approximate distance of 849 meters. Also, there are other 4No feeder roads, joining the main road. The road, characterized by its current suboptimal condition, is in need of a comprehensive overhaul to accommodate increased traffic, enhance safety, and support the burgeoning economic activities in the town. In addition, the existing road needs to be upgraded to merge with the design of Mokowe – Witu Road drainage design system which currently is causing flood in most parts of Mokowe by being higher than the existing roads and drainage system.

Furthermore, the installation of high-mast lights aims to address issues of inadequate lighting along the road, contributing to increased safety for pedestrians and motorists, especially during night-time. The storm water drainage component is integral to managing potential water- flood issues, ensuring that the upgraded road system is resilient to adverse weather conditions and minimizing environmental impacts.

Extensive community-level consultations were conducted within the settlement to discern the infrastructure investment priorities of its residents. Following thorough discussions with stakeholders in Lamu County and the identified settlements,

the prioritized projects encompass the construction of roads, implementation of Stormwater drainage systems, and the installation of three high mast lights. These selected initiatives reflect a collaborative and inclusive approach, ensuring that the identified infrastructure developments align closely with the community's articulated needs and preferences. The proposed endeavors aim not only to enhance the overall infrastructure of the settlement but also to contribute significantly to the well-being and safety of its inhabitants.

The project's geographical scope extends from Mokowe Hospital to Tumbo La Kati, covering an approximate distance of 849 meters. Also, there are other 2No feeder roads, joining the main road. The road, characterized by its current suboptimal condition, is in need of a comprehensive overhaul to accommodate increased traffic, enhance safety, and support the burgeoning economic activities in the town. In addition, the existing road needs to be upgraded to merge with the design of Mokowe – Witu Road drainage design system which currently is causing flood in most parts of Mokowe by being higher than the existing roads and drainage system.

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2.2.1 Proposed Scope of Works

Table 2: Proposed project Summary description

Proposed Projects	Description			
	No of Footpaths	**Widths**	**Total lengths**	**Nature of upgrade**
5. Roads	2	6m	849m	Upgrade to bitumen standard with side pavements, culverts and crossing paths.
6. Drainage system	**Description**			
	Construction of Lined up open drains and infiltration pits with No culverts no crossing points			
7. Street Lighting- Installation off High Mast lighting	**Description**			
	No of High Mast lighting		**Height**	**Luminous Radius (Coverage)**
	1		30m	150m
8. Solid Waste Management Systems	**Description**			
	Introduction of Waste collection exercise at Household level, Transport to Transfer station for sorting into recyclables and non-Recyclables by non-motorist means for instance cart. Treatment of non- recyclables and disposal to authorised approved site done by County Government of Lamu			

Roads and Drainage System

Table 3: Roads and drainage system

Road Number	Drawing Reference Name	Road Length (Metres)	Width (m)
Road 1	**KISIP 2/LAMU/PP/MOKOWE ROAD 01**	**602**	**6**
Road 2	**KISIP 2/LAMU/PP/MOKOWE ROAD 02**	**247**	**6**
Total		**849**	

The **Road works** entail.

Carriage way of widths of 6m

Pavement structure comprising of;

- 300mm thick improved subgrade compacted in two layers of 150mm to 100% MDD (AASHTO T99)

- 200mm thick Natural Gravel material Sub base, minimum CBR 30%
- 150mm thick 2% Cement Treated Gravel Base
- 50mm Sand/ Quarry dust layer course
- 80mm heavy duty concrete paving blocks

The **Drainage system construction works** shall include;

- Cross pipe culverts and access culverts
- Lined closed U-shaped drains

Design Standards

The proposed roads in the identified settlement are classified as being in an urban setting. The road geometrics, pavement and storm water drainage preliminary and detailed designs will be carried out in conformity with the Ministry of Roads standards as outlined in the Roads Design Manual Part I, III and IV.

2.2.3 Geometric Design

The geometric designs of the project roads were done in such a way that it followed the existing road alignments as close as possible. This was done in order minimize on land acquisition and relocation of the inhabitants of the settlements. Aspects considered in the geometric design include but are not necessarily limited to:

- horizontal alignment,
- vertical alignment,
- Road cross section
- Junctions
- Road Furniture
- Crossing structures
- Road Drainage

The geometric design was carried out by use of AutoCAD's Civil 3D software.

The design has taken into consideration design limiting factors such as encroachments to way leave and zoning or other regulatory restrictions.

Functional characteristics that were considered in the design as per the Urban Roads Design Manual are outlined in the table below:

Table 4: Functional Road Characteristics (Urban Road Design Manual)

No	Function	Local Street
1	Traffic movement	Secondary access
2	Flow conditions	Interrupted flow
3	Design Speed	30 – 40 km/hr
4	Running speed	20 – 40 km/hr
5	Road reserve width	3-9 m
6	Carriageway width	3-6 m
7	Property access	primary
8	Connections	Minor Collectors and local streets
9	Parking	Accepted

Design Speed

The alignment design elements, e.g. curvature, sight distances and vertical grades are directly related to design speed. The selection of the appropriate design speed is therefore an important aspect of alignment design.

The design speed for the road was chosen as 40km/hour due to the fact that the roads are basically residential access roads.

Design speed is one factor that determines the degree of curvature in the horizontal alignment design. In this case the roads are within the residential areas where land development and encroachments to the road reserve are the main factors affecting the horizontal curvature of the design. Therefore, some curves impose low level of comfort to the drivers.

Taking into account the limitations imposed by existing developments on horizontal curves, crest curves and sag curves, the curve radii adopted ranged from minimum of 5m at junctions for turning, to 200m on the curves along the alignment.

Design Vehicles

The design vehicle governing the geometric design is indicated in Table 3- 4 below:

Table 5: Design Vehicle as a Design Control Parameter

Design vehicle type	Overall, m			Overhang, m		Wheel base, m	Minimum design turning radius, m	Minimum inside radius, m
	Height	width	length	front	rear			
4x4 passenger car	1.3	2.1	5.8	0.9	1.5	3.4	7.3	4.2
Single unit truck	4.1	2.6	9.1	1.2	1.8	6.1	12.8	8.5

Design Cross-sections

The typical section was adopted for urban condition taking into account the road reserve width available. The project roads had different road reserve as follows:

- Public roads to the settlement 6m
- Internal roads 3 - 4m
- Footpaths 2 - 3m

The proposed cross sections (provided in the book of drawings) have a carriageway width of **3 -6m** with **1m** shoulders in road reserves of 9m as well as covered drains for additional space to cater for non-motorized traffic. Mokowe settlement only has footpaths ranging between 2-3m widths depending on available right of way, specific to each settlement.

Alignment

Horizontal and vertical alignments of a road are designed to an optimum balance so as to provide the most direct, practical and economic route flowing with the terrain and with minimum disturbance to the existing route and without compromising on road safety.

The followings assumptions were made during the design of vertical alignments:

- Drivers eye height -1.10m
- Object height for stopping sight distance -0.10m
- Object height for meeting and passing sight distance - 1.10m

The vertical parabolic curves were fitted using the Autodesk Civil 3D software. For each vertical intersection point, the curve was fitted by inputting the required length and balancing with the design speed.

Sight Distance

Minimum stopping sight distance for urban streets ranges from 30 – 60m. Design for passing sight distance is seldom applicable in urban streets.

Table 6: Stopping Sight Distance

Design speed km/h	Brake reaction distance, m	Braking distance on level, m	Calculated stopping sight distance, m	Design stopping sight distance, m
20	13.9	4.6	18.5	20
30	20.9	10.3	31.2	35
40	27.8	18.4	46.2	50
50	34.8	28.7	63.5	65

Source: AASHTO Geometric design of highways, Exhibit 3.1

Grades

Grades for informal settlements should be as level as practical, consistent with the surrounding terrain. The gradient adopted for local streets will be less than 15%. Where grades of 4% or steeper are necessary, the drainage design may become critical. For proper drainage, the desirable minimum grade that will be adopted for the access roads with outer curbs will be 0.30%, but a minimum grade of 0.2% may be used.

Cross slope

For efficient drainage, pavement cross slopes should be adequate. The normal travelled cross slopes suggested by AASHTO for both highways and low pavement surfaces are shown in the table below:

Table 7: Normal Travel Way Cross Slope

Surface Type	Range in cross slope rate, %

High	1.5 - 2
Low	2 - 6

Source: AASHTO Geometric design of highways, Exhibit 4.4

High type pavements are those that retain smooth riding qualities and good non-skid properties in all weather

Junctions

Junctions and accesses were provided at required sections. The road is an urban road and therefore, unrestricted access is provided.

Most junctions were for residential accesses, but some were accesses to major and other existing urban roads in the area.

The turning radii provided fit the turning characteristics of passenger car with the minimum being 5m.

Side slopes

The side slopes have been taken as 1:1.5 (vertical: horizontal). According to urban road design manual, suggested slopes for cut and fill conditions are shown in the table below:

Table 8: Recommended Design Slopes

Height of fill or cut, m	Earth slope, vertical to horizontal		
	Flat	Moderately steep	Steep
0 – 1.5	1:4	1:4	1:4
1.5 – 3	1:4	1:3	1:2
3 – 4.5	1:3	1:2.5	1:1.5
4.5 – 6	1:2	1:2	1:1.5
Over 6	1:2	1:1.5	1:1.5

Accesses

Access culverts have been provided to allow for accesses to various plots along the road.

Footpaths

The width of the footpath has been estimated on the basis of minimum width required as 1.2m. However, a width of 2m was adopted due to availability of space. The surfacing is of bitumen standards.

Cycle tracks

Due to volume of traffic projected, cycle tracks have not been provided separately and therefore they will use the same carriageway with other motorized traffic.

Road furniture

Road furniture including road signs, guardrails, speed bumps and miscellaneous furniture were considered in the detailed design.

Roads Operation Phase Activities

This is the phase when the road is actually in use. Most of the activities in this phase will involve monitoring of the activities of the project in line to the objectives of the project. These will include repairs to destroyed areas, expansions, policy development and implementation and general maintenance of the road and the associated structures.

Roads Decommissioning Phase

Decommissioning refers to the final disposal of the project and associated materials at the expiry of the project life span. In respect to the road, decommissioning is not anticipated. However, it will be sustained in accordance to transportation demands of the project area.

Nevertheless, after the construction period, construction equipment and dismantled camp materials will be salvaged and removed from the site by the contractor.

Environmental Protection

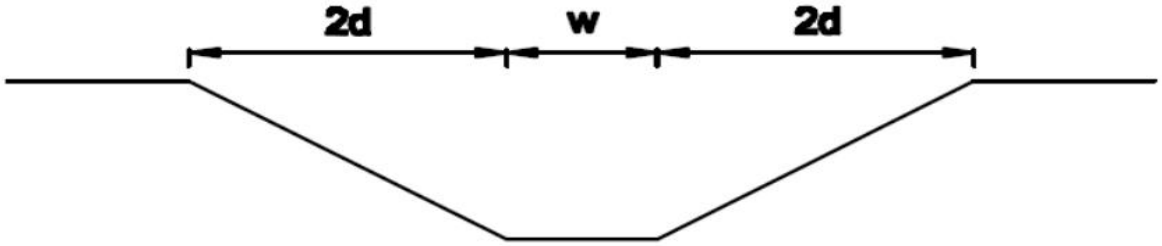
The Contractor is supposed to ensure so far as is reasonably practicable and to the satisfaction of the responsible proponent agent; that the impact of the construction on the environment shall be kept to a minimum and that appropriate measures as brought out in the ESMMP are taken to mitigate any adverse effects during the construction. These measures shall include:

a) After extraction of construction materials, all quarries and borrow pits shall be back-filled and landscaped to their original state to the satisfaction of the Engineer. In particular, those near the project road shall be back-filled in such a way that no water collects in them.
b) Spilling of bitumen, fuels, oils, lubricants and other pollutants shall be avoided and if spilt, shall be collected and disposed of in such a way as not to adversely affect the environment.

Long traffic diversion roads shall be avoided so as to minimize the effect of dust on the surrounding environment. In any case all diversions shall be kept damp and dust free.

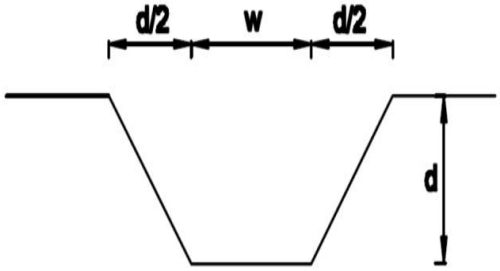
Drainage Facilities Design

Major channels are designed as V-shaped. The major channels run through reserve areas, which are undeveloped areas. The loose slope of the channel is H: V=2:1 which does not require reinforced concrete structure. By adopting this design, construction and management cost can be saved.

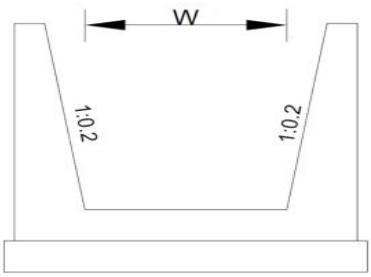


1V-Shape Drain (H:V=2:1)

Meanwhile, side ditches along roads are designed as U-shaped, to provide a large area for roadside land use. The slope of the channel is H:V = 1:1 or H:V = 1:2, depending on their widths. The maximum width of a U-shape drain with slope H:V=1:1 and without reinforcement is 1,000 mm.



2 U-Shape Drain (H:V=1:2)



3U-Shape Drain (H:V=1:1)

2.2.4 Street Lighting Works

The Street Lighting works shall comprise of installation of 1Nr. High Mast lights with a 30 m high steel tower complete with a lockable electrical control switchgear and power meter chamber and 3000mm by 3000mm concrete foundation. Radius of illumination is 150m.

2.3 Project Activities and Processes

Projects to be Undertaken;

- Roads and Storm Water Drains
- High mast security lighting
- Solid waste collection and disposal points

Road and Drainage Construction Activities

The major Works to be executed under the Contract comprise mainly of but are not limited to the following:

- Limited site clearance and top soil removal;
- Earthworks;
- Preparation of the sub-grade to receive the pavement layers as per the standard specifications;
- Provision of cement improved gravel for road sub-base of the specified thickness;
- Provision of cement stabilized gravel for road base of the specified thickness;
- Provision of a double surface dressing using 14/20 mm and 6/10 mm pre-coated class 4 chippings for both the carriageway and the shoulders. The shoulders shall be constructed with the same material and thickness as for sub-base, base and surfacing;
- Construction of culverts and other drainage works;
- Protection works using stone pitching and gabions as necessary;
- Relocation of services as necessary;
- Provision of road furniture, including road marking and traffic signs;
- Landscaping including top soiling and grassing;
- Maintenance of passage of traffic through and around the works.

Any other activity not listed above in either category but deemed to be necessary by the Engineer, shall be subject to the Engineer's formal instructions and within the mode of payment stipulated either by day works or on a measured basis.

Anticipated Waste: Road construction typically generates various types of waste, including excess soil and earthworks material, concrete and asphalt debris, packaging waste from construction materials, and potentially hazardous waste such as oils and lubricants.

Products and By-Products: The main product of road construction is the completed road infrastructure. By-products may include recycled materials from demolished structures or excess materials like soil that can be repurposed.

Waste Management: Waste from road construction can be managed through practices such as recycling concrete and asphalt for use in base layers or new construction, proper disposal of hazardous waste in designated facilities, and minimizing packaging waste through bulk deliveries and reusable containers.

Drainage

Anticipated Waste: Construction of drainage facilities can result in waste like excavated soil and sediment, discarded pipes or culverts, excess concrete or grout, and packaging waste.

Products and By-Products: The products are functional drainage systems. By-products may include materials suitable for reuse or recycling, such as excavated soil for landscaping or recycled pipes.

Waste Management: Waste from drainage construction can be managed through practices like reusing excavated soil for backfilling or landscaping, recycling materials like pipes and concrete, and proper disposal of non-recyclable waste in designated landfills.

Installation of High-Mast lights

The installation of high-mast lights involves several activities to ensure the proper functioning and safety of the lighting system. Below is a list of activities typically involved in the installation process:

- Site Assessment: Conduct a thorough assessment of the installation site to determine the optimal locations for high-mast lights. Consider factors such as visibility requirements, surrounding infrastructure, and potential obstacles.
- Design and Planning: Develop a detailed design plan for the high-mast lighting system, including the height, and the placement of lights. Plan the electrical wiring and power supply for the entire system.
- Foundation Installation: Excavate and prepare the foundation for each high-mast pole according to engineering specifications. Install the anchor bolts and secure the foundation to ensure stability.
- Mast Erection: Use appropriate equipment to lift and install the high-mast poles onto the prepared foundations. Ensure the correct alignment and verticality of each mast.
- Electrical Wiring: Connect the electrical wiring from the power source to each high-mast pole. Install control panels, switches, and other electrical components.
- Light Fixture Installation: Mount the high-intensity light fixtures onto the top of each mast. Ensure proper alignment and secure fastening to prevent movement.
- Testing and Commissioning: Conduct comprehensive testing of the entire high-mast lighting system to ensure functionality. Verify the performance of each light fixture, the power supply, and the control system.
- Establish a maintenance agreement outlining responsibilities and schedules for ongoing upkeep.

Anticipated Waste: The installation process for high mast lights may generate waste such as packaging materials, old lighting fixtures, wiring scraps, and possibly excess concrete or foundation materials.

Products and By-Products: The products are the installed high mast lights and improved lighting infrastructure. By-products could include recyclable materials from packaging and old fixtures.

Waste Management: Waste can be managed by recycling packaging materials, properly disposing of old lighting fixtures and wiring in accordance with waste regulations, and reusing or recycling excess construction materials where feasible

2.3.1 Operation Phase Activities

This is the phase when the road is actually in use. Most of the activities in this phase will involve monitoring of the activities of the project in line to the objectives of the project. These will include repairs to destroyed areas, expansions, policy development and implementation and general maintenance of the road and the associated structures.

2.3.2 Decommissioning Phase

Decommissioning refers to the final disposal of the project and associated materials at the expiry of the project life span. In respect to the road, decommissioning is not anticipated. However, it will be sustained in accordance to transportation demands of the project area.

Nevertheless, after the construction period, construction equipment and dismantled camp materials will be salvaged and removed from the site by the contractor.

2.4 Environmental Protection

The Contractor is supposed to ensure so far as is reasonably practicable and to the satisfaction of the responsible proponent agent; that the impact of the construction on the environment shall be kept to a minimum and that appropriate measures as brought out in the ESMP are taken to mitigate any adverse effects during the construction. These measures shall include:

a) After extraction of construction materials, all quarries and borrow pits shall be back-filled and landscaped to their original state to the satisfaction of the Engineer. In particular, those near the project road shall be back-filled in such a way that no water collects in them.
b) Spilling of bitumen, fuels, oils, lubricants and other pollutants shall be avoided and if spilt, shall be collected and disposed of in such a way as not to adversely affect the environment.
c) Long traffic diversion roads shall be avoided so as to minimize the effect of dust on the surrounding environment. In any case all diversions shall be kept damp and dust free.

2.5 Estimated Project Budget

Table 9: Roads and Drainage Cost

BILL No.	DESCRIPTION	AMOUNT
	MOKOWE ROADS	
4.00	SITE CLEARANCE AND TOPSOIL STRIPPING	261,063.01
5.00	EARTHWORKS	15,930,598.58
8.00	CULVERT & DRAINAGE WORKS	17,368,188.19
9.00	PASSAGE OF TRAFFIC	1,452,774.59
12.00	NATURAL MATERIAL FOR SUBBASE AND BASE	4,244,631.60
14.00	CEMENT AND LIME TREATMENT	1,394,856.87
16.00	BITUMINOUS MIXES/WEARING COURSE	15,848,511.60
20.00	ROAD FURNITURE	7,992,255.49
	SUB - TOTAL 1	**64,492,879.93**

Table 10: High Mast Street lighting cost

BILL No.	DESCRIPTION	AMOUNT
1.0	FLOODLIGHTING AND OTHER SERVICES	**5,984,200.00**
2.0	CIVIL AND STRUCTURAL WORKS	**2,266,200.00**
	SUB TOTAL	**8,250,400.00**

3. PROJECT ALTERNATIVES

3.1 Project Alternative

Regulation 18(1) of Legal Notice 101 specifies the basic content of an Environmental Impact Assessment Study / Project Report subsequent to which, subsection (i) requires an analysis of alternatives including project site, design and technologies and reasons for preferring the proposed site. Therefore, this section analyses the Project alternatives in terms of site, technology scale and waste management options. However, under this study the alternative that was considered for the Project was focused on:

a) "No-action" Alternative
b) Alternative Routes
c) Alternative Mode of Transportation
d) Analysis of Alternative Construction Materials and Technology

3.2 The "No-action" Alternative

The selection of the "No-action" alternative would mean the discontinuation of all projects designs and result in the site being retained in its existing form. If the site is left undeveloped, the proponent would lose in terms of not achieving development goals. In this case, the road already exists in the type of murram road, therefore there is no standard ''no-action'' scenario if the strategic objectives of the MoM are in constructing the road in bitumen material to improve its standard. There is no other macro-transport alternative like water and overland rail which can be applicable to connect these two towns. The possible alternative is air transport but this is not adequate and affordable to the short distance to be covered and it's not economical.

This is defined as maintaining the road in passable condition. Intermittent repairs are undertaken from time to time. "Without-the-project" scenario is therefore to assume that similar interventions will continue in the future and that the maintenance strategy will be to ensure that the road remains passable. The maintenance strategy may involve environmentally sustainable and friendly mechanisms.

3.2.1 Upgrade of Roads

Alternative 1: Patch and Repair

Instead of a comprehensive road upgrade, this alternative involves patching and repairing specific sections of the existing roads. It is a cost-effective option but may not address long-term issues.

Pros:

- Cost-effective in the short term
- Minimal disruption to traffic

Cons:

- Limited long-term effectiveness
- May lead to recurring maintenance needs

Alternative 2: Incremental Upgrade

Implement a phased approach to road upgrades, focusing on critical sections first. This allows for budgetary flexibility and minimizes disruptions to traffic and communities.

Pros:

- Phased approach allows for flexibility
- Minimizes immediate financial burden

Cons:

- Prolonged disruption as upgrades occur in phases
- Potential delays in addressing critical road sections

Alternative 3: New Road Alignment

Consider creating new road alignments or bypasses to alleviate traffic congestion and address issues in a more strategic manner, though this may involve acquiring new land.

Pros:

- Addresses traffic congestion strategically.
- Allows for optimized road design

Cons:

- Land acquisition challenges
- Higher upfront costs

Therefore, the incremental upgrade alternative may strike a balance between immediate improvements and long-term considerations. Further detailed analysis is needed to determine the optimal phasing and critical sections for initial upgrades.

3.2.2 Construction of Storm-water Drainage

Alternative 1: Green Infrastructure

Explore the incorporation of green infrastructure solutions, such as permeable pavements and green roofs, to manage storm-water naturally and enhance environmental sustainability.

Pros:

- Environmentally sustainable
- Potential for community engagement

Cons:

- Initial implementation costs may be higher
- Requires on-going maintenance

Alternative 2: Traditional Drainage Systems

Opt for traditional drainage systems with concrete pipes and culverts. This alternative may be more straightforward but could have higher associated costs and environmental impacts.

Pros:

- Proven effectiveness
- Standardized construction methods

Cons:

- Potential environmental impact
- Limited flexibility in managing storm-water naturally

Alternative 3: Regional Detention Ponds

Implement regional detention ponds to manage storm-water runoff at specific locations, providing a more centralized and controlled approach to drainage.

Pros:

- Centralized storm-water management
- Reduces flood risk in specific areas.

Cons:

- Requires significant space
- Potential impact on existing ecosystems

Therefore, the selection between green infrastructure and traditional drainage systems depends on the environmental goals and community preferences. Further study on costs and long-term impacts is necessary.

3.2.3 Installation of High-Mast Lights

Alternative 1: Solar-Powered Lights

Consider the use of solar-powered high-mast lights to reduce reliance on traditional energy sources, promote sustainability, and potentially lower long-term operational costs.

Pros:

- Sustainable and environmentally friendly
- Potential long-term cost savings

Cons:

- Higher initial investment
- Weather-dependent efficiency

Alternative 2: Smart Lighting Systems

Implement smart lighting systems with sensors and controls to optimize energy usage and adjust lighting levels based on real-time conditions, improving efficiency and reducing environmental impact.

Pros:

- Energy-efficient and adaptable
- Allows for real-time adjustments

Cons:

- Initial setup costs may be higher
- Requires technological expertise

Alternative 3: Decorative Lighting

Explore the installation of decorative high-mast lights that not only provide illumination but also contribute to the aesthetic enhancement of the area, considering the cultural and visual preferences of the community.

When considering project alternatives, factors such as cost, environmental impact, community preferences, and long-term sustainability should be carefully evaluated. This evaluation process helps decision-makers choose the most suitable and effective approach for achieving the project objectives while mitigating potential negative impacts.

Pros:

- Aesthetic enhancement
- Community-focused design

Cons:

- Potential higher upfront costs
- Balancing aesthetics with functional lighting requirements

3.3 The Alternative Analysis

The analysis of project alternatives provides valuable insights into various options for the upgrade of roads, construction of storm-water drainage, and installation of high-mast lights. The considerations for each alternative are essential in making informed decisions that align with environmental regulations, community needs, and project objectives.

The "no-action" alternative would impede the achievement of development goals for the upgrade of roads, construction of storm-water drainage, and installation of high-mast lights. This alternative is not feasible, given the strategic objectives of the projects in Mokowe town. The alternatives for road upgrades offer a spectrum of choices, each with its own set of advantages and challenges. The road design highlighted appears to strike a balance between immediate improvements and long-term considerations. The alternatives for storm-water drainage emphasize the need to balance environmental sustainability with practicality. The selection the designed drainage systems costs effective, and has long-term impacts. The alternatives for high-mast lights present options ranging from solar-powered solutions to smart lighting systems and decorative lighting. The decision-making process involves weighing the benefits of sustainability, efficiency, and aesthetics against the associated costs.

The document underscores the importance of a comprehensive evaluation process, taking into account financial considerations, environmental impact, community preferences, and long-term sustainability. It emphasizes the need for further detailed analysis in certain areas to make well-informed decisions.

Further detailed analysis is recommended for specific aspects, such as the optimal phasing and critical sections for road upgrades, the costs and long-term impacts of storm-water drainage alternatives, and the careful consideration of the balance between aesthetics and functionality in high-mast lighting.

The project alternatives analysis provides a solid foundation for decision-makers to choose the most suitable and effective approaches for the identified projects. It reflects a commitment to responsible and sustainable development, considering the diverse needs and concerns of the community and adhering to environmental regulations.

4. SOCIO-ECONOMIC AND ENVIRONMENTAL BASELINE

4.1 Biophysical Environmental Baseline

4.1.1 Physical Environment

4.1.1.1 Climate

Lamu, situated within the Equatorial Climate System, experiences its weather patterns primarily influenced by two monsoon winds, leading to consistently warm temperatures year round. Tropical Monsoon and Arid Steppe Hot climates.

Rainfall in the region follows a bimodal pattern heavily influenced by monsoon winds. The extended rainy season spans from May to July, coinciding with the strengthening of the South East monsoon winds. Short rains occur from November to December, decreasing notably in January and February. Dry conditions prevail from January to March, and the reliability of short rains lessens as one moves northward from the county's southern part. It is during this rainfall seasons that the settlement experiences flooding.

The mean annual potential evaporation stands notably high at about 2,327 millimeters per year. The total evapotranspiration usually hits around 2,230 millimeters annually, peaking in March and September and dropping to the lowest values in May.

The average hourly wind speed in Mokowe experiences significant seasonal variation over the course of the year. The windier part of the year lasts for 5 months, from May 19 to October 18, with average wind speeds of more than 8.9 miles per hour. The windiest month of the year in Mokowe is August, with an average hourly wind speed of 11.4 miles per hour. The calmer time of year lasts for 7.0 months, from October 18 to May 19. The calmest month of the year in Mokowe is March, with an average hourly wind speed of 6.4 miles per hour.

In Mokowe, the month with the most daily hours of sunshine is February with an average of 8.26 hours of sunshine. In total there are 256.19 hours of sunshine throughout February. The month with the fewest daily hours of sunshine in Mokowe is January with an average of 6.82 hours of sunshine a day. In total there are 211.54 hours of sunshine in January. Around 2726.21 hours of sunshine are counted in Mokowe throughout the year. On average there are 89.7 hours of sunshine per month.

Climate change has caused extreme rains to be experienced all over the country and Lamu is no exception. Extreme rainfall causes the bank of existing rivers e.g. River Tana and the Nyongoro tributary that leads to flooding in many parts of Lamu county.

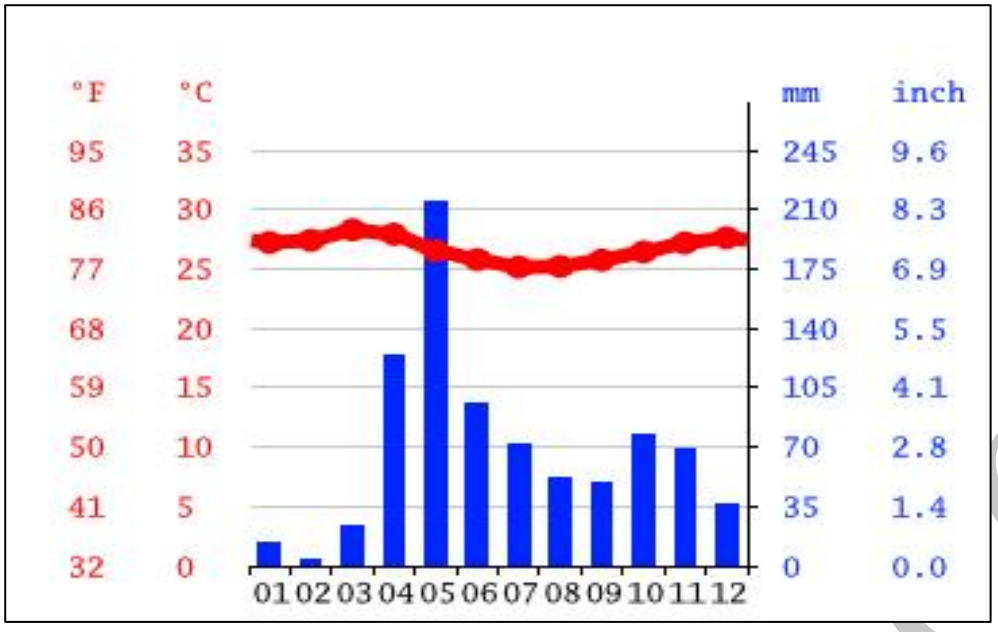


Figure 4: Annual temperature and precipitation in Lamu County- Source, Climate.org

	January	February	March	April	May	June	July	August	September	October	November	December
Avg. Temperature °C (°F)	27.2 °C (81) °F	27.4 °C (81.3) °F	28.3 °C (82.9) °F	27.9 °C (82.2) °F	26.5 °C (79.8) °F	25.8 °C (78.4) °F	25.1 °C (77.3) °F	25.2 °C (77.4) °F	25.7 °C (78.3) °F	26.4 °C (79.6) °F	27.2 °C (80.9) °F	27.6 °C (81.7) °F
Min. Temperature °C (°F)	25.1 °C (77.2) °F	25.2 °C (77.4) °F	26.1 °C (78.9) °F	25.9 °C (78.6) °F	25 °C (77) °F	24.3 °C (75.8) °F	23.6 °C (74.6) °F	23.6 °C (74.4) °F	24 °C (75.1) °F	24.5 °C (76.2) °F	25.1 °C (77.2) °F	25.5 °C (77.9) °F
Max. Temperature °C (°F)	30.6 °C (87) °F	30.8 °C (87.5) °F	31.4 °C (88.5) °F	30.3 °C (86.5) °F	28.4 °C (83.1) °F	27.7 °C (81.8) °F	27.2 °C (81) °F	27.5 °C (81.5) °F	28.2 °C (82.7) °F	28.9 °C (84) °F	29.6 °C (85.3) °F	30.4 °C (86.8) °F
Precipitation / Rainfall mm (in)	14 (0)	4 (0)	24 (0)	124 (4)	215 (8)	95 (3)	72 (2)	52 (2)	49 (1)	77 (3)	69 (2)	36 (1)
Humidity(%)	74%	73%	73%	77%	80%	77%	75%	74%	73%	75%	77%	75%
Rainy days (d)	1	0	5	17	18	16	15	13	12	13	12	6
avg. Sun hours (hours)	8.9	8.9	9.0	8.4	8.2	8.9	9.1	9.0	8.7	8.5	9.0	9.2

Figure 5: Lamu Climate, Source: climate.org

4.1.1.2 Topography

Lamu County is generally flat and lies between altitude zero and 50m above sea level with the exception of the coastal sand dunes and the Mundane sand hills which hardly exceed 100 m above sea level.

The flat topography makes the county prone to flooding during the rainy seasons and periods of high tides. The flood prone areas include areas around Lake Kenyatta (Mkungunya) in Bahari Ward, along Tana River delta especially around Moa and Chalaluma areas in Witu, archipelago islands such as Pate and Manda and areas along the coastal line. Most disturbing is that, some areas of the County's mainland such as Mokowe, are below the sea level as a result of the areas being a limestone karst terrain (NEMA, 2015). The highest areas of Lamu County are around Samburu Sand Hills (GoK, 1985) and the Boni-Lungi Forest ecosystem.

The main topographic features found in the county include: the coastal plains, island plains, Dodori River plain, the Indian Ocean and the sand dunes. The coastal plain, though not extending to the coastline, creates the best agricultural land in the county. The island plain is found in the coastal, northern and western parts of the county which have good potential for agricultural development. The Dodori River plain which is in the Dodori National Reserve is home to many wildlife species. The Indian Ocean provides a wealthy marine ecosystem which supports livelihoods of the county mainly through fishing and tourism activities. The most extensive terrain in Lamu County is the Inland Plain which occupies the northern and western-most part of the County. The inland plain is punctured with seasonal water bodies being mostly large swampy areas and lake wetlands such as Lake Mkungunya, Lake Amu and Lake Moa. The County's coastal plain covers most of the coastline but is interrupted in some areas by the coastal sand dunes.

There are four major catchment areas each with unique characteristics. They are: Dodori, Coastal zone, Duldul, the Lamu Bay drainage and Tana River catchments. The county has no permanent river but only few seasonal streams which flow from the west towards the south eastern part of the county, with none reaching the sea. The only permanent open water site in the county is Lake Kenyatta in Mpeketoni which has been known to dry during exceptionally dry years. The county also has several swamp areas occasioned by rain water with the main ones located in Dodori, BeleBele in Hindi, Ziwa la Magarini, and Chomo Ndogo - Chomo Kuu along the Hindi-Bargoni road, Luimshi and Kenza on Nairobi Ranch and Kitumbini and Ziwa la Gorjji in Witu.

Old Mokowe Settlement is situated within the Coastal Plains. It ranges from 0M to 1Km from the Coastal plains and the mangrove forest and between 8-10m above sea level.

4.1.1.3 Hydrology and Geology

Lamu County's geological structure is predominantly shaped by Quaternary to Recent sediments, mainly characterized by limestone and coral reef stones. Embedded within this framework are sandstone formations that evolved across different eras, spanning from the Permo-Carboniferous era to the Tertiary period, categorized into four sequences with variations in grain sizes, porosity, permeability, compaction, shaliness, and cementation.

This geological layout significantly influences groundwater presence and accessibility. The hydrological behavior of the region is closely tied to its topography and geology. Rivers flow southeastward, perpendicular to the Indian Ocean coastline, while intermittent streams contribute to groundwater reserves by draining into limestone karsts. Lamu Island and much of the coastal zone are covered by sand dunes, acting as groundwater collection areas that supply freshwater to settlements like Lamu Town. This groundwater source mainly relies on replenishment from direct rainfall and seasonal runoff.

The terrain in Mokowe 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.

4.1.1.4 Water Resources

The following are the main aquifers within Lamu County

Table 11: Main Aquifers within Lamu County

No.	Resource/Aquifer	Ward	Sub-County
1.	Shela Sandunes	Shela	Lamu West
2.	Chomo	Hindi	Lamu West
3.	Belebele	Hindi	Lamu West
4.	Lake Kenyatta	Bahari	Lamu West
5.	Matondoni	Matondoni	Lamu West
6.	Vumbe	Faza	Lamu East
7.	**Kiwayuu Water Supply**	**Kiunga**	**Lamu East**
8.	**Milimani Water Supply**	**Basuba**	**Lamu East**
9.	**Kizingitini Water Supply (Desalination)**	**Faza**	**Lamu East**
10.	**Siyu Water Supply (Desalination)**	**Faza**	**Lamu East**
11.	**Kiunga Water Supply (Desalination)**	**Kiunga**	**Lamu East**

4.1.1.5 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 too 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 fairly alkalinic with pH 8.26.

4.1.1.6 Air Quality

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 transport vehicles and motor bikes traversing the area.

In addition, herds of grazing animals especially such as donkeys and 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.

4.1.2 Biological Environment

4.1.2.1 Fauna

Due to the disturbed nature of the project area only a few mammal species are found around the project site. Mongooses are also common as indicated by the presence of their scant. The area also hosts a vast bird species.

4.1.2.2 *Flora*

Forests: Lamu County is home to several forests. 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).

***Grasslands**:* Palm-bushed grassland areas tend to be found in sandy well drained bottomland areas. The grasslands present are chiefly natural and pristine.

Wetlands: Lamu County has wetlands and swampy areas, particularly around rivers and streams. These wetlands support unique plant communities adapted to waterlogged conditions, including sedges, reeds, and aquatic plants like mangrove. 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.

Agricultural crops: Some of the lands are under agriculture where different types of crops (cow beans, finger millet, maize, black beans) and agro forestry-based trees such cashew nuts, casuarina, and mangoes are grown. Other sites have been colonized by castor plant cashew nut trees, Indigofera sp, Crotaralia sp.

4.2 Socio-economic Baseline

4.2.1 Administration and political Units

Lamu County has two constituencies namely; Lamu West and Lamu East. Within the two constituencies, there are 10 County Assembly Wards.

Table 12: Political Units within Lamu County

Sub County	Wards	Land Area Km2
Lamu West	Shella	54.7
	Mkomani	172.5
	Hindi	1150.8
	Mkunumbi	1366.1
	Hongwe	128.5
	Bahari	123.3
	Matondoni	975.4
Lamu East	Faza	79.2
	Basuba	1708.7
	Kiunga	513.9

Mokowe Old Town is located in Mkomani Ward, Mkomani Location, Mokowe Sub-location, Lamu West constituency in Lamu county. It is 8m above sea level and if the sea rises two meters above, nearby areas are affected. It is the last town on the mainland. Mokowe is located along the Garsen -Witu highway and it is 120 km East of Garsen.

The geographical coordinates of the project's starting point are approximately 2°23'12.85"S latitude and 40° 8'61.26"E longitude.

The settlement is found in Lamu County, Lamu West Sub County, Mkomani Location, Mokowe Sub Location and Mkomani ward. Old Mokowe Settlement has four villages namely; Majengo, Bomani, Kilimani and Tumbo La Kati

Village. During prioritization of projects, the settlement selected the following projects as their priority projects including one road with drainage and two floodlights, one flood light will be erected in Majengo area while the remaining one will be erected in Tumbo La Kati. Mbololo ward where the settlement is located is divided into two topographical zones; lowland zone and highland zone.

4.2.2 Population and Religion

The population of the Republic of Kenya is approximately 43 million and Lamu is the least populated county in Kenya. The population of Lamu County is 143,920 including 76,103 males and 67,813 females. (*Source KNBS 2019 Kenya Population and Housing Census*)

Since the population of Lamu County is increasing fairly rapid, the total population is estimated to reach 184,800 by 2027.

Lamu west sub county is the highest populated sub-county followed by Lamu East.

Generally, Lamu County has both Muslims and Christians and a few Hindus, however Muslims lead at more 71,786.

The settlement has an area of 20Ha and a population of about 5780 people (As per 2019 Census) is one of the fastest growing towns of Lamu County.

4.2.3 Employment

Characterized by fishing, entrepreneurship and tourism as major economic activities, most residents are self-employed with a small number in the formal employment from the national and county government. Fishing holds significant cultural and economic importance in Lamu County, serving as a primary livelihood for coastal communities, especially in Pate.

Mokowe serves as Lamu County Headquarters and has several bank branches, a post office and a police station. There is a jetty which serves as an entry point from Lamu and other islands. The main economic activity of people living in Mokowe settlement is tourism and fishing.

4.2.4 Livelihoods of the people in Mokowe

Lamu County's agricultural system revolves around diversified small-scale farming that combines crop cultivation, livestock rearing, and agroforestry. Across 69,025 hectares of cultivated land, the county annually yields approximately 314,000 tonnes of both food and cash crops. These include maize, cowpeas, cassava, coconut, cashew nuts, bixa, cotton, simsim, citrus, and tomatoes. The predominant technique for crop growth is rain-fed, with around 80% of planting occurring during the extended rainy season and the rest in the shorter period. Lamu contributes significantly to national cotton (40%), simsim (50%), and bixa (40%) production.

Livestock, comprising cattle, sheep, donkeys, goats, and poultry, is predominantly reared through pastoralism and dairy farming systems. Pastoralism is prominent in wards like Hindi, Mkunumbi, Bahari, Hongwe, and Matondoni, while dairy farming focuses on cattle and dairy goats in settlements within Hindi, Bahari, Hongwe, Mkomani, and Matondoni wards. Donkeys, essential for transportation, are primarily bred in Amu (Mkomani and Shella Manda) and Pate (Faza ward) Islands.

Fishing holds significant cultural and economic importance in Lamu County, serving as a primary livelihood for coastal communities, especially in Pate. Fishing Techniques: Adapted techniques including beach seines, gillnets, hand lines, spearfishing, and traps are used for diverse fish types across Lamu.

4.2.5 Settlement

Most of the houses in the settlement have iron sheet as the roofing material, the walls are made of mud and the floors made of concrete.

4.2.6 Land Tenure Status

Land tenure of the local communities is highly insecure in Lamu County. All un-alienated land in the coastal region falls under the government land tenure regime, including the marine reserve and forest reserves. This land is administered under the Government Lands Act (1948) Cap 280 by the Commissioner of Lands who has the executive power to allocate land on behalf of the President.

Nearly 5% of government lands in Lamu fall under settlement schemes. According to the local authorities, four schemes have been established in Lamu to date, beginning in 1974-75 and the latest established in 1997. These Settlement Schemes were intended to settle the landless from different parts of Kenya. Under the Settlements Act, 70% of the allocations were to be made to local residents, however in practice, as noted by the district officer in Mokowe, all decisions were made nationally, and there is no transparency around selection of beneficiaries of settlement schemes.

4.2.7 Land use

The main economic activities under taken with in the county are fishing by men, weaving by women, vending, businesses, transportation especially by boats and motorbikes, and tourism.

4.2.8 Source of Energy

Most of the residents use electricity as the source of energy for lighting, followed by firewood and charcoal as the source of energy for cooking.

4.2.9 Markets/Shopping centres

Old Mokowe Settlement has no established markets within the settlement, the community members usually do their shopping in New Mokowe town which is a walking distance from the settlements.

4.2.10 Water and Sanitation

Most people within the settlement use pit latrine. There is poor sanitation within the settlement because majority of the houses are not connected to sewer lines and there are no designated places for waste collection.

Majority of the residents in the settlement use piped water supplied by LAWASCO Water Company. The water is usually rationed and is available 2-3 times a week. Due to the inconsistent supply of water, the residents have alternative sources of water such as water vendors, rain water and water stored in Jeri cans and drums.

4.2.11 Education Institutions

The education institutions found within Old Mokowe are Mokowe Primary School, Dream Tree Academy, and Mokowe Kenya Medical Training College (KMTC).

5. POLICIES, LEGAL AND INSTITUTIONAL FRAMEWORKS

Based on the review of the ESMF and RPF, and results from the screening checklists, indicate the applicable laws and regulations, policies, and KISIP 2

5.1 National Laws and Regulations

Law/Regulation	Objective	Application
The Environmental Management and Co-ordination Act, (EMCA) 1999 and amended in 2015 and subsequent Regulations.	Supervision and coordination of all matters relating to the environment	Guidelines for mitigating adverse environmental impacts
The Environmental (Impact Assessment and Audit) (Amendment) Regulations, 2003 amended 2019.	Assessing the potential environmental and social consequences/impacts brought about by a project.	Its administration ensures sustainable development and minimizes adverse environmental impacts associated with development projects.
Environmental Management and Coordination, (Water Quality) Regulations 2006	Its objective is to address various aspects of water quality management in order to protect public health and the environment	These Regulations shall apply to drinking water, water used for industrial purposes, water used for agricultural purposes, water used for recreational purposes, water used for fisheries and wildlife, and water used for any other purposes.
Environmental Management and Co-ordination (Waste Management) Regulations, 2006	Its aim is at addressing the challenges of waste management and promoting environmental sustainability.	This policy applies to all categories of waste including hazardous waste and industrial waste. From its generation; collection; transportation; disposal and treatment.
Environmental Management and Co-ordination (Air Quality) Regulations, 2022	Public health protection, preservation of the environment, management of Green House Gases, pollution control etc.	Address various aspects related to air pollution and quality management.
Environmental Management and Coordination (Wetlands, River Banks, Lake Shores and Sea Shore Management) Regulation, 2009	The primary objective of the regulations is to conserve and protect critical ecosystems, recognizing their ecological importance and the services they provide.	Applies to all wetlands, riverbanks, lake shores and sea shores in Kenya regards either private or publicly owned.
Environmental Management and Coordination (Noise and Excessive Vibration Pollution) (Control) Regulations, 2009	The primary objective is to safeguard the health and well-being of the public, wildlife and the entire ecosystem; by regulating and minimizing exposure to excessive noise and vibration levels.	It states that; no person shall make or cause to be made any loud, unreasonable, unnecessary or unusual noise which annoys, disturbs, injures or endangers the comfort, repose, health or safety of others and the environment.
The Kenya Roads Act, 2007	Provided powers and functions of the relevant authorities that manage, develop, rehabilitate and maintain all road projects	Any road upgrade project falls under the purview of this legislation.
Public Roads and Roads of Access Act 1972 revised 2010 Cap 399	Safeguards the right of the public use public roads constructed.	The project entails public road upgrades of the informal sentences
The Traffic Act Cap 403 of 2013	Spells out conditions for use of	Essential to ensure that traffic flow is

Law/Regulation	Objective	Application
	roads by motorists, among others.	maintained during construction.
Occupational Health and Safety Act 2007 CAP 514	Makes provision for the health, safety and welfare of persons employed	The contractor will have to follow this law as he is expected to have employees during the project period.
The Public Health Act 1986 revised 2012 (Cap 242)	Principle instrument for ensuring the health and safety of the people.	Measures need to be placed to ensure the health and safety of the community during the project period.
The Physical and Land Use Planning Act, (PLUPA) 2019	Provides for the preparation and implementation of physical and land use development plans	The legislation provides mechanisms for spatial planning and land use management and addresses the management land resources.
County Government Act No.17 of 2012	The Act empowers the county government to be in charge of function described in Article 186 of the constitution, (county roads, water and Sanitation, Health), Part XI of the Act vest the responsibility of planning and development facilitation to the county government with collaboration with national government	The proponent will work in liaison with Lamu County Government
Urban Areas and Cities (Amendment) Act, 2017.	Denotes the creation of integrated development plan for every county	The proposed project should be integrated in the County Integrated Development plan
National Construction Authority ACT No. 41 of 2011	Encourages the standardization and improvement of construction techniques	The project involves construction activities
Sustainable Waste Management Act 2021	Provide guidelines on solid waste management on project cycle	Mitigate potential solid waste productions during construction stages and the entire proposal on waste management systems
Children Act (2001), revised 2016	Children are being protected from child labour and all forms of violence	Construction camps are likely to interact with children it is mandatory the follow the law to avoid child exploitation. This act also prevents SE
Employment Act, 2007	Aims to regulate the relationship between employers and employees, ensuring fair labor practices and protecting the rights of workers.	This Act shall apply to all employees employed by any employer under a contract of service and shall not apply to; (a) the armed forces; the National Youth Service; and an employer and the employer's dependents where the dependents are the only employees in a family undertaking.
Sexual Offences Act (2006)	Protection of all persons from harm from unlawful sexual acts, and for connected purposes.	Sexual vices are expected to impact the society and as such a law will regulate such Incidences from occurring
The Constitution of Kenya, 2010	The Constitution of Kenya, promulgated in 2010, outlines the fundamental principles and objectives of governance in the	Overall, the Constitution of Kenya 2010 has a broad application across various sectors and aspects of governance, providing a foundation for

Law/Regulation	Objective	Application
	country.	building a just, democratic, and inclusive society.

5.2 County Laws and Regulation

Law	Objective	Application
Lamu County Climate Change Act 2022	The Act puts in place the framework and mechanisms for mobilization and facilitation of communities and other stakeholders in the county to respond effectively to climate change and for connected purposes.	The project aligns with this act reason it involves construction of storm drains that will be used to control flooding. Flooding is as a result of excessive rainfall caused by climate change

5.3 National Policy Framework

Policy	Objective	Application
Kenya Vision 2030	Transform Kenya into a middle-income country.	Contribute to the realization of the goals of Vision 2030
The National Environmental Action Plan (NEAP) 1994	Integrate environmental considerations into the country's economic and social development initiatives/plans.	Help in minimizing environmental impacts of project activities.
Policy Paper on Environment and Development 2014	To ensure projects take environmental considerations into account projects take environmental considerations into account	Potential impacts on the environment and involvement of the public in project planning
The National Water Resources Management Policy (1999)	It, calls development of appropriate sanitation systems to protect people's health and water resource from any source of pollution.	Provides measures to minimize the disruption of natural drainage patterns
HIV and AIDS Policy 2009	Setting Minimum Internal Requirements (MIR) for managing HIV and AIDS	The Contractor will in cooperate in tender document and implement HIV awareness initiatives during implementation of the project.
Gender Policy 2011	Mainstream gender concerns	This policy will be referred to during Project implementation especially during hiring of staff to be involved in the project
National Housing policy 2016	Encompasses, rural housing, slum upgrading and vulnerable groups ensuring a long lifespan	The project is dealing with upgrading of informal settlements
Sessional Paper No. 7 of 2005 on National Employment Policy and Strategies for Kenya	Guarantee safe and peaceful working environment	During construction and demolition phase of the project there will be employment.

5.4 County Policy Framework

Instrument	Objective	Application
Lamu County integrated development goals 2023-2027	Obligates a county to develop an integrated plan, designate planning unit at all County administrative units and promote public participation and engagement by nonstate actors in the planning units.	The project would contribute to the realization of the CIDP's vision for a well-connected and efficient transportation system, thereby supporting broader socioeconomic development goals outlined in the plan.

5.6 Sustainable Development Goals

Instrument	Objective	Application
SDG Goal 1	No poverty	Through the development of the informal settlement it enhances economic opportunities, improving living conditions, and empowering communities.
SDG Goal 2	Zero Hunger	Road Upgrade improves and other project developments improve access to food, resilience to climate change, environmental sustainability, and social inclusion.
SDG Goal 3	Good health & well Being	The project contributes to the improved health and productivity through the provision of a safe and clean environment.
SDG Goal 4	Quality education	Not Applicable
SDG Goal 5	Gender equality	By considering the specific needs and priorities of women and girls in these communities during the project phases
SDG Goal 6	clean water and sanitation	infrastructure improvement within the settlement can contribute to advancing the broader objectives of sustainable water management, sanitation access.
SDG Goal 7	Affordable and clean energy	The project entails the sustainable usage of energy to power the high mass lights and other operations of the project.
SDG Goal 8	Decent work and economic growth	Employment creation that will contribute to reducing the proportion of youth not in employment.
SDG Goal 9	Industry, Innovation and infrastructure	Through infrastructure development of the settlement it promotes resilience, inclusivity, sustainable development, and innovation within the community.
SDG Goal 10	Reduced inequalities	Services provided by each project infrastructure is intended to be accessible to all for example the roads constructed.
SDG Goal 11	Sustainable cities and communities	The proposed project plans to improve/develop informal settlements of Kiunga Lamu county.
SDG Goal 12	Responsible consumption and production	Its indirectly applicable through considerations such as

Instrument	Objective	Application
		waste management, pollution prevention, and Use of resources sustainably impacts on coastal communities.
SDG Goal 13	Climate action	Integrating climate action principles into the informal settlement upgrade project aligns with SDG Goal 13's objectives by mitigating climate change.
SDG Goal 14	Life below water	The drainage of the storm water puts into consideration the aquatic life.
SDG Goal 15	Life on land	Implementing Sustainable development and environmental conservation into the design and implementation of infrastructure projects in informal settlements helps achieve SDG 15.
SDG Goal 16	Peace justice and strong institutions	Through the development of the informal settlement it enhances economic opportunities, improving living conditions, and empowering communities.
SDG Goal 17	Partnerships for the goals	Road Upgrade improves and other project developments improve access to food, resilience to climate change, environmental sustainability, and social inclusion.

5.7 Multilateral Environmental Agreements

Kenya is signatory to several international conventions and treaties that would need to be adhered to in implementing this project and are geared towards environmental protection and conservation. Some of these include;

- ILO Conventions ratified by Government of Kenya
- Safety and Health in Construction Recommendation, 1988
- United Nations Framework Convention on Climate Change
- United Nations Convention on Biological Diversity (UNCBD)

United Nations Framework for Convention on Climate Change (UNFCCC)

The convention addresses the principles of common but differentiated responsibility and precautionary action. Its main objective is to achieve the stabilization of greenhouse gas concentrations in the atmosphere at a level that prevents dangerous anthropogenic interference with climate systems and within a specific timeframe which will allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened and to enable economic development to proceed in a sustainable manner. Kenya signed the Kyoto protocol to the UNFCCC in 1997 which provided limitations and reduction commitments for developed countries and those in transition. Kyoto Protocol to the United Nations Framework Convention on Climate Change aim is to reduce or limit the emission of gases contributing to the "greenhouse effect" and causing climate change in the industrialized countries. United Nations Framework Convention on Climate Change (UNFCCC) aim is to achieve stabilization of greenhouse gas concentrations. The Paris climate change agreement goal is to limit global warming to well below 2, preferably to 1.5 degree Celsius, compared to preindustrial levels.

Vienna Convention for the Protection of Ozone Layer

Inter-governmental negotiations for an international agreement to phase out ozone depleting substances concluded in March 1985 with the adoption of this convention to encourage intergovernmental co-operation on research, systematic observation of the ozone layer, monitoring of CFC production and the exchange of information. Therefore, both the proponent and the contractor are obliged to minimize or phase out the generation of CFCs into the atmosphere during the project cycle.

Convention on Biological Diversity (1992)

The convention promotes the protection of ecosystems and natural habitats, respects the traditional lifestyles of indigenous communities, and promotes the sustainable use of resources. The project activities especially during construction will impact negatively to the flora and fauna of the respective construction areas. As such both the proponent and the contractor must ensure that the activities of the proposed project do not affect the immediate ecosystems negatively and that the livelihoods of the local people are not negatively affected but rather enhanced.

African Union- Agenda 2063

"A prosperous Africa based on inclusive growth and sustainable development" requires that Africa makes significant investments in education with the aim of developing human and social capital through an education and skills revolution emphasizing innovation, science and technology.

African Charter on the Rights and Welfare of the Child.

It calls for protection against abuse and bad treatment, negative social and cultural practices, and all forms of exploitation. Article 2(5) & (6) of the Constitution ratifies international treaties and conventions to form part of Kenyan law.

Montreal Protocol on Substances that Deplete the Ozone Layer (1987)

The Montreal Protocol on Substances that Deplete the Ozone Layer, adopted in 1987 and enforced in 1989, stands as a testament to the global commitment to safeguard Earth's delicate ozone layer. This monumental international agreement signifies a decisive move to tackle the urgent issue of ozone layer depletion by recognizing the imperative need to regulate and control the production and emission of ozone-depleting substances (ODS). The primary objective of the Montreal Protocol is to protect the ozone layer by implementing precautionary measures to mitigate global emissions of ODS. This objective entails a comprehensive strategy to address ozone depletion, acknowledging the pivotal role of the ozone layer in shielding life on Earth from the harmful effects of ultraviolet (UV) radiation originating from the sun.

5.8 World Bank Operational Safeguards

Instrument	Objective	Application
Operational Policy (OP)/Bank Procedure (BP) 4.01, 2001	Environmental Assessment	The project was identified as a Category B
World Bank Safeguard Policy BP 17.50, 2001	Public Disclosure	The proposed project incorporated public participation and stakeholder consultation
World Bank's Operational Policy (OP) 4.12 on Involuntary Resettlement	Assessment of displacement of individuals where a project is being implemented.	The World Bank's Operational Policy (OP) 4.12 on Involuntary Resettlement outlines guidelines for projects that may result in the displacement of people or the loss of assets.
World Bank's Operational Policy (OP) 4.11 on Physical and Cultural Resources	Identification and assessment of potential impacts on physical and cultural resources during project preparation	Outlines the institution's commitment to promoting sustainable development while safeguarding physical and cultural resources affected by Bank-financed projects.
World Bank's Access to Information, 2015 (Amended)	To enhance transparency, accountability, and stakeholder engagement in Bank-financed projects.	Applied to all WB projects.

Instrument	Objective	Application
World Bank's Environmental Health and Safety Standards	Ensures that the projects it finances are environmentally and socially sustainable, and that they adhere to high standards of safety and health.	Applied to all WB projects.

5.9 KISIP 2 Instruments

Instrument	Objective	Application
Environmental and Social Management Framework	Ensure that any adverse environmental and social impacts are avoided or appropriately mitigated and compensated for where necessary.	The project has anticipated impacts to the environment thus there is need to implement this framework to control these impacts.
Resettlement Policy Framework, 2023	RPF be prepared for all projects that anticipate both physical and livelihood displacement.	An ARAP is to be subjected to the project if the project affected people are less than 200. If the PAPS are more than 200 a There were displaced persons though they were less than 200
Stakeholder engagement framework 2023	Describe the applicable regulatory and/or other requirements for disclosure, consultation and engagement with the Project's stakeholders;	Public consultations were conducted as per the framework.

6. PUBLIC PARTICIPATION AND STAKEHOLDER ENGAGEMENT

6.1 Objectives of The Consultation and Public Participation (CPP)

The objective of the consultation and public participation was to:

1. Disseminate and inform the stakeholders about the project with special reference to its key components and location.
2. Gather comments, suggestions and concerns of the interested and affected parties.
3. Sensitize the community on the project
4. Incorporate the information collected in the ESIA study

6.2 Schedule of Stakeholder Consultations

The assessment involved consultations with relevant stakeholders in target Project area. The aim of stakeholder consultations was to give a platform for information sharing and opinion gathering in relation to the proposed Project. Consultations were done in form of public meetings, key informant interviews and questionnaires, which were filled and signed as shown in **ANNEX 2, ANNEX 4.** The area local administration together with the Settlement Executive Committee (SEC)and Grievance Redress Committee (GRC) combined efforts to reach out to the vulnerable through their organized groups/associations existing in the settlement.

Lamu County Environmental Officer and County Physical Planning Officer were interviewed regarding the proposed project and the results of the interviews annexed.

The issues were than analyzed and presented to design team for finalization of Project designs and planning on how best to implement the Project.

Stake holder consultation exercise was realized during household survey interviews in the collection of socio economic data.

Table 13:Schedule of Public Consultation Meetings

Date	Meeting Venue	Stakeholder Consulted	Number of Meeting Attendance	Gender
22nd February 2024	Mokowe Chief's office	County and Local Administration {Lamu West Constituency; and Public from Mokowe, including CBO rep, teacher, public health representative.	12	Male: 8 Female: 4

The main Focused meeting was held within the month of February, 2024, attendance of the meetings was from diverse sectors of the society as summarized below.

6.3 Summary of issues raised in consultations during the assessment

Table 14: Mokowe Focus Group Discussion

ISSUE	RESPONSE
Residents wanted to know if the intended drainage construction would permanently solve the water stagnation that lasts over a week during heavy rains	Team assured the residents that the current proposed design had taken the issue into consideration and that it would adequately bring relief to that
Residents wanted to know whether high-masts security lights will be put at only specific points or cover the entire area.	Residents were informed that the design has been made to provide one high-mast light at a properly designated point with a radius lighting coverage of upto 150m
Residents wanted to know if the contractor will source workforce from the area during construction	EIA team informed residents that during construction the contractor will source some responsible youth from the area as casuals to supplement his permanent staff and residents with relevant skills and training can also present their certificates to be considered for employment opportunities if need arises. Team echoed that at least a 60% consideration would be awarded to residents by contractor
Residents wanted to know if the project will be run by the government or by a specific organization.	The team informed the community that once the project has been implemented it will be handed over to the project management committee through the county government to manage it.
A resident had fears over delay, just like other projects in the past.	EIA Team informed members that the project had reached an advanced stage and that most process had been nearly complete. Amongst those pending were NEMA licensing.
A participant stated that they are plagued by solid waste disposal which is not just causing nuisance but a significantly dumped at the ocean due to improper waste disposal.	The project team explained that the current project was only scoped for provision of improved walkways, drainage and high-masts security lighting. However, the problem has been noted and will be discussed by the project facilitators for consideration.
Safety risks of existing drainage, its overflow during heavy rains emerged.	EIA team informed the residents that drainage specialists will be employed to inspect and evaluate the safety status of the existing infrastructure as per WB's Environmental and Social Operational Safeguard Policy

The Mokowe community are willing for the project to be rolled out and implemented immediately with less impacts to the community.

Employment: This is a key benefit of any project that host communities can gain from a proposed project during construction phase and at operation phase. They thus expressed the need for the proponent to observe the following with regard to employment. Those responsible for project implementation ensure that youth from the area are given priority (60-70%) in recruiting labour force. While recruiting employees during the operation phase there is need to consider local population skilled in various issues.

Project Implementation: Given the immense benefits that the proposed project will produce, the community members urged the proponent to hasten so that the community can start benefitting from it. Those living in towns are especially very keen on the transportation aspect on their environment on storm waste water management, and street lighting.

Manual labour: Community suggested that as much as is practically possible, machinery should not be used where manual labour can be used to increase employment opportunities for the community.

Reduced pollution: The residents living around the project location felt that regular sprinkling of water and road maintenance will help curb the problem of air pollution by dust emission during construction and from potholes. The major

source of pollution for the environment was identified to be dust emissions. This has led to loss of aesthetic value of the environment. The proposed project if implemented and operated as envisioned will arrest this pollution

Participation in the life of the community: The proponent has become part and parcel of the local community. There is thus need to fully participate in the life of the local community in improving the life of the people.

Remuneration: Contractors should be advised not to underpay local people who will be employed on casual basis.

Open communication: To avert unnecessary conflicts, there is need for prompt communication to all stakeholders. This could be through the use of the local administration and any information or clarification about stakeholders' position on project need to be promptly availed to any interested party. Any complaints need to be handled through the structured grievance redress mechanism as presented in this report.

Project acceptance and support: There was a near unanimous support for the proposed project. This was as a result of clear explanation of what is proposed and the way forward in the implementation process. The community understood that the project is feasible in all aspects. In addition, the project will spur growth in the area. The local administration indicated that he and the entire community would support the project as long as it promoted development in the area. The community has no objections for the project since there are similar projects in other parts of the country that have benefited the residents.

Compensation: The community from Old Mokowe Settlement expressed a concern regarding the compensation for marked houses set for demolition. This indicated a need for a robust Compensation and Resettlement Action Plan (RAP). The RAP outlined clear and fair compensation mechanisms for affected households, ensuring that those losing their homes due to the project are adequately compensated. The compensation package took into account the market value of the properties, any associated relocation costs, and other related expenses.

Stakeholders concerns

The following is a summary of concerns that were raised by the consulted stakeholders regarding implementation of the proposed project;

Positive Comments made by the Stakeholders

The following section provides details on the positive impacts of the proposed project as expressed by the stakeholders who interviewed:

a) Creation of Employment Opportunities

The respondents who were interviewed consulted were optimistic that the project will create numerous employment opportunities for both for skilled and unskilled labor alike during the construction and operational phases. Despite the fact that most of the project will need skilled labor force during operation, people expressed hope that they will be able to access employment once the project commences mostly as casual workers. The respondents were also optimistic that they will take up relevant training to take up jobs during operation stage. Job opportunities will arise at vehicle maintenance garages along the project location. These will be sources of income for several individuals and households and hence is expected to boost the GDP and improve the living standards of Kenyans.

b) Increased Business Opportunities

The respondents were optimistic that there will be an increase in business opportunities during the construction and operation along the road. Small scale business people such as food vendors and kiosk owners will benefit greatly during construction. Once the construction of the road is complete, the existing commercial premises will be economically revitalized.

The new road will also lead to the expansion of various businesses located along the road. There is in particular high possibility of expansion of petrol stations, hotels and restaurants, shopping malls, etc. due to increased number of motor vehicles (and people) using the route.

c) Cheap and Faster Means of Transport

The respondents were positive that the proposed road will provide a faster and cheaper means of transport for cargo trucks, passengers and personal cars. This will improve the current transport situation along the road.

d) Easy and Fast Movement of People

The public was positive that the road will reduce the travel time of people within the stretch. They also said that the road will lead to an increased number of transport providers such as tuktuk and bodaboda operators hence making transportation easy.

e) Transfer of Skills

The members of the public suggested that with the road being a source of employment. Many different skilled workers will be employed from within and without the area. This will lead to a transfer of skills and gaining of experience during the construction period.

Negative Concerns of the Stakeholders

a) Noise pollution

There was concern over the possibility of high noise and vibration levels at the project site as a result of excavation, construction and demolition works. The source of noise pollution will include, transport vehicles, construction machinery, metal grinding and cutting equipment, among others. Excavations will also cause vibrations. However, the proponent will take appropriate steps to minimize noise pollution through provision of appropriate protective equipment to construction workers, planning and minimizing the frequency of transporting construction materials and ensuring that all construction machinery and equipment are well maintained.

b) Dust Generation

The public expressed concerns over possibility of generation of large amounts of dust within the project site and surrounding areas as a result of demolition, excavation works and transportation of building materials. The proponent will thus need to ensure that dust levels at the site are minimized as much as possible through sprinkling water in areas being excavated and, on the access, roads used by the transport trucks within the site. Additional mitigation measures presented in this report will need to be fully implemented to minimize the impacts of dust generation.

c) Loss of Vegetation Cover

Members of the public expressed concerns that during the construction phase of the project there will be clearance of vegetation along the corridor. Also, the clearance of vegetation will have impacts on the soil particularly increased soil loss which subsequently may impact on the water quality and ecosystem productivity. Most of the respondents proposed that a major landscaping and tree planting should be carried out along the road in order to restore the scenic beauty of the environment.

d) Road Accidents

The residents along the road expressed fears that the new road will allow vehicles to move at high speed and this may increase the number of road accidents. The project proponent will need appropriate pedestrian crossing points with bumps and zebra crossing and if possibly construct foot bridges in certain key areas.

e) Increase in the spread of STD, HIV and AIDS

The residents along the proposed road corridor expressed concern that there would be an increase in incidences of sexually transmitted diseases including HIV and AIDS especially during construction of the road as a result of increased prostitution. The project proponent will need to work jointly with appropriate county and county government public health agencies in order to come with a comprehensive STD, HIV and AIDs control programme during the construction and operational phases of the project.

6.4 Inclusion of Outcomes of Stakeholder Engagement in the Final Design of the Project

6.4.1 Employment Opportunities for the Public

The Stakeholder Engagement identified the need to provide employment opportunities to the local community members during project implementation period as the main concern from the community.

The project will provide employment opportunities for the estimated number of locals at 60%

The opportunities will be shared equally throughout the Project Areas and as provide by Gender Policy 2011 discussed in chapter 4.

6.4.2 Improved Road Infrastructure, Drainage and Solid Waste Collecting and Disposal

The Stakeholder Engagement identified the need for improved these areas major community concerns in the target Project area. The project will result in improved transportation, storm water drainage and solid waste collection and disposal points.

6.4.3 Public Health and Safety

The public were concerned about health and safety risks that are likely to be triggered by the project. Specific risks were traffic risks of workers and community members during road crossings, occupational health and safety issues related to dust, noise and excessive vibrations and general health and hygiene.

The Contract Specifications (Clause 141 and 142 of the Specifications) have included a chapter on Contractor's compliance with Environment Health and Safety as outlined in the ESMMP prepared for the project. An item has been included in the Preliminaries and General Items Bill of Quantities for the Contractor to price for all costs for compliance with the specified requirements on environment health and safety.

Other public health concerns were contraction of diseases due to the decomposing solid wastes which could be toxic. Safety gears including PPEs would be provided to workers on the waste pillages to prevent this risk.

6.5 Public Disclosure of ESIA, SEP and Annual Monitoring Reports

In accordance with EMCA 1999 and amendment 2015 and World Bank OP 4.01, the Project Proponent in this case PROJECT OPERATOR will ensure that the Results of Public Consultations including ESIA area disclosed on WSP website.

The Reports will also be made available at Chiefs' Offices in the affected Locations for ease of access by the project interested parties at location level and Project site office, the local Chiefs offices include Mkomani Ward.

This disclosure will be done early before commencement of Project Works, 60 days before Contractor's mobilization on site. In addition, the Project Operator will ensure that the ESIA Reports are available throughout the project area. During the disclosure period, interested and affected parties will submit their final comments and concerns about the Reports.

The Reports and information will also be disclosed at the ESIA Stage by NEMA and during Project Implementation Stage by the Project Operator. NEMA will require the Project Operator to undertake a closeout audit after completion of the project and also undertake and initial Environment Audit (EA) immediately after commissioning of the project in the 1st year, these audits are essential in determining the performance of the project in addressing issues related to environment and social safeguards, gaps identified are corrected through implementation of recommendation of the Environment and Social Audit Action Plan (ESAAP).

6.6 Construction, Operation and Decommissioning Phase Consultations

Stakeholder groups that may be affected by and/or interested in the implementation of the Project, as well as proposed communication methods and media for each group, have been identified and are presented in the **table** below.

Table 15: Stakeholder Consultations during Project Construction and Operation Phase

Stakeholder/s	Type of communication	Responsibility	Timing
External Stakeholders			
Project Affected Persons	Public meetings and monthly project progress updates	Contractor / PROJECT OPERATOR	Throughout project implementation phase
Local administration representatives, Chiefs and Ward Representatives	Public meetings and monthly project progress updates	Contractor / PROJECT OPERATOR	Throughout project implementation phase
Interested NGOs and other civil societies	Local media (newspapers) ESIA, published on PROJECT OPERATOR, website.	Contractor / PROJECT OPERATOR	Throughout the implementation of the Project
Relevant National Government and County Government Authorities for example: KURA, Kenya Power	Official correspondence and meetings, progress reports Permitting procedures	Contractor / PROJECT OPERATOR	During project design, construction and implementation
Kenya National Museums due to chance find clause of OP 4.11 on physical cultural resources	Official correspondence and meetings Permitting procedures	Contractor / PROJECT OPERATOR	During project Construction phase
Internal Stakeholders			
Employees (Contractor, PROJECT OPERATOR)	Notice boards, email, Grievance Redress Mechanism, meetings	Contractor / PROJECT OPERATOR	Throughout project implementation phase
Casual workers and temporary staff	Notice boards, email, Grievance Redress Mechanism, meetings	Contractor	Throughout project implementation phase

6.7 Community Relations in Construction Phase

This section set outs the proposed objectives, mechanisms and responsibilities for liaison with Project beneficiaries during the construction phase. It identifies the approach to, and frequency of, consultation with Project beneficiaries.

The primary responsibility for liaison will be borne by the construction contractor, and PROJECT OPERATOR will therefore require the contractor to develop its own plan and more detailed proposals for community liaison. This will build on the approach outlined in this section. All potential contractors will be required to draw up this plan as part of the tender process.

The objectives of the Community Relations Programme will be to:

- Provide local residents with regular information on the progress of work.
- Inform the project/contractor of any community related issues that may impact construction.
- Monitor implementation of mitigation measures and the impact of construction via direct monitoring and feedback from Project area.
- Identify any significant new issues that may arise during the construction period; and
- Manage any complaints against the project/contractors and local residents (i.e., provide a grievance mechanism).

6.8 Construction Contractor's Role in Community Liaison

The Construction Contractor will be required to adhere to the requirements of the Environmental and Social Management and Monitoring Plan (ESMMP) that sets out how the contractor will meet and monitor the mitigation measures recommended by the Plan. The role and responsibilities of the Contractor include:

- Provide primary interface between project and affected or interested persons;
- Coordinate and implement required pre-construction activities, namely;
    - produce management plans for community relations, construction camps and transport; train staff with community relations responsibilities; and
    - implement induction training workshops for all construction staff;
- Assist in local recruitment process; and
- Ensure on-going communication with project and affected or interested persons

6.9 Community Relations in Operational Phase

The objective of the Community Relations Programme in this Phase will be to:

- Maintain constructive relationships between local residents and the water operators, to assist in the operation of the facilities;
- Maintain awareness of safety issues among local residents in the project areas;
- Ensure compliance with land use constraints among land owners in the project areas;
- Monitor community attitudes to the water infrastructure and to the operator, PROJECT OPERATOR

6.10 Decommissioning

In the event of decommissioning of the Project, liaison will continue to take place between PROJECT OPERATOR and with Project Affected or Interested Persons prior to de- commissioning. This role will complement work carried out by the operating company and social investment team to reduce the negative impact of the project decommissioning.

7. IDENTIFICATION OF ENVIRONMENTAL AND SOCIAL IMPACTS AND MITIGATION MEASURES

Environmental and Social Impact Identification and Analysis/Rating

The identification and assessment of environmental and social impacts is a multi-faceted process, using a combination of quantitative and qualitative descriptions and evaluations. It involves applying scientific measurements and professional judgement to determine the significance of environmental impacts associated with a proposed project. Other potentially significant impacts or those of stakeholder concern, the impact identification and evaluation process.

The identified Impacts were categorized as negative and positive. Further, negative impacts were analyzed based on impacts consequence and impacts likelihood as shown on Table 7 and Table 8 below. Similarly, impacts rating was determined based on impacts consequence and impacts likelihood as shown in Table 9 and Table 10. Impacts prediction was made during the construction and the operation phases of the proposed projects. Mitigation measures were thereafter proposed with the hierarchy of avoidance, minimization, mitigation and offsetting the impacts.

Table 25: Impacts Consequences

Severity / Magnitude of Impact	Rating	Spatial Scope / Geographic Extent of Impact	Rating	Duration of Impact	Rating
Insignificant / non-harmful	1	Activity specific	1	One day to one month	1
Small / potentially harmful	2	Area Specific	2	One month to one year	2
Significant /slightly harmful	3	Whole Site	3	One year to ten years	3
Great / harmful	4	Regional/Neighboring areas	4	Life of operation	4
Disastrous / Extremely harmful	5	National	5	Post closure / permanent	5

Note:

Total Rating of Impact Consequence = Rating of Severity/Magnitude + Rating of Spatial Scope of Impact + Rating of Impact Duration

Table 26: Impacts Likelihood

Frequency / duration of activity	Rating	Frequency of impact	Rating
Annually or less	1	Almost never / Impossible	1
6 monthly / temporary	2	Very seldom / highly unlikely	2
Monthly / infrequent	3	Infrequent / unlikely / seldom	3
Weekly / life of operation	4	Often / regularly / likely / possible	4
Post closure	5	Daily / highly likely / definitely	5

Total Rating of Impact Likelihood = Rating of Frequency/Duration of Activity + Rating of Impact Frequency

The definitions used in the impact assessment are given below:

- **Frequency of activity** refers to how often the proposed activity will take place.
- **Frequency of impact** refers to the frequency with which a stressor (aspect) will impact on the receptor.
- **Severity** refers to the degree of change to the receptor status in terms of the reversibility of the impact; sensitivity of receptor to stressor; duration of impact (increasing or decreasing with time); controversy potential and precedent setting; threat to environmental and health standards.
- **Spatial scope** refers to the geographical scale of the impact.
- **Duration** refers to the length of time over which the stressor will cause a change in the resource or receptor.

Table 27: Significance Rating Matrix

Consequence (Magnitude+ Geographic extent + Duration of the Impact)						
Likelihood (Frequency of Activity + Frequency of Impact)	1	2	3	4	5	6
	2	4	6	8	10	12
	3	6	9	12	15	18
	4	8	12	16	20	24
	5	10	15	20	25	30
	6	12	18	24	30	36

Note:

Rating of Impact Significance = Rating of Likelihood X Rating of Consequence

Table 28: Negative Impacts ratings and associated colour codes

Significance rating	**Value**	**Colour Code**	**Negative Impact Management Recommendation**
Very high	30 and above		Propose mitigation measures
High	25-29		Propose mitigation measures
Medium high	19-24		Propose mitigation measures
Low medium	12-18		Maintain current management
Low	8-11		Maintain current management
Very low	4-7		Maintain current management

7.1 Anticipated project positive impacts During Pre-construction Phase

7.1.1 Roads & Drainage

Inclusivity in decision making

Diversity and inclusion practices may be of massive impact on project performance. Having a decision making system that is not bias and is largely transparent to the stakeholders and the community at large may lead to project acceptance.

Enhancement

This impact could be enhanced by ensuring all members of the community are well represented and consulted through all the phases of the project.

Employment for surveys especially enumerators

The project is predicted to create employment for the locals in the community as there will be people who would be employed as enumerators for the project during the preconstruction stage of the project.

Enhancement

As a positive impact, it can be enhanced through ensuring equity in the hiring criteria, considerations given to the 2/3 gender rule. The other vulnerable people like the disabled should also be considered during this project.

7.1.2 Street lighting

Inclusivity in decision making

Diversity and inclusion practices may be of massive impact on project performance. Having a decision making system that is not bias and is largely transparent to the stakeholders and the community at large may lead to project acceptance.

Enhancement

This impact could be enhanced by ensuring all members of the community are well represented and consulted through all the phases of the project.

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Enhancement

As a positive impact, it can be enhanced through ensuring equity in the hiring criteria, considerations given to the 2/3 gender rule. The other vulnerable people like the disabled should also be considered during this project.

7.2 Anticipated Positive Impacts During Construction Phase

7.2.1 Roads & Drainage

Creation of employment

The project is predicted to create employment for the skilled and semiskilled locals such as socioeconomics, trainers, casual laborers for road construction and cooks and cleaners at the construction camps and casual workers

Enhancement

- Prioritizing the hire of locals for all unskilled labour.
- Implementing a local recruitment plan that is fair and transparent (including recruitment processes that ensure inclusivity of both men and women, vulnerable individuals, minority clans, ethnic groups etc.

- Adhering to labour laws, and labour management practices (timely remuneration, equitable compensation for both genders for equal work etc.)
- Creating awareness to workers and the community on worker and project grievance redress mechanisms.

Increased business opportunities

The project may lead to flourishing of businesses mainly business centers located along the road due to increased demand of basic commodities and services such as food, accommodation and construction materials.

Enhancement

This can be enhanced by ensuring the contractor sources materials that can be acquired locally from available suppliers within the settlement.

Food being used at the camp can also be sourced from local women who are in the business of selling food. This can be further enhanced by creating mechanisms of purchasing items locally to also prohibit workers purchasing from local children who might be under age.

Increased Property Values

Improved infrastructure and amenities can enhance the attractiveness of an area, leading to increased property values and potential economic benefits for residents and businesses.

Increased demand of land due to the visible infrastructure development also contribute to increased property values.

Community Engagement

Construction projects often involve community consultation and participation, allowing residents to provide input on design aspects and priorities. This fosters a sense of ownership and pride in the local infrastructure.

Environmental Protection

Modern construction practices often incorporate sustainable methods and materials, which help to minimize environmental impacts and promote biodiversity.

Skills Development

Construction projects provide opportunities for skill development and training for local workers. These skills can be valuable for future employment opportunities beyond the project's duration. Only those who get employment opportunities are the one to benefit so significance of the benefit will be moderate.

Enhancement

As a way to magnify this positive benefit to the youth a CSR can be done after accomplishing construction to take the participated youth to technical colleges.

7.2.2 Street lighting

Creation of employment

The project is predicted to create employment for the skilled and semiskilled locals such as socioeconomics, trainers, casual laborers for road construction and cooks and cleaners at the construction camps and casual workers

Enhancement

- Prioritizing the hire of locals for all unskilled labour.
- Implementing a local recruitment plan that is fair and transparent (including recruitment processes that ensure inclusivity of both men and women, vulnerable individuals, minority clans, ethnic groups etc.
- Adhering to labour laws, and labour management practices (timely remuneration, equitable compensation for both genders for equal work etc.)
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Enhancement

As a way to magnify this positive benefit to the youth a CSR can be done after accomplishing construction to take the participated youth to technical colleges.

7.3 Antisipated positive impacts during Operation Phase

7.3.1 Roads and Drainage

The road may also open up the area to tourists since the road traverses within the municipality which is a well-known destination for tourism.

Improved transport

Creation of faster means of transport for passengers and bulk cargo within the municipality and Kwale County as a whole. There is also reduced cost of public transportation that is expected from the proposed project.

Enhancement

This should be enhanced by ensuring the roads are well maintained to improve their efficiency.

- Reduced risk of accidents on the roads
- Increased property value
- Improvement of quality of life

- Reduction in Flooding
- Prevention of Soil Erosion
- Prevention of Waterlogging
- Enhanced Traffic Management

7.3.2 Street lighting

- Protection of Infrastructure
- Aesthetic Improvement of Urban Areas
- Mitigation of Health Risks
- Increased Property Values
- Contribution of revenue to the municipality, county, national and regional governments.
- Reduced Crime Rates
- Enhanced Visibility
- Improved Safety
- Increased Security
- Support for Night-time Activities
- Boosted Economic Activity
- Improved Quality of Life

7.4 Anticipated Positive impacts During Decommissioning Phase

7.4.1 Roads & Drainage

Adaptation to Changing Needs

Decommissioning allows for the removal of infrastructure that no longer meets the needs of the community, facilitating the reallocation of resources towards more pressing priorities such as sustainable transportation options or climate resilience measures.

Improved Public Safety

Removing outdated or damaged infrastructure during decommissioning can enhance public safety by eliminating potential hazards such as deteriorating roadways, corroded drainage systems, or malfunctioning lighting fixtures.

Environmental Restoration

Decommissioning allows for the restoration of natural habitats and ecosystems that were disrupted during the construction phase. This can include re-vegetation of areas, removal of impervious surfaces, and restoration of waterways.

7.4.2 Street lighting

Cost Savings

Decommissioning outdated or underutilized infrastructure can result in long-term cost savings by reducing maintenance and operational expenses associated with maintaining and repairing aging infrastructure.

7.5 Anticipated Negative impacts

7.5.1 Roads &Drainage

Approval delays from NEMA and other Agencies

There is a possibility of having delays that may lead to the project taking a longer period of time than the expected. This may lead to delay of the project's kickoff period, thus delay in implementation.

Table 29: Approval delays impacts rating

Criteria		Rating
Consequences	Severity/Magnitude of Impact	3
	Spatial Scope/Geographic Extent of Impact	1
	Duration of Impact	2
Likelihood	Frequency/duration of activity	3
	Frequency of impact	1
Impact Significance Rating (Consequence × likelihood)	**Medium High**	24

This can be mitigated by ensuring all the aspects of the reports are handled keenly and well addressed, with less or no comments at all to allow swift movement of the project activities as with the schedule.

Clearing of project corridor

This impact can be mitigated by preparation of a Resettlement Plan Framework, which should be done effectively to manage the land-related impacts.

Table 30: Clearing of project corridor impacts rating

Criteria		Rating
Consequences	Severity/Magnitude of Impact	3
	Spatial Scope/Geographic Extent of Impact	2
	Duration of Impact	2
Likelihood	Frequency/duration of activity	3
	Frequency of impact	3
Impact Significance Rating (Consequence × likelihood)	**Very High**	42

Facilitating all affected persons and address all grievances prior to commencing works should also be done as a mitigation measure.

7.5.2 Street lighting

Risk of excluding some beneficiaries due to unfriendly infrastructure designs *(High)*

Unfriendly infrastructure designs may inadvertently exclude certain groups within the informal settlements, such as people with disabilities, the elderly, or those with limited mobility. This exclusion can lead to social segregation and exacerbate existing inequalities. If infrastructure designs are not inclusive, it may hinder residents' access to essential services like water, sanitation, healthcare, and education. This lack of access can perpetuate poverty and marginalization within these communities.

Table 31: Risk of excluding some beneficiaries impacts rating

Criteria		Rating
Consequences	Severity/Magnitude of Impact	1
	Spatial Scope/Geographic Extent of Impact	2
	Duration of Impact	2
Likelihood	Frequency/duration of activity	3
	Frequency of impact	3
Impact Significance Rating (Consequence × likelihood)	**High**	30

Mitigation measures;

- The implementation of the infrastructure assumed universal design.
- Disseminate this information to the beneficiaries through public participation forums

Divided opinion on project implementations*(High)*

Divided opinions can lead to prolonged debates and conflicts, delaying the implementation of the project. This delay may result in missed opportunities, increased costs, and frustration among stakeholders who are eager to see tangible improvements in their communities. Persistent disagreements may erode trust between stakeholders and project implementers, undermining the legitimacy and credibility of the initiative. Without trust, collaboration and cooperation become more challenging, hindering the project's overall effectiveness.

Table 32: Divided opinion impacts rating

Criteria		Rating
Consequences	Severity/Magnitude of Impact	1
	Spatial Scope/Geographic Extent of Impact	2
	Duration of Impact	2
Likelihood	Frequency/duration of activity	3
	Frequency of impact	3
Impact Significance Rating (Consequence × likelihood)	**High**	30

Mitigation measures

- To address these impacts, it's essential for project implementers to adopt inclusive and participatory approaches that facilitate constructive dialogue, consensus-building, and conflict resolution.
- Engaging stakeholders early and regularly throughout the project lifecycle.
- Conduct extensive public participation and consultation with key stakeholders

7.6 Anticvipated Negative Impacts during Construction

7.6.1 Roads&Drainage

Impact on soil

The Project activities are likely to have minor impacts on soils, this impact include: Soil Erosion, Soil Compaction, Soil pollution especially in areas with inadequate erosion control measures. These Impacts on soil can lead to

unfertile soils, considering the locals depend on farming as the main local activity it may have an accumulative effect after a long time if not mitigated.

Table 33: Impact on soil

Criteria		Rating
Consequences	Severity/Magnitude of Impact	1
	Spatial Scope/Geographic Extent of Impact	1
	Duration of Impact	1
Likelihood	Frequency/duration of activity	1
	Frequency of impact	1
Impact Significance Rating (Consequence × likelihood)	**Low**	6

The following are measures that can be implemented to mitigate soil erosion

1. The contractor to adhere to the proposed Soil conservation practices.
2. Proper and compacted back filling.
3. The contractor to stick to clear delineation of the construction to avoid vegetation loss.
4. Planting of vegetation cover along the pipeline wayleave.
5. Environmental monitoring and evaluation to access set out mechanism to mitigate soil erosion
6. Promote soil conservation strategies among beneficiaries of the water supply project.

The following measures can be implemented to mitigate soil compaction

7. Split compacted area to reduce runoff & revegetate where necessary.
8. Vehicles to be kept in designated access roads.
9. Minimize compaction during stockpiling by working the soil in dry state.

The following measures can be implemented to mitigate soil pollution

10. Any polluted soil should be handled with care for proper disposal.
11. Concrete mixing shall be done on concrete slabs or a large metal sheet or mortar boards.
12. Maintenance of vehicles to be done strictly at a designated place/Drip tray to be used to avoid oil spills.
13. Excavation materials to be stock piled at the demarcated location.

Air Pollution

Dust, emissions from construction vehicles and machinery, and material processing activities contribute to air pollution, affecting air quality in the vicinity of the construction site.

Earth moving activities will result to dust generation during clearance and construction at the identified locations. This is in addition to various concrete mixing and painting activities. This will affect the construction workforce, the neighboring households and community in general, flora and fauna in the area.

Table 34: Air Pollution Impacts Rating

Criteria		Rating
Consequences	Severity/Magnitude of Impact	2
	Spatial Scope/Geographic Extent of Impact	1
	Duration of Impact	1
Likelihood	Frequency/duration of activity	4

	Frequency of impact	5
Impact Significance Rating (Consequence × likelihood)	**Very High**	36

Proposed Mitigation measures

1. Dust Control Measures; Implement dust control measures such as watering down construction sites, covering loose materials, and using dust suppressants to minimize airborne dust particles.
2. Vegetation and Greenery; Incorporate green infrastructure elements such as vegetative barriers and green roofs into construction projects to help absorb pollutants and improve air quality in the surrounding area.
3. Regulatory Compliance; Ensure compliance with relevant environmental regulations and permits governing air quality standards and emissions limits for construction activities.

Increased Crime and Insecurity *(Very High)*

Influx of persons to the project area may lead to increased insecurity and incidences of crime. This impact applies to all the project areas under this assessment.

Table 35: Increased Crime and Insecurity impacts rating

Criteria		**Rating**
Consequences	Severity/Magnitude of Impact	2
	Spatial Scope/Geographic Extent of Impact	2
	Duration of Impact	
Likelihood	Frequency/duration of activity	4
	Frequency of impact	4
Impact Significance Rating (Consequence × likelihood)	**Very High**	32

Mitigation measures

1. Contractor and Supervision Team to liaise regularly with the Local Administration and Police Service to address any security and crime arising during project implementation.
2. Contractor to provide 24 hours' security to Workforce Camps, Yards, Stores and to the Supervising Team's Offices

Occupational Health and Safety Risks *(Low Medium)*

These are work related risks during construction they include all accidents and incidents, that maybe caused by fatigue, drug abuse, ignorance etc.

Table 36: Occupational Health and Safety Risks Impacts Rating

Criteria		Rating
Consequences	Severity/Magnitude of Impact	2
	Spatial Scope/Geographic Extent of Impact	2
	Duration of Impact	1
Likelihood	Frequency/duration of activity	1
	Frequency of impact	2
Impact Significance Rating (Consequence × likelihood)	Low Medium	15

Mitigation measures

- Contractor to provide a Health and Safety Plan prior to the commencement of worksto be approved by the Supervising Engineer.
- Construction Workers and the Supervising Team to be provided with Personal Protective Equipment including gloves, gum boots, overalls and helmets. Use of PPE to be enforced by the Supervising Engineer.
- Fully stocked First Aid Kits to be provided within the Sites, Camps and in all Project Vehicles
- Isolate the site from access by the local communities during the construction for theirsafety and health
- Contractor to provide clean water for drinking and healthy food to all the workers
- Contractor to adhere to maximum eight hour working rule
- Contractor to ensure only qualified personnel operate machineries.

Sexual Exploitation and Abuse *(Low Medium)*

- Defined as acts penetrated by aid workers or people associated with aid organization for this case contractors for example against the people the settlement residents during construction period. The proposed development will lead to potential for employment opportunities and access to new services, which will draw people to the area more, specifically the project site.
- This factor will further lead to a temporary increase in economic activities and employment of skills for the development. This will lead to population influx which might lead to changes in or unwanted behaviors in the area. This unwanted or change in behavior may be in the form of loose morality, an increase in school drop-out due to cheap Labor, child Labor, drug use and abuse, theft/robbery and increased incidences of HIV/AIDS and related infections/diseases and other communicable diseases.

Table 37: Sexual Exploitation and Abuse Impacts Rating

Criteria		Rating
Consequences	Severity/Magnitude of Impact	2
	Spatial Scope/Geographic Extent of Impact	2
	Duration of Impact	1
Likelihood	Frequency/duration of activity	1
	Frequency of impact	2
Impact Significance Rating (Consequence × likelihood)	Low Medium	15

Child labour and Abuse Risk *(Medium high)*

In impoverished communities, families may resort to child labor out of economic necessity. This can lead to children being pulled out of school to work in informal sectors such as street vending, domestic work, or

agriculture, depriving them of their right to education and exposing them to exploitation and abuse. Children engaged in labor may be subjected to exploitative working conditions, including long hours, low wages, and hazardous environments. They may be forced to undertake tasks that are physically or mentally harmful, risking their health, well-being, and development.

Table 38: Child labour and Abuse Impacts Rating

Criteria		Rating
Consequences	Severity/Magnitude of Impact	2
	Spatial Scope/Geographic Extent of Impact	1
	Duration of Impact	1
Likelihood	Frequency/duration of activity	4
	Frequency of impact	2
Impact Significance Rating (Consequence × likelihood)	Medium high	24

Mitigation measures

- Ensure each employee signs a code of conduct that covers child protection ensuring no children are employed on site in accordance with national labour laws.
- Ensure that any child sexual relations offenses among contractors' workers are promptly reported to the police.
- Employ workers who are 18 years and above, and with a valid national ID at the time of hire.
- Implement and monitor the employment register regularly.
- Comply with the national labour laws and labour management practices.
- Put visible signage on site "No Jobs for children."

Disruption to Public Services or destruction of public utilities *(Low medium)*

There is high potential for construction to affect powered systems especially underground lines such as water lines and even electricity etc.

Table 39: Disruption to Public Services Impacts Rating

Criteria		Rating
Consequences	Severity/Magnitude of Impact	1
	Spatial Scope/Geographic Extent of Impact	2
	Duration of Impact	1
Likelihood	Frequency/duration of activity	3
	Frequency of impact	1
Impact Significance Rating (Consequence × likelihood)	Low Medium	16

Waste generation *(Very High)*

A range of solid waste, both hazardous and non-hazardous, are likely to be generated during road project implementation. Wastes emanating from construction phase will mainly come from:

- Site clearance (vegetation) and excavation works (cut-to-spoil);
- Construction support activities and machinery maintenance and repair works such as used lubricant cans, packaging wrapper, worn-out tyres, and replaced equipment parts;
- Consumables (such as wood formwork, metal cuttings);

- Material testing and trial laboratories such as lab material rejects, test specimens for disposal, excess lab sample materials and grounded equipment or spares;
- Discarded material from handling losses;
- Residential camp sites waste such as leftovers/food scraps, bottles, cans, clothing, food packaging, newspapers and magazines.

Table 40: Solid waste Impacts Rating

Criteria		Rating
Consequences	Severity/Magnitude of Impact	3
	Spatial Scope/Geographic Extent of Impact	2
	Duration of Impact	1
Likelihood	Frequency/duration of activity	4
	Frequency of impact	5
Impact Significance Rating (Consequence × likelihood)	Very High	54

Mitigation measures

- Waste shall be managed as per Environmental Management and Coordination (Waste Management) Regulations 2006, e.g. No waste shall be buried underground or burned on open air.
- Contractor to develop a waste management plan.
- Manage and control waste generation at the various project sites and stations through standard operating procedures (SOPs) and Solid Waste Management Plan.
- Reduce generation of solid waste at the source through proper planning and procurement of construction materials.
- Segregation of solid wastes and provision of suitable and well labelled waste receptacles within the camp and at other active construction sites.
- Reuse excavated top soil for landscaping of the site as far as practical.
- No waste at the campsite shall be buried or burnt; all waste to be segregated and reused, composted, or collected by licensed waste handler for disposal.
- Prioritize options of waste reduction, reuse and recycling, particularly papers, polyethene, plastics, wrappers and containers as well as other materials that can possibly be recycled.

Gender-Based Violence and Sexual Exploitation and Abuse (SEA) and Sexual Harassment (SH) *(Low Medium)*

GBV, SEA, and SH can result in severe physical injuries, emotional trauma, and mental health issues for survivors. This can have long-lasting effects on their well-being, confidence, and ability to participate fully in community life. Incidents of GBV, SEA, and SH create an environment of fear and insecurity within the community, particularly for women and girls. They may feel unsafe in public spaces, at home, or even within their own families, leading to restrictions on their mobility and freedom.

Table 41: GBV Impacts Rating

Criteria		Rating
Consequences	Severity/Magnitude of Impact	1
	Spatial Scope/Geographic Extent of Impact	1
	Duration of Impact	2
Likelihood	Frequency/duration of activity	3
	Frequency of impact	1

Impact Significance Rating (Consequence × likelihood)	Low Medium	16

Mitigation measures

- Develop and implement a plan to manage the risk of SEA/SH.
- Map the GBV referral pathways and create awareness among women and men on the risk of SEA/SH.
- Ensure the GRM is SEA/SH-responsive.

Noise and Excessive Vibrations. ***(Very High)***

Noise and Excessive Vibrations are caused by operation of construction plant and equipment and activities such as excavation and rock breaking. This impact poses a health and safety risk to both the communities living in the project area and construction workers.

Noise pollution will mainly result from construction vehicles movement as well as from various machinery operations used in construction including metal grinding and welding works, excavations, blasting among other machinery operations. Excessive noise will impact on the community residing within near and along the project areas, as well as the construction workforce.

Vibrations on the other hand would be caused by grading activities, drilling as well as blasting activities. Excessive vibration has the potential to affect the existing infrastructure (people's homes, roads, bridges), destabilize the area geological formation and structural integrity of community houses.

Table 42: Noise Pollution Impacts Rating

Criteria		**Rating**
Consequences	Severity/Magnitude of Impact	3
	Spatial Scope/Geographic Extent of Impact	1
	Duration of Impact	1
Likelihood	Frequency/duration of activity	4
	Frequency of impact	4
Impact Significance Rating (Consequence × likelihood)	**Very High**	40

Proposed mitigation measures

1. Contractor will comply with provisions of EMCA 1999 and amendments 2015 (Noise and Excessive Vibrations Regulations of 2009)
2. The Contractor shall keep noise level within acceptable limits (55 Decibels during the day and 35 Decibels during the night) and construction activities shall, where possible, be confined to normal working hours in the residential areas.
3. Hospitals and other noise sensitive areas such as schools shall be notified by the Contractor at least 5 days before construction is due to commence in their vicinity.
4. Undertake Noise and Excessive Vibration Assessments.
5. Effective use of appropriate PPE by exposed workers and Proper maintenance of machines.
6. Any complaints received by the Contractor regarding noise will be recorded and communicated to the Supervising Engineer for appropriate action.

7.6.2 Street lighting

Inadequate stakeholder Engagement and Exclusion of disadvantaged and vulnerable groups ***(Medium high)***

When disadvantaged and vulnerable groups are excluded from the decision-making process, their voices, needs, and priorities are often overlooked. This can result in infrastructure projects that fail to address the unique challenges faced by these communities, perpetuating inequality and marginalization.

Exclusion from stakeholder engagement can erode trust between communities and project implementers, leading to resentment, frustration, and social tension. Without meaningful participation and inclusion, stakeholders may become disillusioned with the project and its objectives, hindering cooperation and collaboration.

Table 43: Inadequate stakeholder Engagement Impacts Rating

Criteria		**Rating**
Consequences	Severity/Magnitude of Impact	3
	Spatial Scope/Geographic Extent of Impact	2
	Duration of Impact	1
Likelihood	Frequency/duration of activity	1
	Frequency of impact	3
Impact Significance Rating (Consequence × likelihood)	Medium high	24

Mitigation measures;

- Share project information widely and in a timely manner through diverse, feasible and accessible channels of communication e.g., public forums.
- Introduce measures for affirmative action that would ensure especially persons with disability, the elderly and women have access to job opportunities.
- Undertake recruitment transparently, while ensuring the inclusion of disadvantaged groups.
- Develop and implementation of a stakeholder engagement plan.
- Engage stakeholders throughout the project phase as guided by the approved stakeholder engagement plan.

Ineffective Grievance Management *(Very High)*

When grievances are not addressed in a timely and satisfactory manner, they can escalate into larger conflicts or ongoing sources of dissatisfaction within the community. This can lead to resentment, distrust, and a breakdown of relationships between project implementers and stakeholders. Ineffective grievance management can erode trust between the project implementers and the community. If community members feel that their concerns are being ignored or dismissed, they may become disillusioned with the project and its objectives, leading to decreased cooperation and participation.

Unresolved grievances can fuel resistance to the project, potentially leading to protests, delays, or even project shutdowns. This not only undermines the project's progress but can also result in reputational damage and increased costs. Grievances that remain unaddressed can hinder the successful implementation of the project. For example, if community members are dissatisfied with certain aspects of the project design or implementation, they may be less likely to engage with or support the project, reducing its effectiveness and impact.

Table 44: Ineffective Grievance Management Impacts Rating

Criteria		**Rating**
Consequences	Severity/Magnitude of Impact	3
	Spatial Scope/Geographic Extent of Impact	2

	Duration of Impact	1
Likelihood	Frequency/duration of activity	3
	Frequency of impact	4
Impact Significance Rating (Consequence × likelihood)	Very High	42

Mitigation measures;

- Constitute a Local Grievances Committee in consultation with all community segments and incorporate the existing local dispute resolution mechanisms.
- Implement a workers' grievances mechanism.
- Create awareness on the culturally appropriate and accessible GRM to all community segments including vulnerable individuals and households and CSOs.
- Log, date, process, resolve, and close-out all reported grievances in a timely manner.
- Ensure proportionate representation of disadvantaged persons in the local grievances committee.
- Enable the GRM to provide for confidential reporting of particularly sensitive social aspects such as GBV, as well as anonymity.

Risk of excluding some beneficiaries due to unfriendly infrastructure designs *(High)*

If infrastructure designs are not inclusive, it may hinder residents' access to essential services like water, sanitation, healthcare, and education. This lack of access can perpetuate poverty and marginalization within these communities. Unfriendly designs may compromise the safety of residents, especially in disaster-prone areas. For example, inadequate drainage systems can lead to flooding during heavy rains, putting lives and property at risk. Exclusionary infrastructure may impact the economic opportunities available to residents. For instance, poorly planned roads and transportation systems can hinder businesses from operating effectively and limit employment opportunities.

Table 45: Risk of excluding some beneficiaries Impacts Rating

Criteria		**Rating**
Consequences	Severity/Magnitude of Impact	2
	Spatial Scope/Geographic Extent of Impact	1
	Duration of Impact	2
Likelihood	Frequency/duration of activity	3
	Frequency of impact	2
Impact Significance Rating (Consequence × likelihood)	High	25

Mitigation measures;

- The implementation of the infrastructure assumed universal design.
- Disseminate this information to the beneficiaries through public participation forums

7.7 Anticipated Negative Impacts during Operation stage

7.7.1 Roads and footpaths

Gender-Based Violence and Sexual Exploitation and Abuse (SEA) and Sexual Harassment (SH) *(Medium high)*

This is likely to be caused by influx of people in the project area. Incidents of GBV, SEA, and SH create an environment of fear and insecurity within the community, particularly for women and girls. They may feel unsafe in public spaces, at home, or even within their own families, leading to restrictions on their mobility and freedom.

Table 50: Gender based violence Impacts Rating

Criteria		**Rating**
Consequences	Severity/Magnitude of Impact	1
	Spatial Scope/Geographic Extent of Impact	1
	Duration of Impact	4
Likelihood	Frequency/duration of activity	2
	Frequency of impact	2
Impact Significance Rating (Consequence × likelihood)	**Medium High**	24

Mitigation measures

1. Develop and implement a plan to manage the risk of SEA/SH.
2. Map the GBV referral pathways and create awareness among women and men on the risk of SEA/SH.
3. Ensure the GRM is SEA/SH-responsive.

Ineffective Grievance Management *(Very High)*

When grievances are not addressed promptly or adequately, they can escalate into conflicts between stakeholders such as local communities, project developers, contractors, and regulatory agencies.

Table 51: Ineffective Grievance Management Impacts Rating

Criteria		**Rating**
Consequences	Severity/Magnitude of Impact	3
	Spatial Scope/Geographic Extent of Impact	2
	Duration of Impact	1
Likelihood	Frequency/duration of activity	3
	Frequency of impact	4
Impact Significance Rating (Consequence × likelihood)	Very High	42

Mitigation measures;

1. Constitute a Local Grievances Committee in consultation with all community segments and incorporate the existing local dispute resolution mechanisms.
2. Implement a workers' grievances mechanism.
3. Create awareness on the culturally appropriate and accessible GRM to all community segments including vulnerable individuals and households and CSOs.
4. Log, date, process, resolve, and close-out all reported grievances in a timely manner.
5. Ensure proportionate representation of disadvantaged persons in the local grievances committee.
6. Enable the GRM to provide for confidential reporting of particularly sensitive social aspects such as GBV, as well as anonymity.

Inadequate stakeholder Engagement and Exclusion of disadvantaged and vulnerable groups

(Medium high)

Excluding disadvantaged and vulnerable groups from stakeholder engagement processes can bring social injustice, Loss of Trust and Credibility and increase the likelihood of misunderstandings, conflicts, and resistance to the project.

Table 52: Inadequate stakeholder Engagement Impacts Rating b

Criteria		Rating
Consequences	Severity/Magnitude of Impact	3
	Spatial Scope/Geographic Extent of Impact	2
	Duration of Impact	1
Likelihood	Frequency/duration of activity	1
	Frequency of impact	3
Impact Significance Rating (Consequence × likelihood)	Medium high	24

Mitigation measures;

1. Share project information widely and in a timely manner through diverse, feasible and accessible channels of communication e.g., public forums.
2. Introduce measures for affirmative action that would ensure especially persons with disability, the elderly and women have access to job opportunities.
3. Undertake recruitment transparently, while ensuring the inclusion of disadvantaged groups.
4. Develop and implementation of a stakeholder engagement plan.
5. Engage stakeholders throughout the project phase as guided by the approved stakeholder engagement plan.

Energy Consumption *(Low Medium)*

High mast lights, especially if inefficient or not equipped with energy-saving technologies, can contribute to high energy consumption, leading to increased carbon emissions and operational costs.

Table 53: Energy Consumption Impacts Rating

Criteria		Rating
Consequences	Severity/Magnitude of Impact	1
	Spatial Scope/Geographic Extent of Impact	2
	Duration of Impact	1
Likelihood	Frequency/duration of activity	3
	Frequency of impact	1
Impact Significance Rating (Consequence × likelihood)	Low Medium	16

Mitigation measures:

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

Light and Visual discomfort *(Medium high)*

High mast lights can contribute to light pollution when inappropriately placed or excessively bright high mast lights causing glare and visual discomfort for nearby residents, affecting the natural darkness of the night sky and impacting the visibility of celestial bodies.

Table 54: Light and Visual Discomfort Impacts Rating

Criteria		**Rating**
Consequences	Severity/Magnitude of Impact	1
	Spatial Scope/Geographic Extent of Impact	2
	Duration of Impact	1
Likelihood	Frequency/duration of activity	4
	Frequency of impact	1
Impact Significance Rating (Consequence × likelihood)	Medium high	20

Mitigation measures

1. Properly design and angle light fixtures to minimize glare.
2. Consider installing light shields or diffusers to control light direction.
3. Seek aviation lighting design principles
4. Use shielded fixtures and directional lighting to minimize light spillage.
5. Implement curfew times for non-essential lighting.
6. Educate the community on responsible lighting practices.

Water Pollution/Contamination *(Very Low)*

Improper construction and management of storm water drains can lead to water contamination, affecting local water quality.

Contaminated water sources can lead to a range of health problems, including waterborne diseases such as cholera, typhoid, and diarrhea. These diseases can be especially dangerous for children, the elderly, and people with weakened immune systems, leading to illness, hospitalization, and even death.

Pollution from sources such as untreated sewage, industrial waste, and agricultural runoff can degrade water quality and harm aquatic ecosystems. This can lead to the loss of biodiversity, disruption of natural habitats, and decline in water availability for drinking, irrigation, and sanitation purposes.

Table 55: Water pollution impacts rating

Criteria		**Rating**
Consequences	Severity/Magnitude of Impact	1
	Spatial Scope/Geographic Extent of Impact	1
	Duration of Impact	1
Likelihood	Frequency/duration of activity	1
	Frequency of impact	1
Impact Significance Rating (Consequence × likelihood)	**Very Low**	6

To mitigate the impacts of water pollution and contamination, the project should prioritize integrated water management approaches that address both the root causes and symptoms of pollution. This includes investing in infrastructure for safe drinking water supply, wastewater treatment, and solid waste management, promoting sustainable agricultural practices to reduce runoff and pollution, strengthening regulatory frameworks and enforcement mechanisms to prevent industrial pollution, and raising awareness about the importance of water conservation and pollution prevention among community members. By taking proactive measures to protect water resources, the project can contribute to the health, prosperity, and resilience of Kiunga informal settlement and its residents.

Alteration of Natural Drainage Patterns *(Very Low)*

The construction of storm water drains can alter natural drainage patterns, potentially causing unintended consequences for the local environment.

Table 56: Alteration of natural drainage patterns impacts rating

Criteria		**Rating**
Consequences	Severity/Magnitude of Impact	1
	Spatial Scope/Geographic Extent of Impact	1
	Duration of Impact	1
Likelihood	Frequency/duration of activity	1
	Frequency of impact	1
Impact Significance Rating (Consequence × likelihood)	**Very Low**	6

Mitigation measures

1. Conduct detailed hydrological studies to understand natural drainage patterns.
2. Design drainage systems that mimic natural flow to reduce environmental impact

Disturbance to Nocturnal Wildlife *(Very Low)*

Excessive artificial lighting can disrupt the behavior and habitats of nocturnal wildlife in the area.

Table 57: Disturbance to nocturnal wildlife impacts rating

Criteria		**Rating**
Consequences	Severity/Magnitude of Impact	1
	Spatial Scope/Geographic Extent of Impact	1
	Duration of Impact	1
Likelihood	Frequency/duration of activity	1
	Frequency of impact	1
Impact Significance Rating (Consequence × likelihood)	**Very Low**	6

Mitigation measures

1. Install motion sensors or timers to reduce lighting intensity during periods of low activity.
2. Choose warm-coloured lights that are less disruptive to wildlife.

7.7.2 Drainages

Gender-Based Violence and Sexual Exploitation and Abuse (SEA) and Sexual Harassment (SH) ***(Medium high)***

This is likely to be caused by influx of people in the project area. Incidents of GBV, SEA, and SH create an environment of fear and insecurity within the community, particularly for women and girls. They may feel unsafe in public spaces, at home, or even within their own families, leading to restrictions on their mobility and freedom.

Table 50: Gender based violence Impacts Rating

Criteria		**Rating**
Consequences	Severity/Magnitude of Impact	1
	Spatial Scope/Geographic Extent of Impact	1
	Duration of Impact	4
Likelihood	Frequency/duration of activity	2
	Frequency of impact	2
Impact Significance Rating (Consequence × likelihood)	**Medium High**	24

Mitigation measures

3. Develop and implement a plan to manage the risk of SEA/SH.
4. Map the GBV referral pathways and create awareness among women and men on the risk of SEA/SH.
5. Ensure the GRM is SEA/SH-responsive.

Inadequate stakeholder Engagement and Exclusion of disadvantaged and vulnerable groups

(Medium high)

Excluding disadvantaged and vulnerable groups from stakeholder engagement processes can bring social injustice, Loss of Trust and Credibility and increase the likelihood of misunderstandings, conflicts, and resistance to the project.

Table 52: Inadequate stakeholder Engagement Impacts Rating

Criteria		**Rating**
Consequences	Severity/Magnitude of Impact	3
	Spatial Scope/Geographic Extent of Impact	2
	Duration of Impact	1
Likelihood	Frequency/duration of activity	1
	Frequency of impact	3
Impact Significance Rating (Consequence × likelihood)	Medium high	24

Mitigation measures;

1. Share project information widely and in a timely manner through diverse, feasible and accessible channels of communication e.g., public forums.
2. Introduce measures for affirmative action that would ensure especially persons with disability, the elderly and women have access to job opportunities.

3. Undertake recruitment transparently, while ensuring the inclusion of disadvantaged groups.
4. Develop and implementation of a stakeholder engagement plan.
5. Engage stakeholders throughout the project phase as guided by the approved stakeholder engagement plan.

Water Pollution/Contamination *(Very Low)*

Improper construction and management of storm water drains can lead to water contamination, affecting local water quality.

Contaminated water sources can lead to a range of health problems, including waterborne diseases such as cholera, typhoid, and diarrhea. These diseases can be especially dangerous for children, the elderly, and people with weakened immune systems, leading to illness, hospitalization, and even death.

Pollution from sources such as untreated sewage, industrial waste, and agricultural runoff can degrade water quality and harm aquatic ecosystems. This can lead to the loss of biodiversity, disruption of natural habitats, and decline in water availability for drinking, irrigation, and sanitation purposes.

Table 55: Water pollution impacts rating

Criteria		**Rating**
Consequences	Severity/Magnitude of Impact	1
	Spatial Scope/Geographic Extent of Impact	1
	Duration of Impact	1
Likelihood	Frequency/duration of activity	1
	Frequency of impact	1
Impact Significance Rating (Consequence × likelihood)	**Very Low**	6

To mitigate the impacts of water pollution and contamination, the project should prioritize integrated water management approaches that address both the root causes and symptoms of pollution. This includes investing in infrastructure for safe drinking water supply, wastewater treatment, and solid waste management, promoting sustainable agricultural practices to reduce runoff and pollution, strengthening regulatory frameworks and enforcement mechanisms to prevent industrial pollution, and raising awareness about the importance of water conservation and pollution prevention among community members. By taking proactive measures to protect water resources, the project can contribute to the health, prosperity, and resilience of Kiunga informal settlement and its residents.

Alteration of Natural Drainage Patterns *(Very Low)*

The construction of storm water drains can alter natural drainage patterns, potentially causing unintended consequences for the local environment.

Table 56: Alteration of natural drainage patterns impacts rating

Criteria		**Rating**
Consequences	Severity/Magnitude of Impact	1
	Spatial Scope/Geographic Extent of Impact	1
	Duration of Impact	1
Likelihood	Frequency/duration of activity	1
	Frequency of impact	1

Impact Significance Rating (Consequence × likelihood)	**Very Low**	6

Mitigation measures

1. Conduct detailed hydrological studies to understand natural drainage patterns.
2. Design drainage systems that mimic natural flow to reduce environmental impact

7.7.3 Street Lighting

Gender-Based Violence and Sexual Exploitation and Abuse (SEA) and Sexual Harassment (SH) *(Medium high)*

This is likely to be caused by influx of people in the project area. Incidents of GBV, SEA, and SH create an environment of fear and insecurity within the community, particularly for women and girls. They may feel unsafe in public spaces, at home, or even within their own families, leading to restrictions on their mobility and freedom.

Table 50: Gender based violence Impacts Rating

Criteria		**Rating**
Consequences	Severity/Magnitude of Impact	1
	Spatial Scope/Geographic Extent of Impact	1
	Duration of Impact	4
Likelihood	Frequency/duration of activity	2
	Frequency of impact	2
Impact Significance Rating (Consequence × likelihood)	**Medium High**	24

Mitigation measures

6. Develop and implement a plan to manage the risk of SEA/SH.
7. Map the GBV referral pathways and create awareness among women and men on the risk of SEA/SH.
8. Ensure the GRM is SEA/SH-responsive.

Ineffective Grievance Management *(Very High)*

When grievances are not addressed promptly or adequately, they can escalate into conflicts between stakeholders such as local communities, project developers, contractors, and regulatory agencies.

Table 51: Ineffective Grievance Management Impacts Rating

Criteria		**Rating**
Consequences	Severity/Magnitude of Impact	3
	Spatial Scope/Geographic Extent of Impact	2
	Duration of Impact	1
Likelihood	Frequency/duration of activity	3
	Frequency of impact	4
Impact Significance Rating (Consequence × likelihood)	Very High	42

Mitigation measures;

1. Constitute a Local Grievances Committee in consultation with all community segments and incorporate the existing local dispute resolution mechanisms.
2. Implement a workers' grievances mechanism.
3. Create awareness on the culturally appropriate and accessible GRM to all community segments including vulnerable individuals and households and CSOs.
4. Log, date, process, resolve, and close-out all reported grievances in a timely manner.
5. Ensure proportionate representation of disadvantaged persons in the local grievances committee.
6. Enable the GRM to provide for confidential reporting of particularly sensitive social aspects such as GBV, as well as anonymity.

Inadequate stakeholder Engagement and Exclusion of disadvantaged and vulnerable groups

(Medium high)

Excluding disadvantaged and vulnerable groups from stakeholder engagement processes can bring social injustice, Loss of Trust and Credibility and increase the likelihood of misunderstandings, conflicts, and resistance to the project.

Table 52: Inadequate stakeholder Engagement Impacts Rating b

Criteria		**Rating**
Consequences	Severity/Magnitude of Impact	3
	Spatial Scope/Geographic Extent of Impact	2
	Duration of Impact	1
Likelihood	Frequency/duration of activity	1
	Frequency of impact	3
Impact Significance Rating (Consequence × likelihood)	Medium high	24

Mitigation measures;

1. Share project information widely and in a timely manner through diverse, feasible and accessible channels of communication e.g., public forums.
2. Introduce measures for affirmative action that would ensure especially persons with disability, the elderly and women have access to job opportunities.
3. Undertake recruitment transparently, while ensuring the inclusion of disadvantaged groups.
4. Develop and implementation of a stakeholder engagement plan.
5. Engage stakeholders throughout the project phase as guided by the approved stakeholder engagement plan.

Energy Consumption *(Low Medium)*

High mast lights, especially if inefficient or not equipped with energy-saving technologies, can contribute to high energy consumption, leading to increased carbon emissions and operational costs.

Table 53: Energy Consumption Impacts Rating

Criteria		**Rating**
Consequences	Severity/Magnitude of Impact	1

	Spatial Scope/Geographic Extent of Impact	2
	Duration of Impact	1
Likelihood	Frequency/duration of activity	3
	Frequency of impact	1
Impact Significance Rating (Consequence × likelihood)	Low Medium	16

Mitigation measures:

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

Light and Visual discomfort *(Medium high)*

High mast lights can contribute to light pollution when inappropriately placed or excessively bright high mast lights causing glare and visual discomfort for nearby residents, affecting the natural darkness of the night sky and impacting the visibility of celestial bodies.

Table 54: Light and Visual Discomfort Impacts Rating

Criteria		**Rating**
Consequences	Severity/Magnitude of Impact	1
	Spatial Scope/Geographic Extent of Impact	2
	Duration of Impact	1
Likelihood	Frequency/duration of activity	4
	Frequency of impact	1
Impact Significance Rating (Consequence × likelihood)	Medium high	20

Mitigation measures

1. Properly design and angle light fixtures to minimize glare.
2. Consider installing light shields or diffusers to control light direction.
3. Seek aviation lighting design principles
4. Use shielded fixtures and directional lighting to minimize light spillage.
5. Implement curfew times for non-essential lighting.
6. Educate the community on responsible lighting practices.

Disturbance to Nocturnal Wildlife *(Very Low)*

Excessive artificial lighting can disrupt the behavior and habitats of nocturnal wildlife in the area.

Table 57: Disturbance to nocturnal wildlife impacts rating

Criteria		Rating
Consequences	Severity/Magnitude of Impact	1
	Spatial Scope/Geographic Extent of Impact	1
	Duration of Impact	1
Likelihood	Frequency/duration of activity	1
	Frequency of impact	1
Impact Significance Rating (Consequence × likelihood)	**Very Low**	6

Mitigation measures

1. Install motion sensors or timers to reduce lighting intensity during periods of low activity.
2. Choose warm-coloured lights that are less disruptive to wildlife.

7.7.4 Solid Waste Management

Gender-Based Violence and Sexual Exploitation and Abuse (SEA) and Sexual Harassment (SH) *(Medium high)*

This is likely to be caused by influx of people in the project area. Incidents of GBV, SEA, and SH create an environment of fear and insecurity within the community, particularly for women and girls. They may feel unsafe in public spaces, at home, or even within their own families, leading to restrictions on their mobility and freedom.

Table 50: Gender based violence Impacts Rating

Criteria		Rating
Consequences	Severity/Magnitude of Impact	1
	Spatial Scope/Geographic Extent of Impact	1
	Duration of Impact	4
Likelihood	Frequency/duration of activity	2
	Frequency of impact	2
Impact Significance Rating (Consequence × likelihood)	**Medium High**	24

Mitigation measures

- Develop and implement a plan to manage the risk of SEA/SH.
- Map the GBV referral pathways and create awareness among women and men on the risk of SEA/SH.
- Ensure the GRM is SEA/SH-responsive.

Ineffective Grievance Management *(Very High)*

When grievances are not addressed promptly or adequately, they can escalate into conflicts between stakeholders such as local communities, project developers, contractors, and regulatory agencies.

Table 51: Ineffective Grievance Management Impacts Rating

Criteria		Rating
Consequences	Severity/Magnitude of Impact	3

	Spatial Scope/Geographic Extent of Impact	2
	Duration of Impact	1
Likelihood	Frequency/duration of activity	3
	Frequency of impact	4
Impact Significance Rating (Consequence × likelihood)	Very High	42

Mitigation measures;

1. Constitute a Local Grievances Committee in consultation with all community segments and incorporate the existing local dispute resolution mechanisms.
2. Implement a workers' grievances mechanism.
3. Create awareness on the culturally appropriate and accessible GRM to all community segments including vulnerable individuals and households and CSOs.
4. Log, date, process, resolve, and close-out all reported grievances in a timely manner.
5. Ensure proportionate representation of disadvantaged persons in the local grievances committee.
6. Enable the GRM to provide for confidential reporting of particularly sensitive social aspects such as GBV, as well as anonymity.

Inadequate stakeholder Engagement and Exclusion of disadvantaged and vulnerable groups

(Medium high)

Excluding disadvantaged and vulnerable groups from stakeholder engagement processes can bring social injustice, Loss of Trust and Credibility and increase the likelihood of misunderstandings, conflicts, and resistance to the project.

Table 52: Inadequate stakeholder Engagement Impacts Rating b

Criteria		**Rating**
Consequences	Severity/Magnitude of Impact	3
	Spatial Scope/Geographic Extent of Impact	2
	Duration of Impact	1
Likelihood	Frequency/duration of activity	1
	Frequency of impact	3
Impact Significance Rating (Consequence × likelihood)	Medium high	24

Mitigation measures;

1. Share project information widely and in a timely manner through diverse, feasible and accessible channels of communication e.g., public forums.
2. Introduce measures for affirmative action that would ensure especially persons with disability, the elderly and women have access to job opportunities.
3. Undertake recruitment transparently, while ensuring the inclusion of disadvantaged groups.
4. Develop and implementation of a stakeholder engagement plan.
5. Engage stakeholders throughout the project phase as guided by the approved stakeholder engagement plan.

Water Pollution/Contamination *(Very Low)*

Improper construction and management of storm water drains can lead to water contamination, affecting local water quality.

Contaminated water sources can lead to a range of health problems, including waterborne diseases such as cholera, typhoid, and diarrhea. These diseases can be especially dangerous for children, the elderly, and people with weakened immune systems, leading to illness, hospitalization, and even death.

Pollution from sources such as untreated sewage, industrial waste, and agricultural runoff can degrade water quality and harm aquatic ecosystems. This can lead to the loss of biodiversity, disruption of natural habitats, and decline in water availability for drinking, irrigation, and sanitation purposes.

Table 55: Water pollution impacts rating

Criteria		**Rating**
Consequences	Severity/Magnitude of Impact	1
	Spatial Scope/Geographic Extent of Impact	1
	Duration of Impact	1
Likelihood	Frequency/duration of activity	1
	Frequency of impact	1
Impact Significance Rating (Consequence × likelihood)	**Very Low**	6

To mitigate the impacts of water pollution and contamination, the project should prioritize integrated water management approaches that address both the root causes and symptoms of pollution. This includes investing in infrastructure for safe drinking water supply, wastewater treatment, and solid waste management, promoting sustainable agricultural practices to reduce runoff and pollution, strengthening regulatory frameworks and enforcement mechanisms to prevent industrial pollution, and raising awareness about the importance of water conservation and pollution prevention among community members. By taking proactive measures to protect water resources, the project can contribute to the health, prosperity, and resilience of Kiunga informal settlement and its residents.

7.8 Anticipated Negative Impacts During Decommisioning Phase

7.8.1 Roads and Foot paths

Disruption of Services *(Low Medium)*

Decommissioning may disrupt regular services like traffic flow, water drainage, and lighting, causing inconvenience to residents and commuters.

Table 58: Disruption of se4rvices impacts rating

Criteria		**Rating**
Consequences	Severity/Magnitude of Impact	2
	Spatial Scope/Geographic Extent of Impact	2
	Duration of Impact	4
Likelihood	Frequency/duration of activity	1
	Frequency of impact	1
Impact Significance Rating (Consequence × likelihood)	**Low Medium**	16

Mitigation measures

9. Implement phased decommissioning to minimize disruption to services.
10. Provide alternative routes or transportation options for affected commuters.
11. Schedule decommissioning activities during off-peak hours to reduce impact on traffic flow.

Environmental Disturbance *(Low Medium)*

Decommissioning activities can disturb natural habitats, soil, and waterways. The removal of infrastructure might also disrupt ecosystems that have adapted to their presence.

Table 59: Environmental disturbance impacts rating

Criteria		**Rating**
Consequences	Severity/Magnitude of Impact	3
	Spatial Scope/Geographic Extent of Impact	2
	Duration of Impact	2
Likelihood	Frequency/duration of activity	1
	Frequency of impact	1
Impact Significance Rating (Consequence × likelihood)	**Low Medium**	14

Mitigation measures

12. Conduct thorough environmental impact assessments prior to decommissioning.
13. Implement erosion and sediment control measures to prevent soil erosion and water pollution.
14. Replant native vegetation and restore habitats affected by decommissioning activities.

Waste Generation *(Low Medium)*

Decommissioning generates waste materials such as concrete, asphalt, and electrical components, which may end up in landfills if not properly managed.

Table 60: Waste generation impacts rating

Criteria		**Rating**
Consequences	Severity/Magnitude of Impact	3
	Spatial Scope/Geographic Extent of Impact	2
	Duration of Impact	1
Likelihood	Frequency/duration of activity	1
	Frequency of impact	1
Impact Significance Rating (Consequence × likelihood)	Low Medium	12

Mitigation measures

15. Implement recycling and reuse programs for materials like concrete and asphalt.
16. Properly dispose of hazardous materials in accordance with regulations.
17. Encourage contractors to minimize waste generation through efficient construction and decommissioning practices.

Economic Loss *(Low Medium)*

Businesses and communities reliant on the infrastructure being decommissioned may suffer economic losses due to decreased accessibility or functionality.

Table 61: Economic loss impacts rating

Criteria		**Rating**
Consequences	Severity/Magnitude of Impact	2
	Spatial Scope/Geographic Extent of Impact	3
	Duration of Impact	2
Likelihood	Frequency/duration of activity	1
	Frequency of impact	1
Impact Significance Rating (Consequence × likelihood)	Low Medium	14

Mitigation measures

1. Provide support and incentives for local businesses affected by decommissioning.
2. Offer compensation or assistance programs to mitigate financial losses.
3. Develop alternative economic opportunities or infrastructure projects to offset any negative economic impacts.

Health and Safety Concerns*(Medium)*

Decommissioning activities can pose health and safety risks to workers and nearby residents due to noise pollution, air pollution from construction vehicles, and potential accidents.

Table 62: Health and safety concerns impacts rating

Criteria		**Rating**
Consequences	Severity/Magnitude of Impact	2
	Spatial Scope/Geographic Extent of Impact	2
	Duration of Impact	1
Likelihood	Frequency/duration of activity	2
	Frequency of impact	2
Impact Significance Rating	**Medium High**	24
Criteria		**Rating**
(Consequence × likelihood)		

Mitigation measures

1. Enforce strict safety regulations and provide adequate training for workers.
2. Implement dust and noise control measures to minimize pollution and disturbance to nearby residents.
3. Communicate potential risks to the public and provide guidance on safety precautions.

7.8.2 Drainages

Disruption of Services *(Low Medium)*

Decommissioning may disrupt regular services like traffic flow, water drainage, and lighting, causing inconvenience to residents and commuters.

Table 58: Disruption of se4rvices impacts rating

Criteria		Rating
Consequences	Severity/Magnitude of Impact	2
	Spatial Scope/Geographic Extent of Impact	2
	Duration of Impact	4
Likelihood	Frequency/duration of activity	1
	Frequency of impact	1
Impact Significance Rating (Consequence × likelihood)	**Low Medium**	16

Mitigation measures

18. Implement phased decommissioning to minimize disruption to services.
19. Provide alternative routes or transportation options for affected commuters.
20. Schedule decommissioning activities during off-peak hours to reduce impact on traffic flow.

Environmental Disturbance *(Low Medium)*

Decommissioning activities can disturb natural habitats, soil, and waterways. The removal of infrastructure might also disrupt ecosystems that have adapted to their presence.

Table 59: Environmental disturbance impacts rating

Criteria		Rating
Consequences	Severity/Magnitude of Impact	3
	Spatial Scope/Geographic Extent of Impact	2
	Duration of Impact	2
Likelihood	Frequency/duration of activity	1
	Frequency of impact	1
Impact Significance Rating (Consequence × likelihood)	**Low Medium**	14

Mitigation measures

21. Conduct thorough environmental impact assessments prior to decommissioning.
22. Implement erosion and sediment control measures to prevent soil erosion and water pollution.
23. Replant native vegetation and restore habitats affected by decommissioning activities.

Waste Generation *(Low Medium)*

Decommissioning generates waste materials such as concrete, asphalt, and electrical components, which may end up in landfills if not properly managed.

Table 60: Waste generation impacts rating

Criteria		Rating
Consequences	Severity/Magnitude of Impact	3
	Spatial Scope/Geographic Extent of Impact	2
	Duration of Impact	1
Likelihood	Frequency/duration of activity	1
	Frequency of impact	1
Impact Significance Rating (Consequence × likelihood)	Low Medium	12

Mitigation measures

24. Implement recycling and reuse programs for materials like concrete and asphalt.
25. Properly dispose of hazardous materials in accordance with regulations.
26. Encourage contractors to minimize waste generation through efficient construction and decommissioning practices.

Economic Loss *(Low Medium)*

Businesses and communities reliant on the infrastructure being decommissioned may suffer economic losses due to decreased accessibility or functionality.

Table 61: Economic loss impacts rating

Criteria		Rating
Consequences	Severity/Magnitude of Impact	2
	Spatial Scope/Geographic Extent of Impact	3
	Duration of Impact	2
Likelihood	Frequency/duration of activity	1
	Frequency of impact	1
Impact Significance Rating (Consequence × likelihood)	Low Medium	14

Mitigation measures

27. Provide support and incentives for local businesses affected by decommissioning.
28. Offer compensation or assistance programs to mitigate financial losses.
29. Develop alternative economic opportunities or infrastructure projects to offset any negative economic impacts.

Health and Safety Concerns*(Medium)*

Decommissioning activities can pose health and safety risks to workers and nearby residents due to noise pollution, air pollution from construction vehicles, and potential accidents.

Table 62: Health and safety concerns impacts rating

Criteria		Rating
Consequences	Severity/Magnitude of Impact	2

	Spatial Scope/Geographic Extent of Impact	2
	Duration of Impact	1
Likelihood	Frequency/duration of activity	2
	Frequency of impact	2
Impact Significance Rating	**Medium High**	24
Criteria		**Rating**
(Consequence × likelihood)		

Mitigation measures

30. Enforce strict safety regulations and provide adequate training for workers.
31. Implement dust and noise control measures to minimize pollution and disturbance to nearby residents.
32. Communicate potential risks to the public and provide guidance on safety precautions.

7.8.3 Street Lighting

Disruption of Services *(Low Medium)*

Decommissioning may disrupt regular services like traffic flow, water drainage, and lighting, causing inconvenience to residents and commuters.

Table 58: Disruption of se4rvices impacts rating

Criteria		**Rating**
Consequences	Severity/Magnitude of Impact	2
	Spatial Scope/Geographic Extent of Impact	2
	Duration of Impact	4
Likelihood	Frequency/duration of activity	1
	Frequency of impact	1
Impact Significance Rating (Consequence × likelihood)	**Low Medium**	16

Mitigation measures

33. Implement phased decommissioning to minimize disruption to services.
34. Provide alternative routes or transportation options for affected commuters.
35. Schedule decommissioning activities during off-peak hours to reduce impact on traffic flow.

Environmental Disturbance *(Low Medium)*

Decommissioning activities can disturb natural habitats, soil, and waterways. The removal of infrastructure might also disrupt ecosystems that have adapted to their presence.

Table 59: Environmental disturbance impacts rating

Criteria		**Rating**
Consequences	Severity/Magnitude of Impact	3
	Spatial Scope/Geographic Extent of Impact	2

	Duration of Impact	2
Likelihood	Frequency/duration of activity	1
	Frequency of impact	1
Impact Significance Rating (Consequence × likelihood)	**Low Medium**	14

Mitigation measures

1. Conduct thorough environmental impact assessments prior to decommissioning.
2. Implement erosion and sediment control measures to prevent soil erosion and water pollution.
3. Replant native vegetation and restore habitats affected by decommissioning activities.

Waste Generation *(Low Medium)*

Decommissioning generates waste materials such as concrete, asphalt, and electrical components, which may end up in landfills if not properly managed.

Table 60: Waste generation impacts rating

Criteria		**Rating**
Consequences	Severity/Magnitude of Impact	3
	Spatial Scope/Geographic Extent of Impact	2
	Duration of Impact	1
Likelihood	Frequency/duration of activity	1
	Frequency of impact	1
Impact Significance Rating (Consequence × likelihood)	Low Medium	12

Mitigation measures

1. Implement recycling and reuse programs for materials like concrete and asphalt.
2. Properly dispose of hazardous materials in accordance with regulations.
3. Encourage contractors to minimize waste generation through efficient construction and decommissioning practices.

Economic Loss *(Low Medium)*

Businesses and communities reliant on the infrastructure being decommissioned may suffer economic losses due to decreased accessibility or functionality.

Table 61: Economic loss impacts rating

Criteria		**Rating**
Consequences	Severity/Magnitude of Impact	2
	Spatial Scope/Geographic Extent of Impact	3
	Duration of Impact	2
Likelihood	Frequency/duration of activity	1
	Frequency of impact	1

Impact Significance Rating (Consequence × likelihood)	Low Medium	14

Mitigation measures

1. Provide support and incentives for local businesses affected by decommissioning.
2. Offer compensation or assistance programs to mitigate financial losses.
3. Develop alternative economic opportunities or infrastructure projects to offset any negative economic impacts.

Health and Safety Concerns*(Medium)*

Decommissioning activities can pose health and safety risks to workers and nearby residents due to noise pollution, air pollution from construction vehicles, and potential accidents.

Table 62: Health and safety concerns impacts rating

Criteria		**Rating**
Consequences	Severity/Magnitude of Impact	2
	Spatial Scope/Geographic Extent of Impact	2
	Duration of Impact	1
Likelihood	Frequency/duration of activity	2
	Frequency of impact	2
Impact Significance Rating	**Medium High**	24
Criteria		**Rating**
(Consequence × likelihood)		

Mitigation measures

1. Enforce strict safety regulations and provide adequate training for workers.
2. Implement dust and noise control measures to minimize pollution and disturbance to nearby residents.
3. Communicate potential risks to the public and provide guidance on safety precautions.

7.8.4 Solid waste Management

Disruption of Services *(Low Medium)*

Decommissioning may disrupt regular services like traffic flow, water drainage, and lighting, causing inconvenience to residents and commuters.

Table 58: Disruption of se4rvices impacts rating

Criteria		**Rating**
Consequences	Severity/Magnitude of Impact	2
	Spatial Scope/Geographic Extent of Impact	2
	Duration of Impact	4
Likelihood	Frequency/duration of activity	1
	Frequency of impact	1

Impact Significance Rating (Consequence × likelihood)	**Low Medium**	16

Mitigation measures

1. Implement phased decommissioning to minimize disruption to services.
2. Provide alternative routes or transportation options for affected commuters.
3. Schedule decommissioning activities during off-peak hours to reduce impact on traffic flow.

Environmental Disturbance *(Low Medium)*

Decommissioning activities can disturb natural habitats, soil, and waterways. The removal of infrastructure might also disrupt ecosystems that have adapted to their presence.

Table 59: Environmental disturbance impacts rating

Criteria		**Rating**
Consequences	Severity/Magnitude of Impact	3
	Spatial Scope/Geographic Extent of Impact	2
	Duration of Impact	2
Likelihood	Frequency/duration of activity	1
	Frequency of impact	1
Impact Significance Rating (Consequence × likelihood)	**Low Medium**	14

Mitigation measures

1. Conduct thorough environmental impact assessments prior to decommissioning.
2. Implement erosion and sediment control measures to prevent soil erosion and water pollution.
3. Replant native vegetation and restore habitats affected by decommissioning activities.

Waste Generation *(Low Medium)*

Decommissioning generates waste materials such as concrete, asphalt, and electrical components, which may end up in landfills if not properly managed.

Table 60: Waste generation impacts rating

Criteria		**Rating**
Consequences	Severity/Magnitude of Impact	3
	Spatial Scope/Geographic Extent of Impact	2
	Duration of Impact	1
Likelihood	Frequency/duration of activity	1
	Frequency of impact	1
Impact Significance Rating (Consequence × likelihood)	Low Medium	12

Mitigation measures

1. Implement recycling and reuse programs for materials like concrete and asphalt.
2. Properly dispose of hazardous materials in accordance with regulations.
3. Encourage contractors to minimize waste generation through efficient construction and decommissioning practices.

Economic Loss *(Low Medium)*

Businesses and communities reliant on the infrastructure being decommissioned may suffer economic losses due to decreased accessibility or functionality.

Table 61: Economic loss impacts rating

Criteria		**Rating**
Consequences	Severity/Magnitude of Impact	2
	Spatial Scope/Geographic Extent of Impact	3
	Duration of Impact	2
Likelihood	Frequency/duration of activity	1
	Frequency of impact	1
Impact Significance Rating (Consequence × likelihood)	Low Medium	14

Mitigation measures

1. Provide support and incentives for local businesses affected by decommissioning.
2. Offer compensation or assistance programs to mitigate financial losses.
3. Develop alternative economic opportunities or infrastructure projects to offset any negative economic impacts.

Health and Safety Concerns*(Medium)*

Decommissioning activities can pose health and safety risks to workers and nearby residents due to noise pollution, air pollution from construction vehicles, and potential accidents.

Table 62: Health and safety concerns impacts rating

Criteria		**Rating**
Consequences	Severity/Magnitude of Impact	2
	Spatial Scope/Geographic Extent of Impact	2
	Duration of Impact	1
Likelihood	Frequency/duration of activity	2
	Frequency of impact	2
Impact Significance Rating	**Medium High**	24
Criteria		**Rating**
(Consequence × likelihood)		

Mitigation measures

1. Enforce strict safety regulations and provide adequate training for workers.
2. Implement dust and noise control measures to minimize pollution and disturbance to nearby residents.
3. Communicate potential risks to the public and provide guidance on safety precautions.
1. .

8. ENVIRONMENTAL AND SOCIAL MONITORING AND MANAGEMENT PLAN(ESMMP)

Environmental monitoring is an essential component of project implementation. An Environmental Monitoring and Management Plan (ESMMP) provides mechanism of monitoring environmental impacts of a project during its execution in order to reduce their negative effects and to introduce standards of good practice to be adopted for all project works. The ESMMP facilitates and ensures the follow-up of the implementation of the proposed mitigation measures proposed in the ESMMP. The parameters of the proposed upgrade of roads, construction of storm water drainage, and installation of high-mast lights projects that were identified for monitoring include: water quality, air quality, solid waste generation, Occupational Health and Safety risks, human accidents, HIV/AIDS incidences, soil erosion, storm water drainage, livelihood and environmental risks.

8.1 Purpose and Objectives of ESSMP

The ESMMP describes the range of environmental and social issues associated with the project and outlines corresponding management strategies that will be employed to mitigate potential adverse environmental impacts. The ESMMP conveys the Project's environmental and social constraints. The project will comply with all local laws and regulations, which seek to ensure that the road construction and operation does not adversely affect the environment and social community resources.

The project supervision may periodically revise the ESMMP in consultation with the Contractor, and subject to the approval from National Environment Management Authority (NEMA). The revisions may be made to accommodate changes in work, weather, and general conditions. The ESMMP should be made available to all the project staffs.

The objectives of the ESMMP are:

- To serve as a commitment and reference for the project planners and implementers including conditions of approval from NEMA;
- To serve as a guiding document for the environmental and social monitoring activities for future studies, on requisite progress reports;
- To provide detailed specifications for the management and mitigation of activities that have the potential to impact negatively on the environment;
- To provide instructions to relevant project personnel regarding procedures for protecting the environment and minimizing environmental and social effects, thereby supporting the project goal of minimal or zero incidents;
- To document environmental and social concerns and appropriate protection measures; while ensuring that corrective actions are completed in a timely manner; and
- To address capacity building requirements within the project team, if necessary.

8.2 Auditing of the ESMMP

KISIP and the contractor shall conduct regular audits – quarterly and annual, to the ESMMP to ensure that the system for implementation of the ESMMP is operating effectively. The audit shall check that a procedure is in place to ensure that:

a) Environmental, Social, Health and Safety Systems are in place and operational during the project implementation, and identify any gaps for improvement;
b) The ESMMP being used is the up-to-date version;
c) Variations to the ESMMP and non-compliance and corrective action are documented;
d) Appropriate Environmental, Social, Occupational Health and Safety trainings of personnel is undertaken;
e) Emergency and safety procedures are in place and effectively communicated to personnel;
f) A register of major incidents is in place and other documentation related to the ESMMP; and
g) Ensure that appropriate corrective and preventive action is taken by the Contractor once instructions have been issued.

8.3 Responsibilities for the Implementation of the ESMMP

In order to ensure the sound development and effective implementation of the ESMMP, it will be necessary to identify and define the responsibilities and authority of the various persons and organizations that will be involved in the project. The following entities will be involved in the implementation of the ESMMP:

- Kenya Informal Settlement Improvement Project (KISIP)
- National Environment Management Authority;
- Supervising Consultant;
- Contractor(s);
- Directorate of Safety and Health Services (DOSHS);
- Lamu County.

8.3.1 Kenya Informal Settlement Improvement Project (KISIP)

KISIP will be responsible for:

- Overseeing or appointing qualified and competent team to oversee environmental, social, health and safety (EHS) during the Project cycle;
- Review and approve Contractor's Environmental and Social Management Plan (CESMMP);
- Carry out targeted NCL (ESHS) training to the Supervision Consultant and contractor's teams;
- Regular monitoring (monthly) and supervision of Implementation of the ESMMP;
- Carry out regular compliance ESHS audits including developing corrective action plans;
- Ensuring that during construction and operations, the NEMA license conditions are adhered to since it's the principal holder of NEMA license.

8.3.2 National Environment Management Authority (NEMA)

The responsibility of the National Environment Management Authority (NEMA) is to exercise general supervision and co-ordination over all matters relating to the environment and to be the principal instrument of Government in the implementation of all policies relating to the environment and to ensure that all mitigation measures proposed are implemented.

9.3.3 The Contractor(s)

The Contractor will be responsible for:

- Preparing a Contractor's Environmental and Social Management Plan (CESMMP) that will comply with the requirements of the ESIA/ESMMP and the Standard Specifications for road works in Kenya, which include specifications for environmental and social protection and waste disposal, borrow pit and quarry acquisition and exploitation, landscaping and grassing among others;
- Carry out environmental and social assessment for the project auxiliary sites;
- Operationalize, monitor and report on the implementation of the CESMMP on monthly and quarterly basis (or as required by the Supervision consultant and KPA);
- Employ competent and qualified separate environmental and social experts on fulltime basis to manage and monitor implementation of CESMMP;
- Employ fulltime personnel to manage Occupational Health and Safety issues for the entire duration of the project; and
- Report any environmental, social, health and safety incidents to the Supervision Consultant.
- Prepare the following document: Code of Conduct, Emergency Preparedness and Response Plan, Healthy and Safety Plan, Grievance Redress Mechanism, Gender based violence Sexual Exploitation and Response Plan, Waste Management Plan, Biodiversity Monitoring Plan, stakeholder engagement Plan and Traffic Management Plan.

8.3.4 Supervising Consultant

The Supervising Consultant will be responsible for:

- Oversee the construction programme and construction activities performed by the Contractor, in compliance with the ESMMP;
- Employ qualified full time Environmental and Social Specialists in its team to coordinate all aspects of the environment and social during project implementation;
- Review and approve the CESMMP and other associated plans (e.g., rehabilitation/decommissioning plans);
- Daily and regular monitoring, reviewing and verifying the implementation of the project's ESMMP by the contractor;
- Proposing additional appropriate mitigation measures that may be required during the project's implementation;
- Keep track of project compliance regarding permits and approvals necessary from the relevant authorities;
- Conducting and coordinating training to the contractor's team on issues relating to environmental and social issues; and
- Report on monthly and quarterly reports (or as required) on the ESMMP aspects throughout the project implementation duration.

8.3.5 Directorate of Safety and Health Services (DOSHS)

DOSH will be responsible for:

- Registering and permitting of work place for all the work sites and camp sites for the project;
- Inspection and auditing of workplaces to ensure they are adhering to OSHA 2007; and
- Receiving and investigating any severe incidents reported on worksites.

8.3.6 Lamu County Government

The County Governments are created in Chapter Eleven of the Constitution with powers, functions and responsibilities to deliver services provided for in the County Governments Act, 2012. The National and county governments will collaborate in the implementation of KISIP through the respective PCTs. The relevant departmental offices in the County Government shall be called upon to facilitate the project implementation to provide the necessary permits and advisory services to the project implementers. Moreover, the maintenance of the proposed infrastructure will largely lie within the mandate of the County Governments.

8.4 Mitigation of Design Stage Impacts

The Impact Mitigation Plan summarized below reflects respective action at the design, construction and operation phases of the Project. The field works were undertaken by sober and serious-minded survey teams were selected and sensitized on the need to observe safety requirements during enumeration and site surveys and this has greatly mitigated incidence of accidents.

8.5 ESMMP

8.5.1 ESMMP for Preconstruction Stage

8.5.1.1 ESMMP for Roads, footpaths

Environmental impact	Impact level	Proposed Mitigation Measures	Monitoring Indicators	Responsibility	Performance	Frequency	Estimated Cost
	Environmental						
Approval from NEMA and other Agencies for ESIA report	Medium	The Proponent shall ensure that all pertinent permits, certificates, and licenses have been obtained prior to any activities commencing on- site and are strictly adhered to.	Environment licenses Degree of completion of set of required approvals/ permits issued	County Government of Lamu Contractor	EIA/ Number of EIA Permits obtained	Project Cycle	250,000.00
Clearance of Corridors	Medium	In line with the provisions of the RPF, prepare and effectively implement a plan for managing the land-related impacts. Facilitate all affected persons and address all grievances prior to commencing works.	Displacements Number of facilitated PAPs	County Government of Lamu Consultant KISIP	Visibly marked road reserve	During designing time and construction	242,000.00
	Social impacts						
Divided opinion on project implementations	Medium	Conduct extensive public participation and consultation with key stakeholders	Public opinion, Satisfaction to the relevant authority	Consultant GRC SEC KISIP	-Total project support by all	Throughout all stages from onset	200,000.00

Risk of excluding some beneficiaries due to unfriendly infrastructure designs	Low	The implementation of the infrastructure assumed universal design. Disseminate this information to the beneficiaries through public participation forums.	Number of public participation forums held.	KISIP Contactor Consultant GRC EC	SEC/GRC meetings	During designing Stage	250,000.00

8.5.1.2 ESMMP for Drainages

Environmental impact	Impact level	Proposed Mitigation Measures	Monitoring Indicators	Responsibility	Performance	Frequency	Estimated Cost
Environmental							
Approval from NEMA and other Agencies for ESIA report	Medium	The Proponent shall ensure that all pertinent permits, certificates, and licenses have been obtained prior to any activities commencing on- site and are strictly adhered to.	Environment licenses Degree of completion of set of required approvals/ permits issued	County Government of Lamu Contractor	EIA/ Number of EIA Permits obtained	Project Cycle	250,000.00
Clearance of Corridors	Medium	In line with the provisions of the RPF, prepare and effectively implement a plan for managing the land-related impacts. Facilitate all affected persons and address all grievances prior to commencing works.	Displacements Number of facilitated PAPs	County Government of Lamu Consultant KISIP	Visibly marked road reserve	During designing time and construction	242,000.00
Social impacts							

Divided opinion on project implementations	Medium	Conduct extensive public participation and consultation with key stakeholders	Public opinion, Satisfaction to the relevant authority	Consultant GRC SEC KISIP	-Total project support by all	Throughout all stages from onset	200,000.00
Risk of excluding some beneficiaries due to unfriendly infrastructure designs	Low	The implementation of the infrastructure assumed universal design. Disseminate this information to the beneficiaries through public participation forums.	Number of public participation forums held.	KISIP Contactor Consultant GRC EC	SEC/GRC meetings	During designing Stage	250,000.00

8.5.1.3 ESMMP for Streetlights

Environmental impact	Impact level	Proposed Mitigation Measures	Monitoring Indicators	Responsibility	Performance	Frequency	Estimated Cost
Environmental							
Approval from NEMA and other Agencies for ESIA report	Medium	The Proponent shall ensure that all pertinent permits, certificates, and licenses have been obtained prior to any activities commencing on- site and are strictly adhered to.	Environment licenses Degree of completion of set of required approvals/ permits issued	County Government of Lamu Contractor	EIA/ Number of EIA Permits obtained	Project Cycle	250,000.00
Clearance of Corridors	Medium	In line with the provisions of the RPF, prepare and effectively implement a plan for managing the land-related impacts.	Displacements Number of facilitated PAPs	County Government of Lamu	Visibly marked road reserve	During designing time and construction	242,000.00

		Facilitate all affected persons and address all grievances prior to commencing works.		Consultant KISIP			
Social impacts							
Divided opinion on project implementations	Medium	Conduct extensive public participation and consultation with key stakeholders	Public opinion, Satisfaction to the relevant authority	Consultant GRC SEC KISIP	-Total project support by all	Throughout all stages from onset	200,000.00
Risk of excluding some beneficiaries due to unfriendly infrastructure designs	Low	The implementation of the infrastructure assumed universal design. Disseminate this information to the beneficiaries through public participation forums.	Number of public participation forums held.	KISIP Contactor Consultant GRC EC	SEC/GRC meetings	During designing Stage	250,000.00

8.5.2 ESMMP for Construction Phase

8.5.2.1 ESMMP for Roads and footpaths

Possible Impact	Impact Rating level	Management Actions	Monitoring Indicators	Target Areas and Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
Environmental						
Noise pollution and Excessive	Moderate	Enforce EMCA 1999, Revised 2015 (Noise and	Reported complaints from neighbour community and	Environmental	Continuous	400,000.00

Possible Impact	Impact Rating level	Management Actions	Monitoring Indicators	Target Areas and Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
Vibrations		Excessive Vibrations Regulations of 2009) Maintain noise level within acceptable limits (55 Decibels during the day and 35 Decibels during the night) and construction activities shall, where possible, be confined to normal working hours in the residential areas Hospitals and other noise sensitive areas such as schools shall be notified by the Contractor at least 5 days before construction is due to commence in their vicinity Undertake Noise and Excessive Vibration Assessments Effective use of appropriate PPE (earmuffs) for exposed workers. Proper maintenance of machines. Record and communicated to the Supervising Engineer all noise and excess vibration complains for appropriate action.	institutions Records of machine and vehicle maintenance Availability and use of Ear Muffs	Consultants Contractor		
Air pollution	Moderate	Maintain a speed limit of 20km/h within the site during construction phase to reduce dust particles emission. Use of environmentally friendly fuels such as Low Sulphur diesel.	Cases of respiratory complication at nearby health centre. Records of machine	Environmental Consultants Contractor	Continuous	300,000.00

Possible Impact	Impact Rating level	Management Actions	Monitoring Indicators	Target Areas and Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
		Regular maintenance and service of construction machinery and equipment in accordance to manufacturer specifications to minimize the generation of hazardous gases. Providing PPEs such as nose masks to the workers in dusty areas on the site. Maintain regular training of all personnel on methods for minimizing air quality impacts during construction. Ensure a strict schedule plan for all equipment to avoid unnecessary trips and minimize idling of engines. Enforce of EMCA 2015 (Air Quality Regulations 2014) Avoid carrying out dust generating activities especially during strong winds Use of covered trucks for material delivery to avoid spills and windblown dust Communicate air quality monitoring results to the public and address concerns proactively. Monitor air quality in the construction area and surrounding neighborhood.	and vehicle maintenance Low dust generation during construction Availability and use of Nose Masks			

Possible Impact	Impact Rating level	Management Actions	Monitoring Indicators	Target Areas and Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
		Spraying of all earthwork's areas within 200 meters of human settlement to reduce dust.				
Water Pollution	Low	Implement best management practices for construction activities to prevent runoff contamination. Ensure al machineries are serviced at a dedicated service bay to avoid spillages of oil and other fluids Implement erosion control measures to prevent soil runoff into water bodies. Regularly monitor water quality in nearby water bodies during construction and implementing corrective measures. Collaborate with local water authorities to ensure compliance with water quality standards	Water Quality Reports Records of machine and vehicle	Environmental Management Team Water Quality Experts	Throughout Project	500,000.00
Soil pollution / Erosion	Low	Implement soil erosion control measures to prevent the release of contaminants during construction. Regularly monitor soil quality in construction areas and implement corrective measures. Collaborate with environmental agencies to ensure compliance with soil quality standards.	Ground cover in Constructed areas	Environmental Management Team/consultant Contractor	Monthly	400,000.00
Waste Generation	Moderate	Implement a waste management plan, including proper disposal and recycling of construction waste. Educate construction workers on responsible waste	Clean, Organized, Neat Site Presence of waste collection receptacle	Environmental Management Contractor	Throughout Project	500,000.00

Possible Impact	Impact Rating level	Management Actions	Monitoring Indicators	Target Areas and Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
		disposal practices. Monitor waste generation and disposal practices to ensure compliance with the waste management plan. Practice waste recycling, re use and reduction of waste generation	Contract with NEMA Registered Waste Disposal Firm			
Social Risks						
Sexual Exploitation and Abuse	Low Medium	Implement an awareness and prevention program for project workers and the local community. Provide access to HIV testing and counselling services, ensuring confidentiality and non-discrimination. Establish a support system for individuals living with HIV/AIDS, promoting inclusivity and reducing stigma. Alias with local security administration for insecurity management	HIV/AIDS awareness trainings Availability of VCT facilities Social awareness and trainings	Sociologists Environmental and Safety Management Manager Contractor	Throughout Project	300,000.00

Possible Impact	Impact Rating level	Management Actions	Monitoring Indicators	Target Areas and Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
Occupational Safety and Health issues	Moderate	Enforce strict safety protocols and provide regular training for all construction personnel. Conduct routine safety inspections and audits to identify and address potential hazards. Establish an emergency response plan to handle accidents promptly and efficiently. Provide all workers with appropriate full protective gear. These include working boots, overalls, helmets, earmuffs, masks, and gloves. Make available a fully equipped First aid kit that is manageable by a trained qualified first aider. Use of signage's at work construction site for communication to non-workers and other road users Conduct regular training Document all near misses, incidents and accidents. Conduct risk assessments for all general, standard and high risk jobs Engage only qualified personnel on operating or conducting high risk jobs Issue work permits after risk assessment is	Accidents occurrence incidences recorded in the Incidence Book Workers have Safety Gear(PPEs) Emergency contacts for Hospital and Police available	Environmental and Safety Management Manager Contractor	Weekly	300,000.00

Possible Impact	Impact Rating level	Management Actions	Monitoring Indicators	Target Areas and Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
		successfully and all workers verified to be fit for work Conduct physical fitness test regularly for all worker Report all work related injuries and health concerns for action to be taken				
Child Exploitation and Abuse	Medium	Ensure each employee signs a code of conduct that covers child protection ensuring no children are employed on site in accordance with national labour laws. Ensure that any child sexual relations offenses among contractors' workers are promptly reported to the police. Employ workers who are 18 years and above, and with a valid national ID at the time of hire. Implement and monitor the employment register regularly. Comply with the national labor laws and labour management practices. Put visible signage on site "No Jobs for children."	List of workers that does not contain underage persons	SEC GRC Contractor	Daily	200,000.00
Increased Crime and Insecurity	Very High	Contractor and Supervision Team to liaise regularly with the Local Administration and Police Service to address any security and crime arising during project implementation.	Availability of security officers	Environmental and Safety Management Manager Lamu County Traffic	Daily	900,000.00

Possible Impact	Impact Rating level	Management Actions	Monitoring Indicators	Target Areas and Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
		Contractor to provide 24 hours' security to Workforce Camps, Yards, Stores and to the Supervising Team's Offices	Number of security concerns reported.	Department Officials		
Inadequate stakeholder Engagement and Exclusion of disadvantaged and vulnerable groups	Medium high	Share project information widely and in a timely manner through diverse, feasible and accessible channels of communication e.g., public forums. Introduce measures for affirmative action that would ensure especially persons with disability, the elderly and women have access to job opportunities. Undertake recruitment transparently, while ensuring the inclusion of disadvantaged groups. Develop and implementation of a stakeholder engagement plan. Engage stakeholders throughout the project phase as guided by the approved stakeholder engagement plan.	Number of stakeholders involved and proof of their support.	Contractor SEC and GRC County Government officials, Department of Traffic management Environmental And Safety Management Manager	Throughout Project	250,000.00

Possible Impact	Impact Rating level	Management Actions	Monitoring Indicators	Target Areas and Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
Gender-Based Violence and Sexual Exploitation and Abuse (SEA) and Sexual Harassment (SH)	Low Medium	Develop and implement a plan to manage the risk of SEA/SH. Map the GBV referral pathways and create awareness among women and men on the risk of SEA/SH. Ensure the GRM is SEA/SH-responsive	Number of GBV cases reported and solved. GBV Awareness trainings	SEC GRC Contractor Lamu County Government Officials	Throughout Project	150,000.00
Disruption to Public Services	Low Medium	Coordinate with relevant public service providers to adapt services during construction. Communicate service disruptions in advance to minimize inconvenience for residents. Establish a hotline or platform for residents to report service disruptions and address concerns.	Number of complaints from community due to lack of certain services	Environmental and Safety Management Manager Contractor Relevant County Government department with help of KISIP County coordinator	Throughout Project	100,000.00
Risk of excluding some beneficiaries due to unfriendly infrastructure designs	High	The implementation of the infrastructure assumed universal design. Disseminate this information to the beneficiaries through public participation forums	Number of beneficiaries engaged during the public participation meetings	KISIP Contactor Consultant	Initial and Ongoing	200,000.00

8.5.2.2 ESMMP for Drainages

Possible Impact	Impact Rating level	Management Actions	Monitoring Indicators	Target Areas and Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
Environmental						
Noise pollution and Excessive Vibrations	Moderate	Enforce EMCA 1999, Revised 2015 (Noise and Excessive Vibrations Regulations of 2009) Maintain noise level within acceptable limits (55 Decibels during the day and 35 Decibels during the night) and construction activities shall, where possible,be confined to normal working hours in the residential areas Hospitals and other noise sensitive areas such as schools shall be notified by the Contractor at least 5 days before construction is due to commence in their vicinity Undertake Noise and Excessive Vibration Assessments Effective use of appropriate PPE (earmuffs) for exposed workers. Proper maintenance of machines. Record and communicated to the Supervising Engineer all noise and excess vibration complains for appropriate action.	Reported complaints from neighbour community and institutions Records of machine and vehicle maintenance Availability and use of Ear Muffs	Environmental Consultants Contractor	Continuous	400,000.00
Air pollution	Moderate	Maintain a speed limit of 20km/h within the site during construction phase to reduce dust particles	Cases of respiratory	Environmental	Continuous	300,000.00

Possible Impact	Impact Rating level	Management Actions	Monitoring Indicators	Target Areas and Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
		emission. Use of environmentally friendly fuels such as Low Sulphur diesel. Regular maintenance and service of construction machinery and equipment in accordance to manufacturer specifications to minimize the generation of hazardous gases. Providing PPEs such as nose masks to the workers in dusty areas on the site. Maintain regular training of all personnel on methods for minimizing air quality impacts during construction. Ensure a strict schedule plan for all equipment to avoid unnecessary trips and minimize idling of engines. Enforce of EMCA 2015 (Air Quality Regulations 2014) Avoid carrying out dust generating activities especially during strong winds Use of covered trucks for material delivery to avoid spills and windblown dust Communicate air quality monitoring results to the	complication at nearby health centre. Records of machine and vehicle maintenance Low dust generation during construction Availability and use of Nose Masks	Consultants Contractor		

Possible Impact	Impact Rating level	Management Actions	Monitoring Indicators	Target Areas and Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
		public and address concerns proactively. Monitor air quality in the construction area and surrounding neighborhood. Spraying of all earthwork's areas within 200 meters of human settlement to reduce dust.				
Water Pollution	Low	Implement best management practices for construction activities to prevent runoff contamination. Ensure al machineries are serviced at a dedicated service bay to avoid spillages of oil and other fluids Implement erosion control measures to prevent soil runoff into water bodies. Regularly monitor water quality in nearby water bodies during construction and implementing corrective measures. Collaborate with local water authorities to ensure compliance with water quality standards	Water Quality Reports Records of machine and vehicle	Environmental Management Team Water Quality Experts	Throughout Project	500,000.00
Soil pollution / Erosion	Low	Implement soil erosion control measures to prevent the release of contaminants during construction. Regularly monitor soil quality in construction areas and implement corrective measures. Collaborate with environmental agencies to ensure compliance with soil quality standards.	Ground cover in Constructed areas	Environmental Management Team/consultant Contractor	Monthly	400,000.00

Possible Impact	Impact Rating level	Management Actions	Monitoring Indicators	Target Areas and Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
Waste Generation	Moderate	Implement a waste management plan, including proper disposal and recycling of construction waste. Educate construction workers on responsible waste disposal practices. Monitor waste generation and disposal practices to ensure compliance with the waste management plan. Practice waste recycling, re use and reduction of waste generation	Clean, Organized, Neat Site Presence of waste collection receptacle Contract with NEMA Registered Waste Disposal Firm	Environmental Management Contractor	Throughout Project	500,000.00
Social Risks						
Sexual Exploitation and Abuse	Low Medium	Implement an awareness and prevention program for project workers and the local community. Provide access to HIV testing and counselling services, ensuring confidentiality and non-discrimination. Establish a support system for individuals living with HIV/AIDS, promoting inclusivity and reducing stigma. Alias with local security administration for insecurity management	HIV/AIDS awareness trainings Availability of VCT facilities Social awareness and trainings	Sociologists Environmental and Safety Management Manager Contractor	Throughout Project	300,000.00

Possible Impact	Impact Rating level	Management Actions	Monitoring Indicators	Target Areas and Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
Occupational Safety and Health issues	Moderate	Enforce strict safety protocols and provide regular training for all construction personnel. Conduct routine safety inspections and audits to identify and address potential hazards. Establish an emergency response plan to handle accidents promptly and efficiently. Provide all workers with appropriate full protective gear. These include working boots, overalls, helmets, earmuffs, masks, and gloves. Make available a fully equipped First aid kit that is manageable by a trained qualified first aider. Use of signage's at work construction site for communication to non-workers and other road users Conduct regular training Document all near misses, incidents and accidents. Conduct risk assessments for all general, standard and high risk jobs Engage only qualified personnel on operating or conducting high risk jobs Issue work permits after risk assessment is	Accidents occurrence incidences recorded in the Incidence Book Workers have Safety Gear(PPEs) Emergency contacts for Hospital and Police available	Environmental and Safety Management Manager Contractor	Weekly	300,000.00

Possible Impact	Impact Rating level	Management Actions	Monitoring Indicators	Target Areas and Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
		successfully and all workers verified to be fit for work Conduct physical fitness test regularly for all worker Report all work related injuries and health concerns for action to be taken				
Child Exploitation and Abuse	Medium	Ensure each employee signs a code of conduct that covers child protection ensuring no children are employed on site in accordance with national labour laws. Ensure that any child sexual relations offenses among contractors' workers are promptly reported to the police. Employ workers who are 18 years and above, and with a valid national ID at the time of hire. Implement and monitor the employment register regularly. Comply with the national labor laws and labour management practices. Put visible signage on site "No Jobs for children."	List of workers that does not contain underage persons	SEC GRC Contractor	Daily	200,000.00
Increased Crime and Insecurity	Very High	Contractor and Supervision Team to liaise regularly with the Local Administration and Police Service to address any security and crime arising during project implementation.	Availability of security officers on site	Environmental and Safety Management Manager Lamu County Traffic	Daily	900,000.00

Possible Impact	Impact Rating level	Management Actions	Monitoring Indicators	Target Areas and Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
		Contractor to provide 24 hours' security to Workforce Camps, Yards, Stores and to the Supervising Team's Offices		Department Officials		
Inadequate stakeholder Engagement and Exclusion of disadvantaged and vulnerable groups	Medium high	Share project information widely and in a timely manner through diverse, feasible and accessible channels of communication e.g., public forums. Introduce measures for affirmative action that would ensure especially persons with disability, the elderly and women have access to job opportunities. Undertake recruitment transparently, while ensuring the inclusion of disadvantaged groups. Develop and implementation of a stakeholder engagement plan. Engage stakeholders throughout the project phase as guided by the approved stakeholder engagement plan.	Number of stakeholders involved and proof of their support.	Contractor SEC and GRC County Government officials, Department of Traffic management Environmental And Safety Management Manager	Throughout Project	250,000.00
Gender-Based Violence and Sexual Exploitation and Abuse (SEA) and Sexual Harassment (SH)	Low Medium	Develop and implement a plan to manage the risk of SEA/SH. Map the GBV referral pathways and create awareness among women and men on the risk of SEA/SH. Ensure the GRM is SEA/SH-responsive	Number of GBV cases reported and solved. GBV Awareness trainings	SEC GRC Contractor Lamu County Government	Throughout Project	150,000.00

Possible Impact	Impact Rating level	Management Actions	Monitoring Indicators	Target Areas and Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
				Officials		
Disruption to Public Services	Low Medium	Coordinate with relevant public service providers to adapt services during construction. Communicate service disruptions in advance to minimize inconvenience for residents. Establish a hotline or platform for residents to report service disruptions and address concerns.	Number of complaints from community due to lack of certain services	Environmental and Safety Management Manager Contractor Relevant County Government department with help of KISIP County coordinator	Throughout Project	100,000.00
Risk of excluding some beneficiaries due to unfriendly infrastructure designs	High	The implementation of the infrastructure assumed universal design. Disseminate this information to the beneficiaries through public participation forums	Number of beneficiaries engaged during the public participation meetings	KISIP Contactor Consultant	Initial and Ongoing	200,000.00

8.5.2.3 ESMMP for Streetlights

Possible Impact	Impact Rating level	Management Actions	Monitoring Indicators	Target Areas and Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
Environmental						
Waste Generation	Moderate	Implement a waste management plan, including proper disposal and recycling of construction waste. Educate construction workers on responsible waste disposal practices. Monitor waste generation and disposal practices to ensure compliance with the waste management plan. Practice waste recycling, re use and reduction of waste generation	Clean, Organized, Neat Site Presence of waste collection receptacle Contract with NEMA Registered Waste Disposal Firm	Environmental Management Contractor	Throughout Project	500,000.00
Social Risks						
Sexual Exploitation and Abuse	Low Medium	Implement an awareness and prevention program for project workers and the local community. Provide access to HIV testing and counselling services, ensuring confidentiality and non-discrimination. Establish a support system for individuals living with HIV/AIDS, promoting inclusivity and reducing stigma. Alias with local security administration for insecurity	HIV/AIDS awareness trainings Availability of VCT facilities Social awareness and trainings	Sociologists Environmental and Safety Management Manager Contractor	Throughout Project	300,000.00

Possible Impact	Impact Rating level	Management Actions	Monitoring Indicators	Target Areas and Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
		management				
Occupational Safety and Health issues	Moderate	Enforce strict safety protocols and provide regular training for all construction personnel. Conduct routine safety inspections and audits to identify and address potential hazards. Establish an emergency response plan to handle accidents promptly and efficiently. Provide all workers with appropriate full protective gear. These include working boots, overalls, helmets, earmuffs, masks, and gloves. Make available a fully equipped First aid kit that is manageable by a trained qualified first aider. Use of signage's at work construction site for communication to non-workers and other road users Conduct regular training Document all near misses, incidents and accidents. Conduct risk assessments for all general, standard and high risk jobs Engage only qualified personnel on operating or	Accidents occurrence incidences recorded in the Incidence Book Workers have Safety Gear(PPEs) Emergency contacts for Hospital and Police available	Environmental and Safety Management Manager Contractor	Weekly	300,000.00

Possible Impact	Impact Rating level	Management Actions	Monitoring Indicators	Target Areas and Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
		conducting high risk jobs Issue work permits after risk assessment is successfully and all workers verified to be fit for work Conduct physical fitness test regularly for all worker Report all work related injuries and health concerns for action to be taken				
Child Exploitation and Abuse	Medium	Ensure each employee signs a code of conduct that covers child protection ensuring no children are employed on site in accordance with national labour laws. Ensure that any child sexual relations offenses among contractors' workers are promptly reported to the police. Employ workers who are 18 years and above, and with a valid national ID at the time of hire. Implement and monitor the employment register regularly. Comply with the national labor laws and labour management practices. Put visible signage on site “No Jobs for children.”	List of workers that does not contain underage persons	SEC GRC Contractor	Daily	200,000.00

Possible Impact	Impact Rating level	Management Actions	Monitoring Indicators	Target Areas and Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
Inadequate stakeholder Engagement and Exclusion of disadvantaged and vulnerable groups	Medium high	Share project information widely and in a timely manner through diverse, feasible and accessible channels of communication e.g., public forums. Introduce measures for affirmative action that would ensure especially persons with disability, the elderly and women have access to job opportunities. Undertake recruitment transparently, while ensuring the inclusion of disadvantaged groups. Develop and implementation of a stakeholder engagement plan. Engage stakeholders throughout the project phase as guided by the approved stakeholder engagement plan.	Number of stakeholders involved and proof of their support.	Contractor SEC and GRC County Government officials, Department of Traffic management Environmental And Safety Management Manager	Throughout Project	250,000.00
Gender-Based Violence and Sexual Exploitation and Abuse (SEA) and Sexual Harassment (SH)	Low Medium	Develop and implement a plan to manage the risk of SEA/SH. Map the GBV referral pathways and create awareness among women and men on the risk of SEA/SH. Ensure the GRM is SEA/SH-responsive	Number of GBV cases reported and solved. GBV Awareness trainings	SEC GRC Contractor Lamu County Government Officials	Throughout Project	150,000.00
Disruption to Public Services	Low Medium	Coordinate with relevant public service providers to adapt services during construction.	Number of	Environmental and Safety Management	Throughout Project	100,000.00

Possible Impact	Impact Rating level	Management Actions	Monitoring Indicators	Target Areas and Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
		Communicate service disruptions in advance to minimize inconvenience for residents. Establish a hotline or platform for residents to report service disruptions and address concerns.	complaints from community due to lack of certain services	Manager Contractor Relevant County Government department with help of KISIP County coordinator		
Risk of excluding some beneficiaries due to unfriendly infrastructure designs	High	The implementation of the infrastructure assumed universal design. Disseminate this information to the beneficiaries through public participation forums	Number of beneficiaries engaged during the public participation meetings	KISIP Contactor Consultant	Initial and Ongoing	200,000.00

8.5.3 ESMMP for Operational Phase

8.5.3.1 ESMMP for Roads and footpaths

Possible Impact,	Impact Rating Level	Management Actions	Monitoring Indicators	Responsibilities	Monitoring Frequency	Estimated Budget(KShs)
Gender-Based Violence and Sexual Exploitation and Abuse (SEA) and Sexual Harassment (SH)	Medium high	Develop and implement a plan to manage the risk of SEA/SH. Map the GBV referral pathways and create awareness among women and men on the risk of SEA/SH. Ensure the GRM is SEA/SH-responsive.	Number of GBV cases reported and solved. GBV Awareness trainings	County Government of Lamu; Department of Traffic management, KISIP	Throughout Project	No additional cost
Ineffective Grievance Management	Very High	Constitute a Local Grievances Committee in consultation with all community segments and incorporate the existing local dispute resolution mechanisms. Implement a workers' grievances mechanism. Create awareness on the culturally appropriate and accessible GRM to all community segments including vulnerable individuals and households and CSOs. Log, date, process, resolve, and close-out all reported grievances in a timely manner. Ensure proportionate representation of disadvantaged persons in the local grievances committee.	Awareness trainings conducted Grievance complaints documentation Availability of a GRM and SEC committee	County Government of Lamu, KISIP, Contractor	Throughout Project	No additional cost

Possible Impact,	Impact Rating Level	Management Actions	Monitoring Indicators	Responsibilities	Monitoring Frequency	Estimated Budget(KShs)
		Enable the GRM to provide for confidential reporting of particularly sensitive social aspects such as GBV, as well as anonymity.				
Water Pollution/Contamination	Very Low	Prioritize integrated water management approaches that address both the root causes and symptoms of pollution. Investing in infrastructure for safe drinking water supply, wastewater treatment, and solid waste management Promoting sustainable agricultural practices to reduce runoff and pollution Strengthening regulatory frameworks and enforcement mechanisms to prevent industrial pollution, and raising awareness about the importance of water conservation and pollution prevention among community members. Taking proactive measures to protect water resources	Water quality standards and tests	SEC, GRC, KISIP	Ongoing	No additional cost
Inadequate stakeholder Engagement and Exclusion of disadvantaged and	Medium high	Share project information widely and in a timely manner through diverse, feasible and accessible channels of communication e.g., public forums.	Number of stakeholders involved and proof of their support.	SEC, GRC, KISIP	Monthly	200,000.00

Possible Impact,	Impact Rating Level	Management Actions	Monitoring Indicators	Responsibilities	Monitoring Frequency	Estimated Budget(KShs)
vulnerable groups		Introduce measures for affirmative action that would ensure especially persons with disability, the elderly and women have access to job opportunities. Undertake recruitment transparently, while ensuring the inclusion of disadvantaged groups. Develop and implementation of a stakeholder engagement plan. Engage stakeholders throughout the project phase as guided by the approved stakeholder engagement plan.				

8.5.3.2 ESMMP for Drainages

Possible Impact,	Impact Rating Level	Management Actions	Monitoring Indicators	Responsibilities	Monitoring Frequency	Estimated Budget(KShs)
Gender-Based Violence and Sexual Exploitation and Abuse (SEA) and Sexual Harassment (SH)	Medium high	Develop and implement a plan to manage the risk of SEA/SH. Map the GBV referral pathways and create awareness among women and men on the risk of SEA/SH. Ensure the GRM is SEA/SH-responsive.	Number of GBV cases reported and solved. GBV Awareness trainings	County Government of Lamu; Department of Traffic management, KISIP	Throughout Project	No additional cost

Possible Impact,	Impact Rating Level	Management Actions	Monitoring Indicators	Responsibilities	Monitoring Frequency	Estimated Budget(KShs)
Ineffective Grievance Management	Very High	Constitute a Local Grievances Committee in consultation with all community segments and incorporate the existing local dispute resolution mechanisms. Implement a workers' grievances mechanism. Create awareness on the culturally appropriate and accessible GRM to all community segments including vulnerable individuals and households and CSOs. Log, date, process, resolve, and close-out all reported grievances in a timely manner. Ensure proportionate representation of disadvantaged persons in the local grievances committee. Enable the GRM to provide for confidential reporting of particularly sensitive social aspects such as GBV, as well as anonymity.	Awareness trainings conducted Grievance complaints documentation Availability of a GRM and SEC committee	County Government of Lamu, KISIP, Contractor	Throughout Project	No additional cost
Water Pollution/Contamination	Very Low	Prioritize integrated water management approaches that address both the root causes and symptoms of pollution. Investing in infrastructure for safe drinking water supply, wastewater	Water quality standards and tests	SEC, GRC, KISIP	Ongoing	No additional cost

Possible Impact,	Impact Rating Level	Management Actions	Monitoring Indicators	Responsibilities	Monitoring Frequency	Estimated Budget(KShs)
		treatment, and solid waste management Promoting sustainable agricultural practices to reduce runoff and pollution Strengthening regulatory frameworks and enforcement mechanisms to prevent industrial pollution, and raising awareness about the importance of water conservation and pollution prevention among community members. Taking proactive measures to protect water resources				
Inadequate stakeholder Engagement and Exclusion of disadvantaged and vulnerable groups	Medium high	Share project information widely and in a timely manner through diverse, feasible and accessible channels of communication e.g., public forums. Introduce measures for affirmative action that would ensure especially persons with disability, the elderly and women have access to job opportunities. Undertake recruitment transparently, while ensuring the inclusion of disadvantaged groups. Develop and implementation of a	Number of stakeholders involved and proof of their support.	SEC, GRC, KISIP	Monthly	200,000.00

Possible Impact,	Impact Rating Level	Management Actions	Monitoring Indicators	Responsibilities	Monitoring Frequency	Estimated Budget(KShs)
		stakeholder engagement plan. Engage stakeholders throughout the project phase as guided by the approved stakeholder engagement plan.				
Alteration of Natural Drainage Patterns	Very Low	Conduct detailed hydrological studies to understand natural drainage patterns. Design drainage systems that mimic natural flow to reduce environmental impact		SEC, GRC, KISIP	Quarterly	200,000.00

8.5.3.3 ESMMP for Streetlights

Possible Impact,	Impact Rating Level	Management Actions	Monitoring Indicators	Responsibilities	Monitoring Frequency	Estimated Budget(KShs)
Gender-Based Violence and Sexual Exploitation and Abuse (SEA) and Sexual Harassment (SH)	Medium high	Develop and implement a plan to manage the risk of SEA/SH. Map the GBV referral pathways and create awareness among women and men on the risk of SEA/SH. Ensure the GRM is SEA/SH-responsive.	Number of GBV cases reported and solved. GBV Awareness trainings	County Government of Lamu; Department of Traffic management, KISIP	Throughout Project	No additional cost

Possible Impact,	Impact Rating Level	Management Actions	Monitoring Indicators	Responsibilities	Monitoring Frequency	Estimated Budget(KShs)
Ineffective Grievance Management	Very High	Constitute a Local Grievances Committee in consultation with all community segments and incorporate the existing local dispute resolution mechanisms. Implement a workers' grievances mechanism. Create awareness on the culturally appropriate and accessible GRM to all community segments including vulnerable individuals and households and CSOs. Log, date, process, resolve, and close-out all reported grievances in a timely manner. Ensure proportionate representation of disadvantaged persons in the local grievances committee. Enable the GRM to provide for confidential reporting of particularly sensitive social aspects such as GBV, as well as anonymity.	Awareness trainings conducted Grievance complaints documentation Availability of a GRM and SEC committee	County Government of Lamu, KISIP, Contractor	Throughout Project	No additional cost
Energy Consumption	Low Medium	A programmable timer shall control exterior lights. Generator should be provided as a full backup energy source throughout the development. Install and routine maintenance of energy	Reduced and conservative use of energy	County Government of Lamu, KISIP, Contractor	Throughout Project	300,000.00

Possible Impact,	Impact Rating Level	Management Actions	Monitoring Indicators	Responsibilities	Monitoring Frequency	Estimated Budget(KShs)
		efficient appliances e.g. LED bulbs etc. Monitor energy use during construction and set reasonable limit. Put off all lights immediately when not in use or are not needed. The water booster set will contain inverter pumps for energy saving and precise control of flow and pressure rate. Turn off machinery and equipment when not in use. Use of solar energy as an alternative source of energy at contractor's camp sites.				
Inadequate stakeholder Engagement and Exclusion of disadvantaged and vulnerable groups	Medium high	Share project information widely and in a timely manner through diverse, feasible and accessible channels of communication e.g., public forums. Introduce measures for affirmative action that would ensure especially persons with disability, the elderly and women have access to job opportunities. Undertake recruitment transparently, while ensuring the inclusion of disadvantaged	Number of stakeholders involved and proof of their support.	SEC, GRC, KISIP	Monthly	200,000.00

Possible Impact,	Impact Rating Level	Management Actions	Monitoring Indicators	Responsibilities	Monitoring Frequency	Estimated Budget(KShs)
		groups. Develop and implementation of a stakeholder engagement plan. Engage stakeholders throughout the project phase as guided by the approved stakeholder engagement plan.				
Light and Visual discomfort	Medium High	Properly design and angle light fixtures to minimize glare. Consider installing light shields or diffusers to control light direction. Seek aviation lighting design principles Use shielded fixtures and directional lighting to minimize light spillage. Implement curfew times for non-essential lighting. Educate the community on responsible lighting practices.		SEC, GRC, KISIP	Throughout Project	No additional cost
Disturbance to Nocturnal Wildlife	Very Low	Install motion sensors or timers to reduce lighting intensity during periods of low activity. Choose warm-coloured lights that are less disruptive to wildlife.		SEC, GRC, KISIP	Throughout Project	No additional cost

8.5.4 ESMMP for Decommissioning Phase

8.5.4.1 ESMMP for Roads and footpaths

Possible Impact	Impact Level	Management Actions	Monitoring Indicators	Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
Disruption of Services	Low Medium	Implement phased decommissioning to minimize disruption to services. Provide alternative routes or transportation options for affected commuters. Schedule decommissioning activities during off-peak hours to reduce impact on traffic flow.	Number of services affected Duration of service disruptions. Percentage of planned versus unplanned disruptions.	SEC, GRC, KISIP, County Government of Lamu	Throughout Decommissioning	No additional cost
Environmental Disturbance	Low Medium	Conduct thorough environmental impact assessments prior to decommissioning. Implement erosion and sediment control measures to prevent soil erosion and water pollution. Replant native vegetation and restore habitats affected by decommissioning activities.	Compliance with environmental regulations and permits. Inspection frequency and compliance with erosion control practices Survival rates of replanted native vegetation	Environmental Management Team/Consultant, KISIP	Throughout Decommissioning	To be established
Waste Generation	*Low Medium*	Implement recycling and reuse programs for materials like concrete and asphalt. Properly dispose of hazardous materials	Adoption rate of recycled materials in new construction projects Compliance with hazardous	Environmental Management Team/Consultant, KISIP	Throughout Decommissioning	250,000.00

Possible Impact	Impact Level	Management Actions	Monitoring Indicators	Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
		in accordance with regulations. Encourage contractors to minimize waste generation through efficient construction and decommissioning practices.	waste disposal regulations Implementation of practices to reduce packaging waste, excess materials, and unnecessary disposal.			
Economic Loss	Low Medium	Provide support and incentives for local businesses affected by decommissioning. Offer compensation or assistance programs to mitigate financial losses. Develop alternative economic opportunities or infrastructure projects to offset any negative economic impacts.	Service disruption metrics and traffic flow management. Compliance with environmental regulations and effectiveness of restoration efforts. Quantity of recycled materials, hazardous waste disposal compliance, and waste reduction. Number of businesses supported, financial assistance effectiveness, and economic diversification progress.	KISIP,SEC,GRC	Throughout Decommissioning	100,000.00
Health and Safety Concerns	Medium	Enforce strict safety regulations and provide adequate training for workers. Implement dust and noise control measures to minimize pollution and	Adherence to safety regulations and incident rates. Monitoring dust and noise levels, and compliance with	KISIP,SEC,GRC	Throughout Decommissioning	200,000.00

Possible Impact	Impact Level	Management Actions	Monitoring Indicators	Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
		disturbance to nearby residents. Communicate potential risks to the public and provide guidance on safety precautions.	pollution limits. Public awareness and feedback on risk communication effectiveness.			
Environmental Disturbance	Low Medium	Conduct thorough environmental impact assessments prior to decommissioning. Implement erosion and sediment control measures to prevent soil erosion and water pollution. Replant native vegetation and restore habitats affected by decommissioning activities.	Completion and compliance of environmental impact assessments. Effectiveness of erosion and sediment control measures. Success of habitat restoration and native vegetation replanting. Water quality monitoring results. Stakeholder feedback on environmental impacts and restoration efforts. Adherence to environmental regulations and reporting requirements.	Environmental Management Team/Consultant, KISIP	Throughout Decommissioning	300,000.00

8.5.4.2 ESMMP for Drainages

Possible Impact	Impact Level	Management Actions	Monitoring Indicators	Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
Disruption of Services	Low Medium	Implement phased decommissioning to minimize disruption to services. Provide alternative routes or transportation options for affected commuters. Schedule decommissioning activities during off-peak hours to reduce impact on traffic flow.	Number of services affected Duration of service disruptions. Percentage of planned versus unplanned disruptions.	SEC, GRC, KISIP, County Government of Lamu	Throughout Decommissioning	No additional cost
Environmental Disturbance	Low Medium	Conduct thorough environmental impact assessments prior to decommissioning. Implement erosion and sediment control measures to prevent soil erosion and water pollution. Replant native vegetation and restore habitats affected by decommissioning activities.	Compliance with environmental regulations and permits. Inspection frequency and compliance with erosion control practices Survival rates of replanted native vegetation	Environmental Management Team/Consultant, KISIP	Throughout Decommissioning	To be established
Waste Generation	*Low Medium*	Implement recycling and reuse programs for materials like concrete and asphalt. Properly dispose of hazardous materials in accordance with regulations.	Adoption rate of recycled materials in new construction projects Compliance with hazardous waste disposal regulations	Environmental Management Team/Consultant, KISIP	Throughout Decommissioning	250,000.00

Possible Impact	Impact Level	Management Actions	Monitoring Indicators	Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
		Encourage contractors to minimize waste generation through efficient construction and decommissioning practices.	Implementation of practices to reduce packaging waste, excess materials, and unnecessary disposal.			
Economic Loss	Low Medium	Provide support and incentives for local businesses affected by decommissioning. Offer compensation or assistance programs to mitigate financial losses. Develop alternative economic opportunities or infrastructure projects to offset any negative economic impacts.	Service disruption metrics and traffic flow management. Compliance with environmental regulations and effectiveness of restoration efforts. Quantity of recycled materials, hazardous waste disposal compliance, and waste reduction. Number of businesses supported, financial assistance effectiveness, and economic diversification progress.	KISIP,SEC,GRC	Throughout Decommissioning	100,000.00
Health and Safety Concerns	Medium	Enforce strict safety regulations and provide adequate training for workers. Implement dust and noise control measures to minimize pollution and disturbance to nearby residents. Communicate potential risks to the public	Adherence to safety regulations and incident rates. Monitoring dust and noise levels, and compliance with pollution limits. Public awareness and	KISIP,SEC,GRC	Throughout Decommissioning	200,000.00

Possible Impact	Impact Level	Management Actions	Monitoring Indicators	Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
		and provide guidance on safety precautions.	feedback on risk communication effectiveness.			
Environmental Disturbance	Low Medium	Conduct thorough environmental impact assessments prior to decommissioning. Implement erosion and sediment control measures to prevent soil erosion and water pollution. Replant native vegetation and restore habitats affected by decommissioning activities.	Completion and compliance of environmental impact assessments. Effectiveness of erosion and sediment control measures. Success of habitat restoration and native vegetation replanting. Water quality monitoring results. Stakeholder feedback on environmental impacts and restoration efforts. Adherence to environmental regulations and reporting requirements.	Environmental Management Team/Consultant, KISIP	Throughout Decommissioning	300,000.00

8.5.4.3 ESMMP for Street lighting

Possible Impact	Impact Level	Management Actions	Monitoring Indicators	Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
Disruption of Services	Low Medium	Implement phased decommissioning to minimize disruption to services. Provide alternative routes or transportation options for affected commuters. Schedule decommissioning activities during off-peak hours to reduce impact on traffic flow.	Number of services affected Duration of service disruptions. Percentage of planned versus unplanned disruptions.	SEC, GRC, KISIP, County Government of Lamu	Throughout Decommissioning	No additional cost
Environmental Disturbance	Low Medium	Conduct thorough environmental impact assessments prior to decommissioning. Implement erosion and sediment control measures to prevent soil erosion and water pollution. Replant native vegetation and restore habitats affected by decommissioning activities.	Compliance with environmental regulations and permits. Inspection frequency and compliance with erosion control practices Survival rates of replanted native vegetation	Environmental Management Team/Consultant, KISIP	Throughout Decommissioning	To be established
Waste Generation	*Low Medium*	Implement recycling and reuse programs for materials like concrete and asphalt. Properly dispose of hazardous materials in accordance with regulations. Encourage contractors to minimize waste generation through efficient construction	Adoption rate of recycled materials in new construction projects Compliance with hazardous waste disposal regulations Implementation of practices to reduce packaging waste,	Environmental Management Team/Consultant, KISIP	Throughout Decommissioning	250,000.00

Possible Impact	Impact Level	Management Actions	Monitoring Indicators	Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
		and decommissioning practices.	excess materials, and unnecessary disposal.			
Economic Loss	Low Medium	Provide support and incentives for local businesses affected by decommissioning. Offer compensation or assistance programs to mitigate financial losses. Develop alternative economic opportunities or infrastructure projects to offset any negative economic impacts.	Service disruption metrics and traffic flow management. Compliance with environmental regulations and effectiveness of restoration efforts. Quantity of recycled materials, hazardous waste disposal compliance, and waste reduction. Number of businesses supported, financial assistance effectiveness, and economic diversification progress.	KISIP,SEC,GRC	Throughout Decommissioning	100,000.00
Health and Safety Concerns	Medium	Enforce strict safety regulations and provide adequate training for workers. Implement dust and noise control measures to minimize pollution and disturbance to nearby residents. Communicate potential risks to the public and provide guidance on safety precautions.	Adherence to safety regulations and incident rates. Monitoring dust and noise levels, and compliance with pollution limits. Public awareness and feedback on risk communication	KISIP,SEC,GRC	Throughout Decommissioning	200,000.00

Possible Impact	Impact Level	Management Actions	Monitoring Indicators	Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
			effectiveness.			
Environmental Disturbance	Low Medium	Conduct thorough environmental impact assessments prior to decommissioning. Implement erosion and sediment control measures to prevent soil erosion and water pollution. Replant native vegetation and restore habitats affected by decommissioning activities.	Completion and compliance of environmental impact assessments. Effectiveness of erosion and sediment control measures. Success of habitat restoration and native vegetation replanting. Water quality monitoring results. Stakeholder feedback on environmental impacts and restoration efforts. Adherence to environmental regulations and reporting requirements.	Environmental Management Team/Consultant, KISIP	Throughout Decommissioning	300,000.00

9. GRIEVANCE REDRESS MECHANISM

This section describes the project's Grievance Redress Mechanism. The overall objective of the GRM is to establish an effective communication channel among project stakeholders for providing a timely and efficient two-way feedback mechanism to address any grievances and complaints against the project from multiple stakeholders and Project Affected. This GRM complies with the Law of Kenya and international best practices. During the proposed implementation of Mokowe projects, grievances, complaints as well as disputes are expected to arise from several stages of the project including design and implementation phase.

Effective and timely response to community complaints is essential for maintaining good community relations. KISIP is committed to having an effective complaints handling system that reflects the needs, expectations and rights of complainants.

9.1 Objectives of the GRM

The project implementation team will work to prevent grievances through the implementation of proposed mitigation measures as per the ESMP and as identified through the Grievance Redress Mechanism (GRM). Specific objectives of the GRM are:

a) To ensure that comments, responses and grievances are handled in a fair and transparent manner in line with KISIP internal mechanisms;
b) To structure and manage the handling of comments, responses and grievances, and allow monitoring of effectiveness of the mechanism;
c) To provide stakeholders in general with a clear process for providing comment and raising grievances; and
d) To provide a platform for stakeholders to raise comments and concerns.

9.2 Proposed Grievance Redress Procedure

The Chief Grievance Handling Officer will be the Resident Engineer (RE). Everybody else, members of GRC, will acts on RE's behalf and reports to him/her. Anyone will be able to submit a grievance to the project, if they believe any practice by the project is having a detrimental impact on the community, the environment, or on their quality of life. They may also submit comments and suggestions on how such issues can be handled or prevented. Stakeholder sensitization on the GRM will be undertaken during stakeholder meetings scheduled under the project's Stakeholder Engagement Plan.

Table 17: GRC Guiding Principles

Guiding Principles	Description
Fairness	The grievance redress system treats complainants with respect and courtesy. The rules of natural justice apply, and all parties involved have the opportunity to respond to raised issues.
Transparency and Accessibility	The complaints handling system is well-known to stakeholders, staff, and contractors. It includes information on the right to complain, the process, locations, and how complaints will be handled. Details are easily accessible, and there is no charge for complainants. The system aims to be easy to understand, use, and presented in plain language. Interpreter services are provided for non-English speakers if possible.
Responsiveness	Complaints are dealt with quickly, courteously, and fairly within established timelines. Complainants are informed of the expected resolution time and kept updated on progress. If additional time is needed, the complainant is notified with reasons for the delay. If unresolved, clear explanations are provided, and alternative actions or review opportunities are offered.
Privacy and Confidentiality	The complaint handling process ensures complainant confidentiality, including cases against staff. Complaint details are limited to those directly concerned.
Accountability	The system is open to public and oversight scrutiny, such as by the Ombudsman. A reporting mechanism on the complaints process is maintained. KISIP maintains a complaints register and conducts regular audits, formulating action plans to address any deficiencies.

The general steps of the grievance process have been summarized in Table 4 below and comprise:

a) Registration/receipt/Acknowledgment of Complaints
b) Investigate and determine solution to the complaint
c) Implementing the Redress Action;
d) Verifying the Redress Action;
e) Monitoring and Evaluation; and
f) Recourse or Alternatives

Table 18: Grievance Redress Mechanism

Step	Process	Description	Timeframe	Responsibility
1	Grievance receipt and registration/ logging	Face to face; phone; letter, recorded during public/community meetings; WhatsApp etc. Significance assessed and grievance recorded or logged using the model complaint form and filed.	1-2 Days	An aggrieved party or PAPs Lodging complaint to the GRC. GRCs- Receive, registering and logging grievances
2	Development and implementation of response	GRC meets or takes a decision on the grievance. Grievance assigned to appropriate party for resolution if necessary. Response development with input from relevant stakeholders. Redress response/action approved by GRC and logged. Redress response/update of progress on resolution communicated to the complainant. Start implementing redress action	5- 10 Days	GRC
3	Verifying the implementation of redress action	Redress action implemented and verified by GRC. GRC satisfied with implementation of redress action. Complainant duly signed the grievance resolution form	10-15 Days	Environmental (Social) Officer/Safeguard Specialist at the County level (CPCT)
4	Close grievance or refer grievance to 2nd tier resolution	Completion of redress action recorded or logged. Confirm with complainant that grievance can be closed or determine what follow up is necessary. Record final sign off of grievance. If grievance cannot be closed, return to step 2 or recommend to the next tier- County, National.	15-25 Days	Environmental (Social) Officer/Safeguard Specialist at the County level (CPCT)/ Grievance Officer
5	Court of law	If 2nd and third level settlement does not address dispute, complainant can resort to court of law	Unknown	Safeguard Specialist under KISIP 2 at the National level (NPCT)
6	Monitoring and evaluation, and reporting	Grievance Redress Mechanism Process is documented and monitored		Safeguard Specialist under KISIP 2 at the National level (NPCT)

9.3 The Three Tier of Grievance Redress Mechanism

The three-tier grievance redressal mechanism refers to a structured approach used by organizations or governments to address and resolve complaints or grievances raised by individuals or groups. These are;

Informal Resolution

This initial tier involves resolving grievances through informal means, such as direct communication between the aggrieved party and the concerned individual or department. It may include discussions, meetings, or informal mediation to resolve the issue before it escalates further. The goal here is to address the grievance swiftly and amicably without formal procedures.

Formal Resolution

If the grievance is not resolved at the informal level or if it is of a serious nature, it moves to the formal resolution tier. Formal resolution often involves submitting a written complaint or grievance through designated channels within the organization or institution. This tier may include a structured investigation process, hearings, or meetings with designated

grievance redressal authorities. The decision or resolution at this level is typically documented and communicated to the parties involved.

Appellate or Escalation Level

If the aggrieved party is not satisfied with the resolution provided at the formal level, they may have the option to escalate the matter to a higher authority or an appellate body. This tier involves a review of the previous decisions or actions taken, and it may include a reconsideration of the grievance based on new evidence or arguments presented. The appellate or escalation level provides a final opportunity for a fair and impartial review of the grievance before a decision is made.

These tiers ensure that grievances are addressed through a systematic process, starting with informal attempts to resolve issues and escalating to formal procedures and higher authorities if necessary. It aims to provide transparency, accountability, and fairness in resolving complaints within organizations or government bodies.

9.4 Worker Grievance Procedure

Contractor shall commit to enforce KISIP's comprehensive labor and employment policies, including its requirements on workplace discrimination and harassment, across the entire workforce. This policy requires that all contractor workers are to be treated fairly, with dignity and respect, and have equal employment opportunities.

Therefore, contractors shall be required to develop a Labour Management Plan that includes an authorized process for workers to raise grievances and concerns to senior management, covering any issues that are work related, that affect an employee or contractor, or that an employee deems unfair. Such concerns may relate (but are not limited) to the following:

- ❖ Management decisions;
- ❖ Occupational health and safety concerns;
- ❖ The behavior or conduct of another employee, manager, or contractor; and
- ❖ The effects of KISIP's contractors' Human Resources policy or procedures.

Contractor shall ensure that all grievances raised by workers are treated impartially, respectfully and confidentially.

9.5 World Bank Group Grievance Redress Service

The World Bank Group's Grievance Redress Service (GRS) is an essential mechanism for addressing complaints and grievances related to projects funded by the World Bank Group. The GRS aims to provide affected communities, also known as Project Affected People (PAPs), with a platform to voice their concerns and seek resolutions.

Purpose of GRS

The primary purpose of the Grievance Redress Service is to ensure that affected individuals and communities have a voice in projects financed by the World Bank Group. It is designed to address complaints related to social and environmental issues, human rights violations, resettlement concerns, and other project-related grievances.

Types of Complaints

The GRS handles various types of complaints, including but not limited to:

- Social issues: Such as community displacement, loss of livelihoods, cultural heritage preservation.
- Environmental concerns: Such as pollution, deforestation, water contamination.
- Human rights violations: Such as labor rights abuses, discrimination, lack of consultation with affected groups.

PAPs, including individuals, communities, or organizations directly affected by World Bank-funded projects, have the right to lodge a complaint with the GRS. The affected parties can be from both the public and private sectors. Complaints can be lodged through the following;

Identify the Issue: Clearly identify the specific issue or grievance you want to raise. Provide details, evidence, and supporting documents if available.

Contact GRS: PAPs can contact the Grievance Redress Service directly through various channels, such as:

1. GRS Online Platform: Many complaints can be submitted through the World Bank's online grievance portal.
2. Local World Bank Office: In some cases, PAPs can lodge complaints at the local World Bank office responsible for the project.
3. Community Liaison Officers: Some projects have designated Community Liaison Officers who can assist in lodging complaints.

Submit the Complaint: Follow the instructions provided by the GRS for submitting your complaint. Include all relevant information and documents to support your case.

Wait for Acknowledgment: Once the complaint is submitted, the GRS will acknowledge receipt and begin the review process. The review process is as follows;

- **Initial Assessment**: The GRS team conducts an initial assessment of the complaint to determine its validity and relevance to World Bank Group policies and guidelines.
- **Investigation**: If the complaint is deemed valid, the GRS team may conduct further investigations, which may involve site visits, consultations with stakeholders, and gathering additional information.
- **Resolution**: Based on the findings of the investigation, the GRS works toward resolving the complaint through various means, such as mediation, corrective actions, or policy recommendations.
- **Feedback and Follow-up**: Throughout the process, the GRS provides feedback to the complainant and ensures follow-up actions are taken to address the grievances effectively.

Confidentiality and Protection: The GRS respects the confidentiality of complainants and ensures protection against any reprisals or retaliation for lodging a complaint. PAPs' identities are generally kept confidential unless consent is provided otherwise.

Monitoring and Evaluation: After a complaint is resolved, the GRS may conduct monitoring and evaluation to assess the effectiveness of the resolution and identify lessons learned for future projects.

By providing an accessible and transparent platform for addressing grievances, the World Bank Group's Grievance Redress Service plays a crucial role in promoting accountability, transparency, and sustainable development in its funded projects.

9.6 GRM Cost Estimate

Table 19: GRM cost

S/No	Description	Monthly Cost in Kshs	Annual cost
1	GRC facilitation fee for 12 members of the committee	12,000	144,000
2	GRC meeting venue	5,000	60,000
3	Others	10,000	120,000
	TOTAL	**27,000**	**324,000**

The above GRM estimate cost is the rate per month for Matondoni settlement, and is dependent on the total project duration, which is estimated to be 12 months, making the total cost to **Kshs. 324,000.**

10. CONCLUSION AND RECOMMENDATIONS

10.1 Conclusion

The Environmental and Social Impact Assessment (ESIA) for the KISIP Mokowe projects has been conducted in accordance with international best practices, regulatory requirements, and stakeholder engagement principles. The study aimed to comprehensively evaluate the potential environmental and social impacts associated with the project, identify mitigation measures, and develop an effective Environmental and Social Management and Monitoring Plan (ESMMP) to guide the project's implementation.

Key Findings

Positive Impacts:

The project is expected to bring significant positive impacts to the local community, including job creation, economic opportunities, and improvements in infrastructure.

Negative impacts:

The project also introduces potential negative impacts that require careful management to minimize adverse effects.

Mitigation Measures:

Comprehensive mitigation measures have been identified and incorporated into the ESMMP to address potential negative impacts. These measures encompass a range of areas, including water quality, traffic management, aesthetic concerns, and others.

Stakeholder Engagement:

The ESIA process prioritized stakeholder engagement, ensuring that the concerns and expectations of local communities, authorities, and other relevant parties were taken into account. Feedback mechanisms have been established to facilitate ongoing communication.

Compliance:

The project design aligns with relevant regulations and standards, ensuring compliance with environmental and social requirements. The ESMMP incorporates measures to prevent, minimize, or offset adverse impacts.

Risk Management:

Potential risks, such as soil contamination, water quality issues, and disruptions to public services, have been thoroughly assessed. The ESMMP includes strategies to manage and monitor these risks throughout the project lifecycle.

Therefore, the ESIA concludes that, with the implementation of the proposed Environmental and Social Management Plan, the KISIP 2, Mokowe Comprehensive Settlement Upgrade is poised to deliver positive outcomes while effectively mitigating potential adverse impacts. The comprehensive nature of the assessment, coupled with robust stakeholder engagement and a well-defined ESMMP, demonstrates a commitment to environmental and social responsibility.

The KISIP 2 Mokowe Old Town Upgrade projects is therefore recommended for approval with the understanding that the proposed mitigation measures and management strategies will be diligently implemented and monitored. Continuous stakeholder engagement, regular environmental monitoring, and periodic audits will be essential components of ensuring

the project's success in minimizing negative impacts and maximizing positive contributions to the local community and environment.

10.2 Recommendation

Road Upgrade

- Develop a comprehensive traffic management plan to minimize disruptions and congestion during the construction phase. Clearly communicate alternative routes to the public.
- Engage with the local community to gather feedback on the proposed road upgrades. Address concerns and keep residents informed about the project's timeline and potential impacts.
- Implement erosion control measures to prevent soil runoff into nearby water bodies. Regularly monitor water quality and collaborate with local water authorities to ensure compliance with standards.
- Adhere to design guidelines to minimize visual disruption. Utilize temporary screens or barriers to shield construction sites from view. Gather regular feedback from residents to address aesthetic concerns.
- Designate alternative parking areas during construction to minimize inconvenience. Clearly communicate parking options to residents and businesses. Monitor and assess the impact on parking availability regularly.

Storm water Drainage Construction:

- Implement dust control measures during construction to mitigate air quality concerns. Regularly monitor air quality in the construction area and communicate results to the public.
- Conduct community sensitization sessions on potential dust and air quality issues. Develop and distribute information, education, and communication (IEC) materials to raise awareness.
- Collaborate with local water authorities to ensure storm water drainage does not compromise water quality. Implement corrective measures promptly based on regular monitoring.

High-Mast Street Lights Installation

- Implement design guidelines to ensure high-mast street lights are installed in a way that minimizes aesthetic impact on surrounding properties. Engage with residents for feedback.
- Develop a stakeholder engagement plan specifically for the high-mast lights installation. Communicate project information widely and transparently.
- Prioritize hiring locals for unskilled labor during the installation phase. Ensure fair and transparent recruitment processes.
- Implement safety measures during the installation of high-mast lights. Engage with the community to raise awareness and address safety concerns.

Other recommendations

- Contractor to prepare C-ESMP
- Contractor to prepare all requisite plans before the commencement of works i.e. occupational, health and safety plan, traffic management plan
- Contractor to prepare labour management plan/ Local recruitment plan which will ensure local employment and disadvantaged individuals within the project area are involved.
- Contractor to involve a community liaison person during construction phase
- All unforeseen social impacts which will result from displacement of project affected persons during project construction phase will be addressed as per the provisions of RPF
- Grievance redress system should be made -GBV responsive before commencement of works
- Project workers should have a transparent, open, available and anonymous GRMs for lodging grievances which should be solve in a timely manner

Issues of climate smart interventions and gender should be given a priority during the entire project life cycle

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ANNEXES

ANNEX 1: Lead Expert License

FORM 5 (r. 14(4))

Application Reference No: 733
Registration No: 1283
FOR OFFICIAL USE

THE ENVIRONMENTAL MANAGEMENT AND COORDINATION ACT

CERTIFICATE OF REGISTRATION AS AN ENVIRONMENTAL IMPACT ASSESSMENT/AUDIT EXPERT

This is to certify Ms. **MR. CHARLES L. MUYEMBE**
of **P. O. BOX 18823 - 00100, NAIROBI** (Address)
has been registered as an Environmental Impact Assessment Expert in accordance with the provisions of the Environment Management and Coordination Act and is authorized to practice in the capacity of a Lead Expert/Associate Expert/Firm of Experts (Type) **LEAD EXPERT**

Dated this **27TH** day **MARCH** of 20**07**

Signature

(Seal)

Director General
The National Environmental Management Authority

GPK (L)

Tel: +254 20 6005522/3/7, 6001945
Wireless: +254 20 210370
Mobile: 0724 253 398, 0733 600 035
Email: dgnema@nema.go.ke

Popo Road, Off Mombasa Road
P.O Box 67839-00200
Nairobi, Kenya
Website: www.nema.go.ke

NEMA/EIA/EL/27533 2024-05-23

Charles Muyembe

P.O. BOX 1784 - 00606 NAIROBI.

RE: ACKNOWLEDGEMENT OF EXPERTS LICENSE APPLICATION.

The National Environment Management Authority (NEMA) acknowledge receipt of your application for license as **Lead Expert** Environmental (Impact Assessment/ Audit) expert.

The application reference is **NEMA/EIA/EL/27533**. The Authority will review and communicate the record of decision in due course through the email address provided in the online system.

Annastacia Vyalu

HEAD OF EXPERT SECTION

ANNEX 2: Filled Questionnaires

PUBLIC CONSULTATION AND PARTICIPATION QUESTIONNAIRE

Charles and Barker Ltd on behalf of the proponent, **Second Kenya Informal Settlement Improvement Program (KISIP 2)**, is undertaking Public consultation on the proposed projects. **KISIP 2** plans to undertake settlements improvement projects in six settlements in **LAMU** County. The Projects includes upgrading of marram roads, constructions of storm water drainage system and installation of high mast lights. Kindly spear time to respond to this questionnaire as part of due diligence for Environmental and Social Impact Assessment for these projects. The information provided shall only be used to prepare the said report for submission to NEMA for project Licensing.

Settlement: Mokowe.

Part one: Personal Details (Provide the personal details for NEMA authentication)

a. Name of the Respondent: Luam Hussein
b. Phone Number: 0724450459
c. ID Number: 13535600
d. Gender Male ☐ Female ☑
e. Occupation: Nil
f. Highest level of Education

None ☐ Primary ☑ Secondary ☐ Tertiary ☐ University ☐

Part two: General Survey

1. Do you have any concerns arising from the proposed projects (road, drainage and high mast lights) construction and operation activities?

Yes ☑ No ☐

a. If yes, state the concerns

we need them because is it the argent of the Community

2. Will the project have positive or negative impacts?

Only positive impacts ☐ Only negative impacts ☑ Both positive and negative impacts ☐

a) What are the positive impacts?

Benefit the community
Creat job opportunity to the Community

b) What are the negative impacts?

Displacement of the affected people
— might arise accident in the [illegible] process

In your opinion, how can the negative impacts mentioned be mitigated?

observing safetyness
by [illegible] positive [illegible]

3. What is your preferred mode of transport in the area?

Walking ☐ Motorbike ☑ Vehicle ☐ Donkey ☐ Other (specify)……………………

4. Do you feel happy with the state of roads, storm water drainage and security lights in the area?

Yes ☐ No ☑

If no,

a. What are the main concerns with the state of roads?

should be improve

How could this be addressed?

By [illegible] cabroad

What are the main concerns with storm water drainages?

safe guard the of the community

How can it be addressed?

By puting the Contraction in practice

b. What are the concerns with the current status of security lighting?

Not functioning and satisfactory to the community

c. How can it be addressed?

security lighting to be put in place for the benefit of the community

5. Which road type would you prefer? Tarmac ☐ Marram ☐ Gravel ☐ Cabro ☑

6. Kindly list the types of solid wastes produces in your household/facility/office/place of work?

Higher waste peels of fruits, offices waste stationeries.

7. How do you dispose off the said wastes?

Collected by municipality ☐ Disposed to predefined landfill ☐ Wild disposal areas ☐

Disposed irregularly ☐ Burning ☑ Other (specify).....

8. What type of waste water system do you have in your household/facility/office?

Common sewerage system ☑ Septic tank ☐ Discharge directly to the neighborhoods ☐

Other (specify).....

9. What type of sanitation facility do you have in your household/facility/office?

Flush toilet ☐ Pour flush toilet ☐ Pit latrine ☑ other (specify).....

10. How do you access water?

MOWASSCO Piped ☐ Borehole ☐ Streams/Ocean ☐ Others (specify).....

11. What are the challenges faced concerning water supply?

low water rationing is not enough to the community

12. In your opinion, in the area safe at nights? Yes ☐ No ☑

a. If no, what should be done to enhance security?

Clear bushes, light implition be puting place

13. Do you think the project will impact the culture heritage of the local population?

Yes ☑ No ☐

a. If yes, state the impacts

It will enhance the securit

14. What are your expectations before, during and after the project implementation?

The community is eagerly waiting for the implementation

15. Do you support the projects implementation? Yes ☑ No ☐

If no give reasons.....

Thank You!

Date 21/2/2024 Signature.....

PUBLIC CONSULTATION AND PARTICIPATION QUESTIONNAIRE

Charles and Barker Ltd on behalf of the proponent, **Second Kenya Informal Settlement Improvement Program (KISIP 2),** is undertaking Public consultation on the proposed projects. **KISIP 2** plans to undertake settlements improvement projects in six settlements in **LAMU** County. The Projects includes upgrading of marram roads, constructions of storm water drainage system and installation of high mast lights. Kindly spear time to respond to this questionnaire as part of due diligence for Environmental and Social Impact Assessment for these projects. The information provided shall only be used to prepare the said report for submission to NEMA for project Licensing.

Settlement..... MOKOWE .....

Part one: Personal Details (Provide the personal details for NEMA authentication)

a. Name of the Respondent Fatima Mohamed
b. Phone Number 0700653361
c. ID Number 19637296
d. Gender Male ☐ Female ☑
e. Occupation.....
f. Highest level of Education

None ☐ Primary ☑ Secondary ☐ Tertiary ☐ University ☐

Part two: General Survey

1. Do you have any concerns arising from the proposed projects (road, drainage and high mast lights) construction and operation activities?

Yes ☑ No ☐

a. If yes, state the concerns

.....
.....

2. Will the project have positive or negative impacts?

Only positive impacts ☐ Only negative impacts ☑ Both positive and negative impacts ☐

a) What are the positive impacts?

We need them because it is the urgent need of the Community.

.....
.....

b) What are the negative impacts?

Displace the people
Can Create accident

.....
.....
.....
.....

In your opinion, how can the negative impacts mentioned be mitigated?

finding positive Solution

3. What is your preferred mode of transport in the area?

Walking ☐ Motorbike ☑ Vehicle ☐ Donkey ☐ Other (specify).....

4. Do you feel happy with the state of roads, storm water drainage and security lights in the area?

Yes ☐ No ☑

If no,

a. What are the main concerns with the state of roads?

Should be improved

How could this be addressed?

Contracted Cabral.

What are the main concerns with storm water drainages?

Safe gurd the life of the Community

How can it be addressed?

Construction to put in place

b. What are the concerns with the current status of security lighting?

not functioning

c. How can it be addressed?

Put in place

5. Which road type would you prefer? Tarmac ☐ Marram ☐ Gravel ☐ Cabro ☑

6. Kindly list the types of solid wastes produces in your household/facility/office/place of work?

— Vegetables peels' waters from trees, office stationary

7. How do you dispose off the said wastes?

Collected by municipality ☐ Disposed to predefined landfill ☐ Wild disposal areas ☐

Disposed irregularly ☐ Burning ☑ Other (specify).....

8. What type of waste water system do you have in your household/facility/office?

Common sewerage system ☑ Septic tank ☐ Discharge directly to the neighborhoods ☐

Other (specify).....

9. What type of sanitation facility do you have in your household/facility/office?

Flush toilet ☐ Pour flush toilet ☑ Pit latrine ☐ other (specify).....

10. How do you access water?

MOWASSCO Piped ☐ Borehole ☑ Streams/Ocean ☐ Others (specify).....

11. What are the challenges faced concerning water supply?

low water fetching, not enough for the Community

12. In your opinion, in the area safe at nights? Yes ☑ No ☐

a. If no, what should be done to enhance security?

.....

13. Do you think the project will impact the culture heritage of the local population?

Yes ☑ No ☐

a. If yes, state the impacts

It will enhance security

14. What are your expectations before, during and after the project implementation?

Community Eagerly Waiting for the project

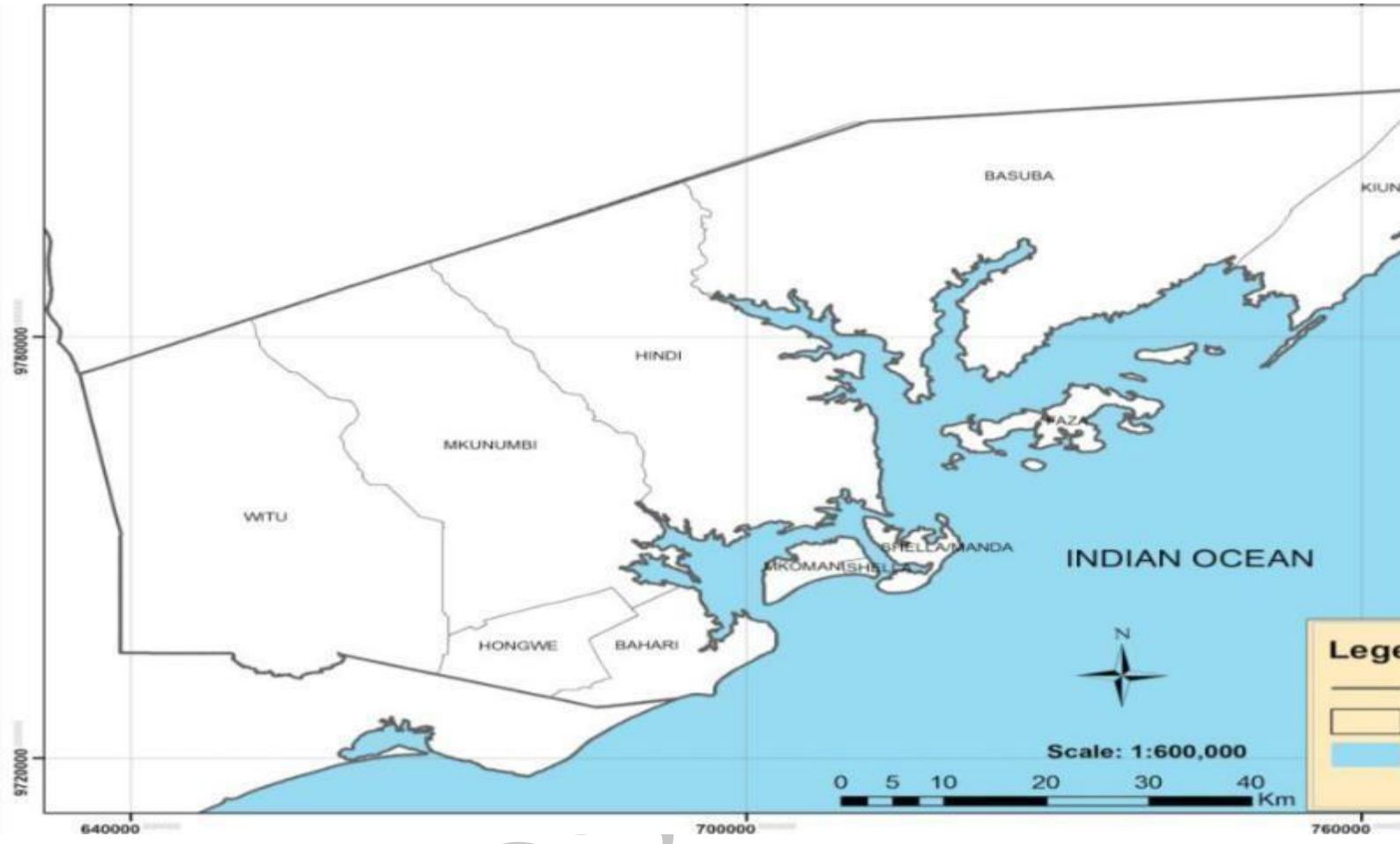
15. Do you support the projects implementation? Yes ☑ No ☐

If no give reasons.....

Thank You!

Date 24/02/2024 Signature

ANNEX 3: Lamu Administration Map



ANNEX 4: Attendance list for a public consultation forum

ANNEX 5: Minutes

MINUTES OF THE PUBLIC PARTICIPATION MEETING FOR THE KISIP 2 PROJECT IN HELD ON MOKOWE 21st FEBRUARY 2024 AT THE CHIEF'S OFFICE.

Attendance
A full list of attendance is herewith attached.

Agenda
a) Introduction
b) Overview of the project
c) Discussions on the possible impacts of the project
d) Way forward
e) Adjournment

MINUTES

MIN	DESCRIPTION	ACTION
1.0	**Introduction to the meeting**	
	The SEC chairperson called the meeting to order at 3 Pm; followed by a word of prayer from a volunteer. The SEC chair proceeded with welcoming all participants to the meeting before formally introducing the consultant to the other participants. The participants were given an opportunity to introduce themselves together with the interests they were representing in the meeting. In his introductory remarks, the SEC chairperson acknowledged that the area is in need of the proposed project. He expressed gratitude to The County Government for helping this locality. Further, he thanked all the attendees for making time to be part of the meeting to discuss infrastructure issues in the area.	
2.0	**Overview of the project**	
	The consultant through the ESIA expert gave an overview of the project; detailing all the stages involved. He informed the meeting that KISIP 2 project is aimed at upgrading informal settlements, though road constructions, solid waste management, drainage systems and street lighting. The project will involve construction of roads, drainage systems, solid waste management and high mast street lights. He introduced the benefits and negative impacts of the project and left the other attendees to explore more on both positive and negative impacts of the project to them.	
3.0	**Discussions on the possible impacts of the project**	
	All the participants were already aware of the project. This was expected since the project is an important necessity, and has been anticipated by the locals. The bad road network system has impacted negatively to the residents as they are forced to use the poor roads in the settlement. The EIA team allowed the community to identify some of the possible Positive and	

	negative impacts of the project to both the host community and the environment. **Positive impacts discussed** The project has 100% support from the residents as they anticipate numerous benefits from its implementation. Some of the benefits or positive impacts mentioned in the view of the project implementation includes but not limited to; ▪ Improved Road Infrastructure, Drainage and Solid Waste Collecting and Disposal ▪ Public Health and Safety ▪ There will be creation of employment across the project cycle, ▪ The value of land within the surrounding areas will improve, **Negative impacts discussed** The community identified some of the negative impacts of the project that they perceive will face them. They include the following; ✓ The construction of works will require machines that generate noise ✓ Occupation health concerns will be high in the project area particularly during construction of the project. ✓ As a result of influx of workers from outside to work on the project, there will be tendency of increased sexually transmitted diseases. ✓ Air Pollution ✓ Inadequate stakeholder Engagement and Exclusion of disadvantaged and vulnerable groups **Proposed Mitigation measures** The consultant took time to go through the concerns of the locals and addressing them by providing solutions for the anticipated impacts. Some of the mitigation measures were to; ✓ Guiding and counselling within the project area; ✓ Using locals in project implementation; ✓ Ensure safety of the construction workers by putting first aid area and injury reporting mechanism; ✓ Establish the appropriate safety measures in the O & M manual for the operation phases;	
4.0	**Way forward**	
	The meeting unanimously resolved that the project should proceed to implementation since it is very important not only to them but to the entire sub county. This was however premised on the agreement that a few negative impacts identified will be mitigated upon. The ESIA consultant representative thanked the participants for their attendance and support of the project. He informed them of the good thoughts KISIP and the County Government has for the project area that will improve the area in terms of economic improvement programs that are on the way. The residents demonstrated their approval to the project by lifting their hands.	
5.0	**Adjournment**	
	There being no further business to be undertaken, the meeting was adjourned at 5PM by the SEC chairperson after a word of prayer from one of the participants.	

Minutes prepared by;

Name: Allan Kirombo

Signature: 

Lead Expert;

Name: Charles Muyembe Lwanga, (NEMA 6417) 

ANNEX 6: Screening Checklist

Environment and Social Management Framework (ESMF) screening check list

Questions to be considered	Yes/No. Briefly Describe	Is this likely to result in a significant effect? Yes/No/? -why
Brief Project Description KIPIS 2 Project for Mokowe Settlement Roads, Drainage, Solid Waste, and Lighting infrastructures improvement in Lamu County within Lamu West sub-county, Mokowe Ward		
A: Triggers to EMCA		
1. Does the project fall under the second schedule of EMCA Cap. 387	Yes, Follows in the second Schedule of EMCA	Yes, The projects are listed as medium risk projects in Legal Notice 31&32
B. Triggers to World Bank Safeguard Policies		
2. Does the project trigger one or more of the World Bank Safeguard policies	Yes, Follows in Category B of World Bank OP	Yes, the project will have effects on the livelihood of the community
C. GoK Policies and Laws applicable		
3. Does the project fall under/trigger any other GoK Policies and Laws?	Yes, it triggers some Government Acts and Policies like The EMCA 1999 (Rev 2015) and Land Act of 2012 among others	Yes, these policies need to form the literature review for the ESIA
D. Project Location		
4. Is the proposed site a protected or reserved site (Provide proximity in kms)? • Biosphere Reserve • National park • Wildlife / Bird Sanctuary • Wetland • Important Bird Areas • Coastal area with corals • Mangrove areas (or Estuary with, mangroves) • Natural lakes • Habitat of migratory birds (outside protected areas) • Migratory Route of Wild Animals Birds • Area with threatened/ rare/endangered fauna (outside protected areas) • Area with threatened/rare/ endangered flora (outside protected areas) • Reserved/Protected Forest • Zoological Park /Botanical	 No No No No No Yes, Appx 50m Yes, App 50M	None

Garden	No No No No No No No	
5. Are there any areas on or around the location which are protected under international or national or local legislation for their ecological, landscape, cultural or other value, which could be affected by the project?	No	No protected area
6. Are there any other areas on or around the location which are important or sensitive for reasons of their ecology e.g. wetlands, watercourses, coastal zone, mountains, mangroves, forests or woodlands, migratory routes, which could be affected by the project?	Yes, Coastal Zone is less than 50m from the settlement. Coastal zone is likely to be used for waste water discharge	Yes, Waste water disposal should be planned in advance
7. Are there any routes or facilities on or around the location which are used by the public for access to recreation or other facilities, which could be affected by the	Yes, the project aims at improving the only existing infrastructures within the settlement. This will affect their accessibility	Yes, the project will affect the residents activities including their movement and businesses

	project?		
8.	Is the project in a location where it is likely to be highly visible to many people?	Yes, the project will be visible to everyone in the settlement	Yes, houses are aligned to the existing and proposed infrastructures for improvements
9.	Are there any areas or features of historic or cultural importance on or around the location which could be affected by the project?	No	No historical or cultural importance feature
10.	Is the project located in a previously undeveloped area where there will be loss of greenfield land?	No, the area is fully developed although poorly planned	No the area is fully developed although poorly planned
11.	Are there existing land uses on or around the location e.g. homes, gardens, private property, industry, commerce, recreation, public open space, community facilities, agriculture, forestry, tourism, mining, or quarrying which could be affected by the project?	No	None
12.	Are there any plans for future land uses on or around the location which could be affected by the project?	Currently, none	None at the moment
13.	Are there any areas on or around the location which are densely populated or built up, which could be affected by the project?	Yes, some parts of the settlement are densely populated with very many formal and informal settlements like Tumbo La Kati	No, there is enough space for development but the contractor needs to develop plans on protecting the neighboring properties
14.	Are there any areas on or around the locations which are occupied by sensitive land uses e.g. hospitals, schools, places of worship, community facilities which could be affected by the project?	Yes. Churches, Mosques, hospitals, and schools will be affected by the project	Yes, plans need to developed before the project to ensure flow of services

15. Are there areas on or around the location which are subject to pollution or environmental damage e.g. where existing legal environmental standards are exceeded, which could be affected by the project?	Yes. Homesteads, places of worship, businesses, schools, and hospitals	Yes, plans need to developed before the project to ensure flow of services
16. Is the site already degraded (low groundwater, poor soil quality)?	No	Not degraded
17. Are there steep slopes in the proximity of the investment site?	No	Not steep
18. Do people live on the proposed site?	Yes, It's a human settlement region	Yes, residents will be 100% affected by the project
19. Do indigenous peoples live on or near the site?	No	It's a metropolitan town
20. Is the site vulnerable to natural hazards (in floodplain, near volcano, on seismic fault, near coastline in hurricane zone)?	Yes. The area is prone to flooding because of its poor existing drainage system	Yes, there is need to have proper drainage system installed before other improvements are made
21. Are there land title conflicts?	No,	No titles have been issued
22. Are there known archaeological, historical or other cultural property? Are any of these world heritage/ UNESCO designated etc	No	None
E. Construction Impacts		
23. Will construction, operation or decommissioning of the project involve actions which will cause physical changes in the locality (topography, land use, changes in water bodies, etc.)?	Yes, topography of the land will change due to construction of drainage and roads	No, not of high significance
24. Will the construction or operation of the project use natural resources such as land, water, materials or energy, especially any resources which are non-renewable or in short supply?	Yes, the project will require murram and aggregates which will be sourced Locally. Water will be highly used in the operations	Yes, water resource need to be well planned to avoid conflict and shortage

25. Will the project involve use, storage, transport, handling or production of substances or materials which could be harmful to human health or the environment or raise concerns about actual or perceived risks to human health?	Yes, storage, use, and transportation of construction materials like murram and asphalt may affect the human health	Yes, contractor should prepare ESMP to guide the operations
26. Will the project produce solid wastes during construction or operation or decommissioning?	Yes, there will be high production of solid waste	Yes, waste management plan should be prepared before the operations
27. Will the project release pollutants or any other hazardous, toxic or noxious substances to the air?	Yes, if not controlled fuels from asphalt mix plans and machines to be used on site may pollute the environment	Yes, regular maintenance of equipment recommended
28. Will the project cause noise and vibration o release of light, heat energy or electromagnetic energy?	Yes, the machine operations and movements will cause noise and excessive vibration to residents neighboring construction sites	Yes, baseline survey for noise and excessive vibration should be recommended and regular monitoring.
29. Will the project lead to risks of contamination of land or water from releases of pollutants onto the ground or into surface waters, ground water, coastal waters or the sea?	Yes, the drainage of the settlement leads to the coastal waters which might be contaminated by oil spills	Yes, oil spills prevention mechanism recommended
30. Will there be any risks of accidents during the construction or operation of the project which could affect human health and the environment?	Yes, the project will involve machine work and manual works	Yes, occupational health and safety plan recommended
31. Will the project result in social changes, for example, in demography, traditional lifestyles, employment?	Yes, infrastructure and security improvement to the settlement will improve livelihood and demography of the settlement. More employment opportunities will also be created	Yes, there is need for labor influx management plan
F. Water Resource Impacts		
32. Could the investment result in a modification of groundwater levels by altering flows, paving surfaces or increasing water extraction?	Yes, the project area is flat and need to be modified to drain water to the coastline	Yes, not very significance
33. Could it affect groundwater quality?	No	No, It will not affect
34. Could it affect quality (through sediment, wastewater, storm discharge or solid waste) of nearby surface waters (lake, rivers, streams)?	No	No, It will not affect

35. Will it affect water quantity in nearby water bodies (lake, river, stream)?	No	No, It will not affect
36. Are there nearby potable water sources that need to be protected?	No	No, It will not affect
G. Drainage Impacts		
37. Will the investment in storm water drainage affect existing drainage patterns?	Yes, the project will have a new drainage system that will be connected to the existing drainage system that drains to the nearby coastline	Yes, solid waste pollution to the nearby ocean should be addressed
38. Will it cause standing water, which could cause public health risks?	No, however it need to be monitored	No, it will not cause as per the design
39. Will erosion result in sediment discharge to nearby water bodies?	Yes, if not controlled there will be soil erosion leading to the coastline	Yes, contractor need to prepare erosion management plan
40. Will surface drainage patterns be affected in borrow pits and quarries?	No, there is no available lands for borrow pits and quarries in the settlement. Material will be sourced from outside. Contractor should look for external borrow pit	Yes, borrow pit and quarry management plan should be developed
41. Will infiltration patterns be affected?	No, the area has coral rocks which are poor in infiltration	No
H. Ecosystem Impacts		
42. Could the investment affect natural habitats or areas of high ecological value?	No	No, It will not affect
43. Could it affect natural characteristics of adjacent or nearby sites?	No	No, It will not affect
44. Could it affect wildlife or natural vegetation?	No	No, It will not affect
I. Socio-Economic Impact		
45. Will the project entail resettlement of population?	No	No resettlement
46. Will the project affect People's property or livelihoods/income?	Yes, the project will open up the settlement affecting the business and livelihood within the settlement positively	Yes
47. Will the project affect indigenous peoples?	No	No, It will not affect
48. Will it limit access to natural resources	No	No, It will not affect

to local populations?		
49. Will it have an impact on land use?	No	No, It will not affect
50. Will it induce further encroachment of nearby areas?	No	No, It will not affect
51. Will it cause any health impacts?	No	No, it will not cause
52. Will it disturb nearby communities during construction?	No	No
53. Could cultural resources be affected?	No	No
54. Could it affect nearby properties	Yes, transportation of materials and construction need to be well managed to prevent destruction of existing KeNHA and KURRA Roads	Yes, traffic management plan for transportation of materials and construction should be developed
J. Operation Impacts		
55. Is the project susceptible to earthquakes, subsidence, landslides, erosion, flooding and extreme or adverse climatic conditions e.g. temperature inversions, fogs, severe winds, which could cause the project topresent environmental problems?	Yes, if not monitored well, the project may cause flooding as the construction site is flat and has no drainage system	Yes, the area is prone to flooding
56. Are there any other factors which should be considered such as consequential development which could lead to environmental effects or the potential for cumulative impacts with other existing or planned activitiesin the locality?	Yes, the project needs to be monitored and done up to completion. If left, the community will have no infrastructure to use	Yes, the area is prone to flooding
K. Displacement Impacts		
57. Acquisition of private/community land?	No	No
58. Alienation of any type of government land including that owned by urban local body?	No	No
59. Clearance of encroachment from government/ urban local body land?	No	No
60. Clearance of squatting from Government/Urban local body?	No	No

61. Number of structures, both authorized and/or unauthorized to beacquired/cleared?	None	None
62. Number of household to be displaced?	None	None
63. Details of village common properties to be alienated, Pasture land(acres)cremation /burial ground and others specify?	None	None
64. Describe existing land uses on and around the project area(e.g. Community facilities, agriculture, tourism, private property)?	The land use is residential	N/A
65. Will the project result in construction workers or other people moving into or having access to the area (for a long period and in large numbers compared to permanent residents) ?	Yes, though most of the workers will be sourced locally, some will be sourced from other regions	Yes, Labor management plan need to be prepared
66. Are financial/in kind compensation measures expected to be needed?	No	No
L. Loss of Assets, Crops, fruit, household infrastructure and livelihood		
67. Will the project result in the permanent or temporary loss of Crops?	No	No
68. Fruit trees/coconut palms? Specify with numbers	Yes	Several trees will be cut to clear the road corridor
69. Household assets/infrastructure? Specify with numbers	None	No
70. Loss of agriculture land? specify with numbers	No	No
M. Public and Occupational health and safety, welfare , employment and gender		
71. Is the project likely to provide local employment opportunities, including employment opportunities for women?	Yes, employees will be sourced locally	Yes, Labor management and influx plan should be prepared
72. Is the project being planned with sufficient attention to local poverty alleviation objectives?	Yes, the project is aimed at improving livelihood to locals	Yes, more public participation and interactions should be planned

73. Is the project being designed with sufficient local participation of women in the planning design and implementation process?	Yes, there are extensive and all-inclusive public participation forums	Yes
74. Will the project affect/lead to traffic and Pedestrian Safety?	Yes, the project aims at improving the only access roads and infrastructures to the settlement	Yes, OHS management plan and ESMP should be prepared
75. Will the project interfere with the normal health and safety of the worker/employee/public?	Yes, health and safety will be a key consideration for employees and locals	Yes, OHS management plan should be prepared
76. Will the project introduce new practices and habits?	No	No
77. Will the project lead to child delinquency (school drop-outs, child abuse, child labour, etc.?	If not monitored, the project may affect the kids schooling	No, but child labor management plan should be prepared
78. Will the project lead to gender disparity?	No, but need to be a key factor of consideration	No
79. Will the project lead to social evils (drug abuse, excessive alcohol consumption, crime, etc.)?	Yes, money attract social vices	Yes
N. Historical, Archaeological, or cultural Heritage sites		
80. Based on available sources, consultation with local Authorities, local knowledge and/ or observation could the project alter?	None	None
81. Historical heritage site(s) or require excavation near the same?	No	No
82. Archaeological heritage site(s) or require excavation near the same?	No	No
83. Cultural heritage site(s) or require excavation near the same	No	No
84. Graves or sacred locations or require excavation near the same?	No	No
O. Result/Outcome of Environmental/ Social and Resettlement Screening Exercise		
No Environment Impact Assessment Required		

Environment Impact Assessment Required	Yes. The project meets the EMCA schedule two projects and World Bank OP Category B threshold for ESIA	
RAP category required (RAP/ARAP)	No	
P: Authorization		
Screening undertaken by: …. ***A. MURIUKI*** Designation.....***ENVIRONMENTALIST***	Signature Date.....***15/02/2024***.....	
Approved by **CHARLES M** Designation **ESIA LEAD EXPERT**	Signature Date... ***16/02/2024***.....	
PMU Confirmation by: ..... Designation.....	 Signature..... Date.....	

Summary of features of project and its location indicating the need for EIA

The project entails improvement through subsequent construction of Road, Drainage, Waste Disposal Sites, and Street lighting infrastructures. The construction will generate high level pollution in terms of noise and air, create discomfort and nuisance to locals, affect day to day business and livelihood activities, and if not well supervised may cause flooding and social vices. The project will also affect the coastline during waste water disposal. The ESIA will be needed for this project in order to propose mitigation measures to the foreseen project impacts and develop ESMP for the project.

Resettlement Policy Framework (RPF) Screening Checklist

Questions to be considered	Yes/No. Briefly Describe	Is this likely to result in a significant effect? Yes/No/? -why
Brief Project Description KIPIS 2 Project for Mokowe Settlement Roads, Drainage, Solid Waste, and Lighting infrastructures improvement in Lamu County within Lamu West sub-county, Mokowe Ward		
A. Triggers to WB Safeguard Policies		
1. Does the project trigger one or more of the WB Safeguard policies Op 1.12	Yes, because of the limited working space if the project is poorly executed it might cause private properties destruction	Yes, the project will affect the livelihood of the residents
B. GoK Policies and Laws applicable		
2. Does the project fall under/trigger any GoK Policies and Laws?	Yes, National land policy 2007, Land Act 2012 and Constitution of Kenya 2010	Yes, there is need to consider them during the project implementation period
C. Project Location		
3. Are there any areas on or around the location which are protected under international or national or local legislation for their ecological, landscape, cultural or other value, which could be affected by the project?	No	No
4. Are there any routes or facilities on or around the location which are used by the public for access to recreation or other facilities, which could be affected by the project?	Yes, The public uses the proposed roads to access recreational areas like the Mokowe Primary School Ground	Yes, if poorly executed. The proposed roads will affect the movement of the local people
5. Are there any areas or features of historic or cultural importance on or around the location which could be affected by the project?	No	No
6. Are there existing land uses on or around the location e.g. homes, gardens, private property, industry, commerce, recreation, public open space, community facilities, agriculture, forestry, tourism, mining, or quarrying which could be affected by the project?	Yes, the proposed infrastructures are used as access to Mosques, churches, schools, and homes	Yes, the project should be supervised to completion to ensure access sustainability

Questions to be considered	Yes/No. Briefly Describe	Is this likely to result in a significant effect? Yes/No/? -why
7. Are there any areas on or around the location which are densely populated or built up, which could be affected by the project?	No	No
8. Are there any areas on or around the location which are occupied by sensitive land uses e.g. hospitals, schools, places of worship, community facilities which could be affected by the project?	Yes, there are all social amenities in the settlement including hospitals and schools	Yes, the proposed roads are the only access to the social amenities
9. Do people live on the proposed site?	Yes	Yes, livelihood might be affected if the project is poorly executed
10. Do indigenous peoples live on or near the site?	No	No
11. Are there known archaeological, historical or other cultural property? Are any of these world heritage/ UNESCO designated etc.	No	No
D. Socio-Economic Impact		
12. Will the project entail resettlement of population?	No	No
13. Will the project affect People's property or livelihoods/income?	Yes, positively, by creation of jobs will improve livelihood and businesses within the settlement	Yes, though not very significant
14. Will the project affect indigenous peoples?	No, the settlement has several tribes	No
15. Will it limit access to natural resources to local populations?	No	No
16. Will it have an impact on land use?	Yes, opening up of the settlement through improved infrastructures will result to more developments	No, the area is fully residential
17. Will it induce further encroachment of nearby areas?	No	No
18. Could cultural resources be affected?	No	No
19. Could it affect nearby properties?	Yes, the working width is very limited.	Yes, contractor need to develop mechanism of

		protecting the nearby houses and fences
E. Displacement Impacts		
Will project include?		
20. Acquisition of private/community land?	No	No
21. Alienation of any type of government land including that owned by urban local body/community?	No	No
22. Clearance of encroachment from government/urban local body land?	No	No
23. Clearance of squatting from Government/Urban local body?	No	No
24. Number of structures, both authorized and/or unauthorized to be acquired/cleared?	None	No

Questions to be considered	**Yes/No.** **Briefly Describe**	**Is this likely to result in a significant effect?** **Yes/No/? -why**
25. Number of household to be displaced?	None	No
26. Details of village common properties to be alienated, Pasture land (acres) cremation /burial ground and others specify?	None	No
27. Describe existing land uses on and around the project area (e.g. Community facilities, agriculture, tourism, private property)?	The land use on and around the settlement is residential and commercial on private property and community facilities like mosques	No
28. Are financial/in kind compensation measures expected to be needed?	None	Not applicable
F. Loss of Assets, Crops, fruit, household infrastructure and livelihood		
Will the project result in the permanent or temporary loss of		
29. Crops?	No	No
30. Fruit trees/coconut palms? Specify with numbers	Yes	Yes, several trees will be cut to clear the road corridor
31. Household assets/infrastructure?	No	No

Specify with numbers		
32. Loss of agriculture land? specify with numbers	No	No
G. Welfare , employment and gender		
33. Is the project likely to provide local employment opportunities, including employment opportunities for women?	Yes, project will create jobs	Yes, contractor need to prepare labour management plan
34. Is the project being planned with sufficient attention to local poverty alleviation objectives?	Yes, job creation and improvement of livelihood through creating business environment within the settlement will eradicate poverty	Yes, special attention should be given to locals during the construction period
35. Is the project being designed with sufficient local participation of women in the planning design and implementation process?	Yes	Yes, SEC officials have obeyed the 2/3 gender rule
H. Historical, Archaeological, or cultural Heritage sites		
Based on available sources, consultation with local Authorities, local knowledge and/ or observation could the project alter?		
36. Historical heritage site(s) or require excavation near the same?	No	No
37. Archaeological heritage site(s) or require excavation near the same?	No	No
38. Cultural heritage site(s) or require excavation near the same	No	No
39. Graves or sacred locations or require excavation near the same?	No	No

Questions to be considered	Yes/No. Briefly Describe	Is this likely to result in a significant effect? Yes/No/? -why
I. Result/Outcome of Environmental/ Social and Resettlement Screening Exercise		
RAP category required (RAP/ARAP)	No ARAP needed	Not applicable
Any special conditions	Contractor should adhere to the construction design to avoid property destruction and boundary conflict with the residents	
P: Authorization		
Screening undertaken by: **CHARITY GATHUTHI** Designation. **SOCIALOGIST**	Signature Date....**15/02/2024**	
Approved by… **Charles M** Designation.... **ESIA LEAD EXPERT**	Signature Date....**15/02/2024**	
PCT Confirmation by: ..... Designation.....	Signature..... Date.....	
Summary of features of project and its location indicating the need for RAP ARAP is not needed in this project. From, the assessment, the project will not require preparation of ARAP.		

ANNEX 7: Validation Form

REPUBLIC OF KENYA

MINISTRY OF LANDS, PUBLIC WORKS, HOUSING AND URBAN DEVELOPMENT

STATE DEPARTMENT FOR HOUSING AND URBAN DEVELOPMENT

KENYA VISION 2030
Towards a globally competitive and prosperous nation.

SECOND KENYA INFORMAL SETTLEMENTS IMPROVEMENT PROJECT (KISIP II)

PROJECT AFFECTED PERSONS VALIDATION FORM

County	LAMU
Cluster	CLUSTER II
Name of the Settlement	MOKOWE
Total Number of Project Affected Persons	NIL
Validated Number of PAPS	NIL

VALIDATING TEAM MEMBERS AND SIGNATURES

County representative	
Name	ARCH. OMAR AHMED SAGGAF
Function /Designation	COUNTY ARCHITECT / COORDINATOR
Signature	
Date	19/6/2024

KISIP National representative	
Name	
Function /Designation	
Signature	
Date	

Consultant Representative	
Name	CHARLES L. MUYEMBE
Function /Designation	PM — ESG
Signature	
Date	19/6/2024