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 (WIYONI) IN LAMU COUNTY

COMPRENSIVE PROJECT REPORT FOR WIYONI SETTLEMENT IN LAMU COUNTY

DATE: JULY 2024

CONSULTANT

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CERTIFICATION AND DOCUMENT AUTHENTICATION

This document has been prepared in accordance with the Environmental (Impact Assessment and Audit) Regulations, 2003 of the Kenya Gazette Supplement No.56 of13thJune 2003, Legal Notice No. 101.

This report is prepared for and on behalf of:

The Proponent

The Government of the Republic of Kenya, Ministry of Lands, Public Works, Housing and Urban Development, State Department of Housing and Urban Development.

P.O. Box

Nairobi - Kenya.

Designation ----------

Name ----------

Signature ----------

Date ----------

Lead Expert

I, **Charles Muyembe Lwanga, Lead Expert, 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 Wiyoni settlement Upgrade Project.

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

Signature: ……

Designation: ESIA/AUDIT LEAD EXPERT REG. NO 6417

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ARAP	Abbreviated Resettlement Action Plan
AFDB	African Development Bank
AFD	Agence Francaise Developement
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

Project Background

The current project, known as Second Kenya Informal Settlement Improvement Project (KISIP 2) follows the successes realized from First Kenya Informal Settlement Improvement Project (KISIP 1), KISIP is a project adopted by the Ministry of Lands and Urban planning in the year 2003. Lamu County was among the recommended counties for the second phase of the informal settlement upgrade. Wiyoni settlement of Lamu West Constituency in Lamu County is among the identified areas for the KISIP 2 programme. The primary target infrastructures for Wiyoni settlement upgrade project included;

- Walkways/footpaths
- Drainage system
- High-masts security light installation.
- Waste collection points and Disposal points

The responsible body for the implementation of the project, hereby referred to as the proponent is the State Department of Housing and Urban Development (SDFH&UD).

The proposed project is the comprehensive upgrade of Walkways roads in Wiyoni Settlement from unpaved walk way roads to heavy duty concrete blocks, construction of storm water drainage, the installation of high-mast lights and solid waste collection points and disposal points.

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. Wiyoni settlement, it is a critical locale within the Lamu County, bordering Lamu town a booming tourist attraction site. With this an existing road network has become inadequate to support the evolving socio-economic activities and population growth in the area.

The project's geographical scope extends from Wiyoni Primary School to Maziarani along the Indian Ocean Coastline, covering an approximate distance of 1013 meters. Also, there are other 7 No feeder roads, joining the island to the ocean. The existing Walkways roads, characterized by its current suboptimal condition, are in need of a comprehensive overhaul to improve movements and accommodate projected human traffic, enhance safety, and support the burgeoning economic activities in the town.

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 when most of the fishermen operate.

The storm water drainage component is integral to managing water- flood issues experienced during rainy seasons, ensuring that the upgraded road system is resilient to adverse weather conditions and minimizing environmental impacts.

The waste collection points/disposal sites shall highly improve on the risks of public health and also mitigate irresponsible waste disposal such as dumping waste at the sea front. Currently there is no clear commitment to help solve waste menace in Wiyoni

The Project is planned to be financed under the Second Kenya Informal Settlement Improvement Project (KISIP 2), which is a project funded jointly by the Agence Francaise Developement (AFD), World Bank and Government of Kenya. The Project lead implementing agency is the State Department of Housing and Urban Development under the Ministry of Ministry of Transport, Infrastructure, Housing & Urban Development (MTIH&UD). The Project is financing investments in infrastructure and service delivery in Wiyoni area of Lamu region with the main Project Development Objective (PDO) to strengthen urban services and infrastructure in the area.

Objectives of the ESIA

- 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.

Terms of reference

The consultant is expected to undertake activities that will ensure that outputs are consistent with the professional and legal requirements. All outputs will be presented using modern techniques/technology and will form part of the digital land information systems for informal settlements being generated by KISIP 2. It is also required that the data is generated through a consultative process that guarantees authenticity and ownership through the following specific tasks.

1. Desktop study.
2. Community mobilization and sensitization for stakeholder engagement.
3. Identification and preparation of base maps of the existing informal settlements.
4. Undertake Environmental and Social Impact Assessment and prepare a Social Management Plan and or a Resettlement Action Plan.
5. Undertaking socio-economic surveys and physical mapping of the settlements
6. Land Information System (LIS).

Project Location and Size

Project Description

The proposed Wiyoni informal settlement upgrade project's scope as per the detailed design master plan includes:

a. The **Street Lighting works**

Shall comprise of installation of 2Nr. 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

b. The **Footpaths/Walkway works** shall comprise

- 60mm concrete blocks surfacing
- 50mm Sand/ Quarry dust layer course

- 100mm Natural Gravel base
- 150mm Natural Gravel Subbase

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

- Lined open drains
- Infiltration pits

Scope of works

Table A- 1: Project description

Proposed Projects	Description				
	No of Footpaths	No of roads	Widths	Total lengths	Nature of upgrade
1. Roads	-	5	9m	3,674.44 meters.	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)	
	3		30m	150m	

Socio economic Baseline

Wiyoni Settlement is located in Mkomani ward, Lamu West constituency of Lamu County. It has an area of about 16Ha and with a population of approximately 8401 people. Main economic activity includes fishing, small business and raffia weavings.

Based on the Köppen-Geiger climate classification, Lamu County is said to have a climate between Tropical monsoon and Arid steppe hot climate. It is characterized by long and short rains with long rains, approximately 1100mm starting from late March and early June with May being the wettest month. Short rains, less than 500mm come between November and December decreasing to a minimum towards January and February and the period between January to March is usually the driest.

The settlement is found in one of the 65 islands in Lamu archipelago extending from the Indian Ocean. It's about 5m above sea level. The Shella aquifer and surface water boreholes are among sources of water in this County.

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 O Safeguard Policies. These instruments are presented as follows:

Policy Provision

- National Policy for Disaster Management in Kenya 2009
- National Disaster Response Plan, 2009,
- Constitution of Kenya 2010
- Kenya Vision 2030
- The Sustainable Development Goals
- National Environment Policy (NEP)
- National Land Policy
- HIV and AIDS Policy 2009
- Gender Policy 2011

Acts of Parliament

- Environmental Management and Coordination Act (EMCA) 1999 amended in 2015
- Water Act 2002 amended in 2016
- County Government Act no 17 of 2012
- Physical Planning Act 1996 (286)
- Occupational Health and Safety Act (OSHA 2007), Public Health Act (Cap.242)
- Works Injuries and Benefits Acts (2007)

Institutional framework

KISIP, Lamu County, Kenya National Highways Authority, Kenya Rural Roads Authority, Community Based Organizations, Kenya Power, Water Service Boards supplying water to the settlement

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.

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

Highlights of Stakeholder Engagement

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 within the month of February 2024; attendance of the meetings was from diverse sectors of the society as summarized below.

Table A- 2: Schedule of Stakeholder Consultations

Date	***Meeting Venue***	***Stakeholder Consulted***	***Number of Meeting Attendance***
22nd February 2024	Wiyoni village Wiyoni Hospital premises	County and Local Administration {Lamu West Constituency; and Public from Wiyoni, including CBO rep, teacher, public health representative.	11

Table A- 3: Summary of Stakeholder Consultation Issues

ISSUE	**RESPONSE**
Residents wanted to know what areas would be covered by the project.	EIA team informed the residents that these areas extended from Wiyoni Primary school to Maziarani covering a total of four footpaths 1013metres.
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

Potential Project Impacts

Pre-construction stage Positive Impacts

- Inclusivity in decision making
- Employment for surveys especially enumerators

Negative impact

- Approval delays from NEMA and other Agencies

- Clearing of project corridor
- Risk of excluding some beneficiaries due to unfriendly infrastructure designs

Construction Phase

Positive Impacts During Construction Phase

- Creation of employment
- Increased business opportunities
- Increased Property Values
- Community Engagement
- Environmental Protection
- Skills Development

Negative Impacts during Construction

- Impact on soil
- Air Pollution
- Increased Crime and Insecurity
- Occupational Health and Safety Risks
- Sexual Exploitation and Abuse
- Inadequate stakeholder Engagement and Exclusion of disadvantaged and vulnerable groups
- Ineffective Grievance Management
- Child labour and Abuse Risk
- Disruption to Public Services or destruction of public utilities
- Waste generation
- Gender-Based Violence and Sexual Exploitation and Abuse (SEA) and Sexual Harassment (SH)
- Noise and Excessive Vibrations.

Operation Phase

Potential positive impacts during Operation Phase

Improved transport

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

Potential Negative Impacts during Operation stage

- Gender-Based Violence and Sexual Exploitation and Abuse (SEA) and Sexual Harassment (SH)
- Ineffective Grievance Management
- Inadequate stakeholder Engagement and Exclusion of disadvantaged and vulnerable groups
- Energy Consumption
- Light and Visual discomfort
- Water Pollution/Contamination
- Alteration of Natural Drainage Patterns
- Disturbance to Nocturnal Wildlife

Decommissioning Phase

Positive impacts

- Adaptation to Changing Needs
- Cost Savings
- Improved Public Safety
- Environmental Restoration

Negative Impacts

- Disruption of Services
- Environmental Impact
- Waste Generation
- Decommissioning generates waste materials such as concrete, asphalt, and
- Economic Loss
- Health and Safety Concerns

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 level	Proposed Mitigation Measures	Monitoring Indicators	Responsibility	Performance	Frequency	Estimated Cost

impact							
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)

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 emission. Use of environmentally friendly fuels such as Low	Cases of respiratory complication at nearby health centre. Records of machine and vehicle maintenance	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)
		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 (AirQuality 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. Spraying of all earthwork's areas within 200	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)
		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 Contract with NEMA Registered Waste Disposal Firm	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				
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
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 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)
		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 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	Medium	Ensure each employee signs a code of conduct that covers child protection ensuring no children	List of workers that does not contain underage persons	SEC GRC	Daily	200,000.00

Possible Impact	Impact Rating level	Management Actions	Monitoring Indicators	Target Areas and Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
Abuse		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."		Contractor		
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

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. Communicate service disruptions in advance to minimize inconvenience for residents.	Number of complaints from community due to lack of certain services	Environmental and Safety Management Manager Contractor Relevant County	Throughout Project	100,000.00

Possible Impact	Impact Rating level	Management Actions	Monitoring Indicators	Target Areas and Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
		Establish a hotline or platform for residents to report service disruptions and address concerns.		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 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	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)
		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.				
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 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.	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)
		Enforce of EMCA 2015 (AirQuality 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. 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	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)
		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 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 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)
		HIV/AIDS, promoting 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 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. Contractor to provide 24 hours’ security to Workforce	Availability of security officers on site	Environmental and Safety Management Manager Lamu County Traffic Department Officials	Daily	900,000.00

Possible Impact	Impact Rating level	Management Actions	Monitoring Indicators	Target Areas and Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
		Camps, Yards, Stores and to the Supervising Team's Offices				
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

Possible Impact	Impact Rating level	Management Actions	Monitoring Indicators	Target Areas and Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
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.	Clean, Organized, Neat Site Presence of waste collection receptacle Contract with NEMA Registered Waste Disposal Firm	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)
		Monitor waste generation and disposal practices to ensure compliance with the waste management plan. Practice waste recycling, re use and reduction of waste generation				
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
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,	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)
		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 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	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)
		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."				
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

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 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	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)
		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 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	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)
		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

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 treatment, and solid waste management	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)
		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 stakeholder engagement plan. Engage stakeholders throughout the project phase as guided by the	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)
		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

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 accessible GRM to all	Awareness trainings conducted Grievance complaints documentation Availability of a GRM and	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)
		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.	SEC 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 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	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)
		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 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.	SEC, GRC, KISIP	Monthly	200,000.00
Light and Visual discomfort	Medium High	Properly design and angle light fixtures to minimize glare. Consider installing light shields or diffusers		SEC, GRC, KISIP	Throughout Project	No additional cost

Possible Impact,	Impact Rating Level	Management Actions	Monitoring Indicators	Responsibilities	Monitoring Frequency	Estimated Budget(KShs)
		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.				
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

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	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

Possible Impact	Impact Level	Management Actions	Monitoring Indicators	Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
		commuters. Schedule decommissioning activities during off-peak hours to reduce impact on traffic flow.				
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 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 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	Environmental Management Team/Consultant, KISIP	Throughout Decommissioning	300,000.00

Possible Impact	Impact Level	Management Actions	Monitoring Indicators	Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
			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. 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

Possible Impact	Impact Level	Management Actions	Monitoring Indicators	Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
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. 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.	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)
		Communicate potential risks to the public 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

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 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	Service disruption metrics and traffic flow management. Compliance with environmental regulations and effectiveness of restoration efforts.	KISIP,SEC,GRC	Throughout Decommissioning	100,000.00

Possible Impact	Impact Level	Management Actions	Monitoring Indicators	Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
		mitigate financial losses. Develop alternative economic opportunities or infrastructure projects to offset any negative economic impacts.	Quantity of recycled 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 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

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 Wiyoni settlement project, 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.

Conclusions

In conclusion, the Wiyoni Settlement project presents a transformative endeavour that holds the promise of significantly improving the quality of life for its residents. The planned construction of roads, drainage systems, solid waste management and street lighting infrastructures is poised to bring about positive changes in settlement livelihoods, community connectivity, and overall safety.

Acknowledging the positive outcomes, it is imperative to address potential challenges associated with the construction phase. The resettlement and demolition of structures, coupled with the risk of heightened noise and air pollution, may pose temporary inconveniences for the local population. Additionally, disruptions to daily activities and businesses, along with potential flooding and social issues, underscore the need for vigilant supervision and comprehensive planning during the project's implementation.

The subsequent assessment, as recommended, should be conducted based on both the World Bank's Operational Policy 4.01 Environmental Assessment and the Government of Kenya regulations under the Legal Notice 31 and 32 of Environmental Impact Assessment and Audit Regulations amended in 2019. This dual approach is essential, given the project's funding from both the World Bank and the Government of Kenya under counter-part funding, ensuring alignment with international and national environmental assessment standards.

Recommendations

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 Wiyoni settlement currently suffers from inadequate walkway roads, very poor drainage system and lighting infrastructure because existing systems are not in proper functioning conditions and insufficient. Therefore, the proposed development of infrastructure at the Wiyoni settlement will significantly alleviate most of the challenges faced by residents in the area.

1 INTRODUCTION

1.1 Background Information

The current project, known as Second Kenya Informal Settlement Improvement Project (KISIP 2) follows the successes realized from First Kenya Informal Settlement Improvement Project (KISIP 1), which was conceived in 2003. Lamu County was among the recommended counties for the second phase of the informal settlement upgrade. Wiyoni settlement of Lamu West Constituency in Lamu County is among the identified areas for the KISIP 2 programme. The primary target infrastructures for Wiyoni settlement upgrade project included;

- Walkways/footpaths
- Drainage system
- High-masts security light installation.

The responsible body for the implementation of the project, hereby referred to as the proponent is the State Department of Housing and Urban Development (SDFH&UD).

The proposed project is the comprehensive upgrade of Walkways roads in Wiyoni Settlement from Marram road to heavy duty concrete blocks, construction of storm water drainage, and the installation of high-mast lights in Wiyoni settlement, situated within the Constituency 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. Wiyoni 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.

The Ministry of Transport, Infrastructure, Housing and Urban Planning is charged with the responsibility of providing policy direction and coordinating all matters related to lands, housing and urban development in the country. The ministry is systematically strengthening and expanding its capacity and undertaking major infrastructure projects to address challenges as a way of attaining its mandate. To this end, the ministry is partnering with various development partners, which are providing funding and technical assistance for various projects. The ministry secured AFD and World Bank funding for the proposed Wiyoni informal settlement upgrade project through which it proposes to construct walkway roads, storm water drainage and high-mast lights installation.

1.2 Objectives of the Project

The Kenya informal settlements improvement project aims to upgrade various infrastructural components and the implementation of the project as a whole is inclusive of the residents of these settlements which are its direct beneficiaries, at all stages.

1.3 Objectives of the ESIA

The main objective of the Comprehensive Project Report study is to predict, assess, and analyze the possible positive and negative environmental and social impacts that are expected during the construction, operation and decommissioning phases of the project. The specific objectives are: -

- Prediction and evaluation of potential environmental impacts of the project, and propose workable mitigation measures for the significant negative impacts of the project on the environment.
- Preparation of a detailed Environmental and Social Management and Monitoring Plan (ESMMP) for the proposed project.

1.4 Terms of References (TORS)

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.

1.5 Justification of the ESIA

The implementation of the proposed project shall have both socio-economic and environmental impacts on the projectarea. 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.

1.6 Environmental and Social Impact and Assessment Team

Table 1:ESIA Team

Designation	Name	Responsibilities
Lead Expert	Charles Muyembe	• Supervise ESIA field Surveys and Socio economic field surveys' • Provide general guidance • Review Comprehensive Project Reports, Screening reports and Socio Economic Reports
Environmentalist	1. Alex Muriuki 2. Frederick Gaya 3. Kashim Oginga 4. Allan Kirombo 5. Michael Morse 6. Saraphina Nasimiyu	• Carrying out Field Surveys/Assessments • Drafting of Screening Reports, Socio-economic Reports and the Comprehensive Project Reports
Sociologists	Charity Gathuthi	• Conducting Socio-economic Field assessments • Drafting of socio-economic reports

1.7 ESIA Approach and 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:

- 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
- Environmental scoping that provided the key environmental issues
- Desktop studies
- Physical inspection of the area and surrounding areas
- ESIA Public participation via the use of general questionnaires, key informants' interviews, socio-economic surveys and interactive meetings
- Data analysis and
- Report preparation.

1.7.1 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 consultant did screening of the project and prepared a screening report. The screening checklist has been annexed below : Error! Reference source not found.

1.7.2 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. The ESMF has been annexed below: Error! Reference source not found..

1.7.3 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. **Labor 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.

   The resettlement policy framework checklist has been annexed below: Error! Reference source not found.

1.7.4 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.

1.7.5 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.

1.7.6 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.

1.7.7 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.

1.7.8 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. Sample questionnaires have been annexed below: Error! Reference source not found.

1.7.9 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. The sample questionnaires have been annexed below:

1.7.10 Socio-economic surveys

This was carried out by conducting a household survey within the settlement, used as a method of public participation.

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,

1.7.11 Public 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.

1.7.12 Data Analysis, Reporting and Documentation

Data was quantitatively and qualitatively analysed 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

Wiyoni Settlement lies at 2°15'25"S 40°53'46"E. The settlement is located in Mkomani ward, Amu Division, Lamu West constituency of Lamu County as illustrated in the KISIP II settlements Google Image below.

The settlement has an area of about 172.5 Ha and with a population of approximately 8401 people.

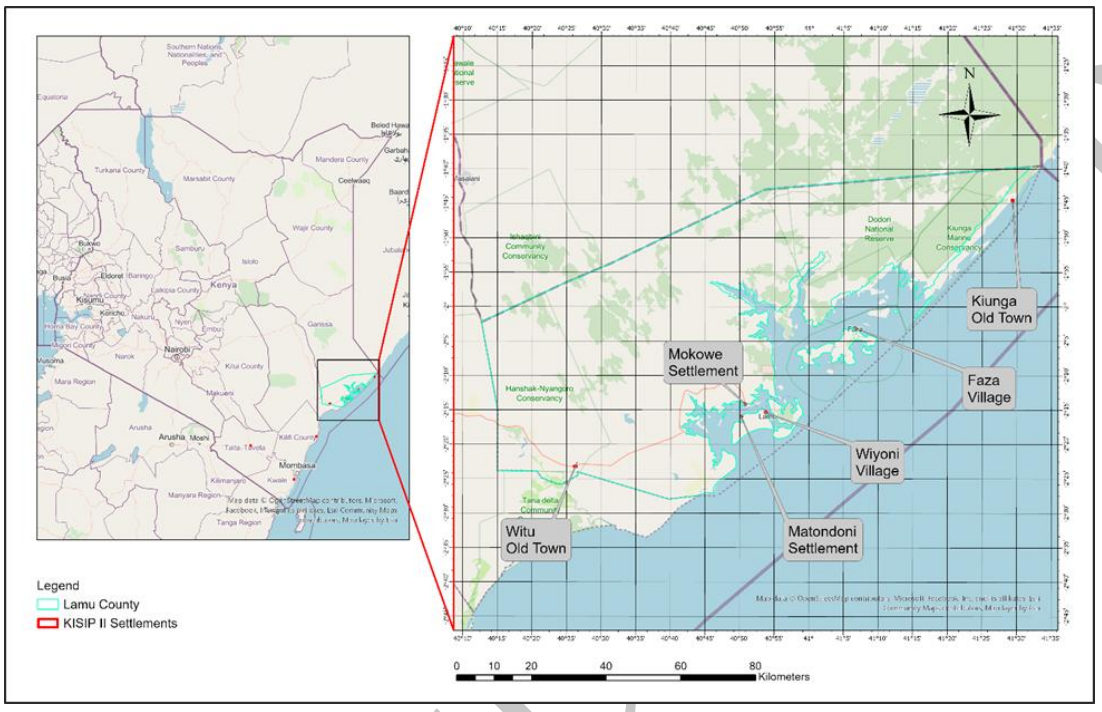


Figure 1:Lamu settlement Google map location

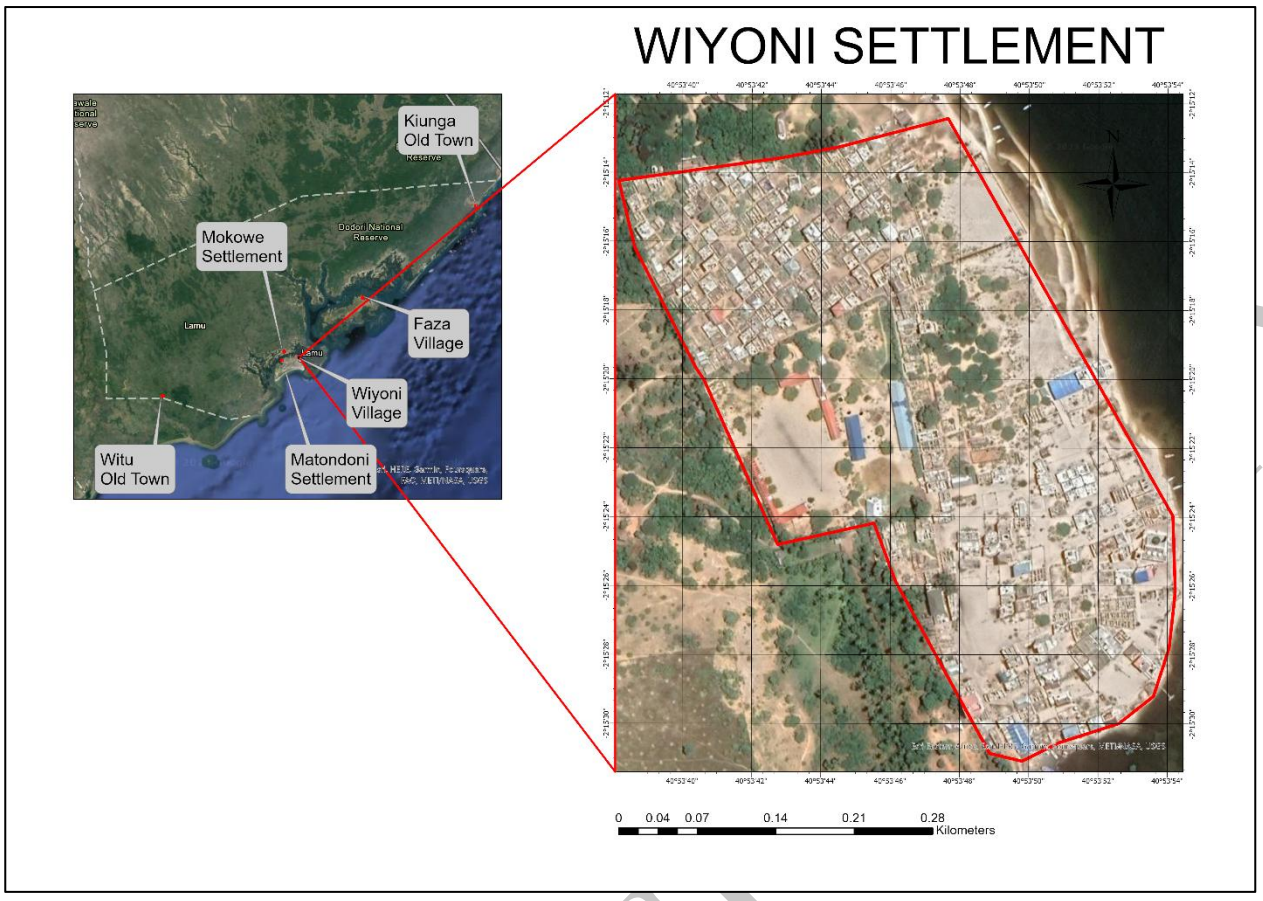


Figure 2:Wiyoni settlement

The project's geographical scope extends from Wiyoni Primary School to Maziarani along the Indian Ocean Coastline, covering an approximate distance of 1013 meters. Also, there are other 7No feeder roads, joining the island to the ocean. The existing Walkways roads, 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. 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 when most of the fishermen operate. 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.

2.2 Project description

The proposed project encompasses the stretch from the Wiyoni sea front through within the settlement covering a total distance of 1150 meters. The proposed four footpath development will have an overhaul approach to concrete surfacing famously known as (Cabro). The comprehensive overhaul is necessary to accommodate increased traffic, enhance safety, and support the growing economic activities in the town. The storm water drainage system is integral to managing potential flood issues witnessed during rainy seasons with destruction of livelihoods and interference to normal way of living. This shall ensure that the flood disaster is adequately managed and that the upgraded road system is resilience to adverse weather conditions and minimizing environmental impacts

The installation of high-mast lights is a key component aimed at addressing insufficient street lighting. This initiative contributes to increased safety for pedestrians especially fishermen and motorists, particularly during night-time.

Solid waste management system is a vital proposal to the settlement as there are no solid waste collection and disposal systems by the county government or private sector, this poses a risk to public health and environmental degradation. The proposal on waste management system is vital in curbing the menace.

Proposed scope of works

Table 2:Summary of works

Proposed Projects	Description			
	No of Footpaths	Widths	Total lengths	Nature of upgrade
1. Footpath	4	2m and 3m	1013m	Upgraded to concrete block pavers surfacing of 60mm
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			

2.3 Footpath and Drainage System

Table 3: Footpath and Drainage System

Road Number	Drawing Reference Name	Road Length (Metres)	Width (m)
FOOTPATH 1	**KISIP 2/LAMU/PP/WIYONI FOOTPATH 01**	**552**	**3**
FOOTPATH 2	**KISIP 2/LAMU/PP/WIYONI FOOTPATH 02**	**78**	**2**
FOOTPATH 3	**KISIP 2/LAMU/PP/WIYONI FOOTPATH 03**	**164**	**2**
FOOTPATH 4	**KISIP 2/LAMU/PP/WIYONI FOOTPATH 04**	**219**	**2**
	Total	**1013**	

The **Footpaths/Walkway works** shall comprise

- 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

Cost estimates

Table 4:Cost estimates

S/N	DESCRIPTION	AMOUNT
	WIYONI FOOTPATHS	
1	SITE CLEARANCE AND TOPSOIL STRIPPING	627,059.10
2	EARTHWORKS	8,176,158.45
3	CULVERT & DRAINAGE WORKS	10,621,640.51
4	PASSAGE OF TRAFFIC	1,398,509.08
5	NATURAL MATERIAL FOR SUBBASE AND BASE	2,451,103.20
6	WEARING COURSE	8,192,409.60
7	ROAD FURNITURE	9,003,229.97
	SUB - TOTAL 1	***40,470,109.91***

2.3.1 Design Standards

The proposed roads in the identified settlements 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.

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

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 5: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 6: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

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 7: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.

Pavement design

The major factor in pavement design is the cumulative number of equivalent standard axles in the design period and nature of the subgrade. Equivalent standard axle imposes a load of 80KN. This preliminary design has adopted traffic class T5 for all the settlements, where the cumulative number of standard axles ranges between 0.25million – 1 million.

The table below summarizes the material characteristics of the proposed pavement structures:

Table 2- 8: Characteristics of the proposed pavement for bitumen standard road

Pavement layer	Class / Type	Material characteristic
Subgrade class	S2 -S3	Natural earth
Traffic class	T5 – Daily number of standard axles estimated at 25 – 100 and taking into account a constant rate of 7.5% over a design period of 10 years	N/A
Surfacing	35 mm type II AC 80mm Concrete Interlocking blocks 60mm Concrete Interlocking blocks	Aggregate requirements for Type II AC - LAA Max 30 - ACV Max 25 - SSS Max Max 12 - FI Max 20 - Aggregate size 0/14mm For Roads, Concrete interlocking blocks to be 80mm thick with a minimum compressive strength of 49N/mm² For Footpaths, Concrete interlocking blocks to be 60mm thick with a minimum compressive strength of 35N/mm²
Sub-Base and base	150mm Cement improved Gravel Base 200mm Natural Gravel Subbase For footpaths, 100mm Natural gravel base, and 150mm Natural gravel subbase	Sub base/ Base will consist of natural gravel material with the following properties: - CBR of at least 30% at 95% MDD - PI not exceeding 15 - Maximum size of particle 80mm - Plasticity Modulus Max 250

Drainage

Design flows for a return period of 25 years will be considered.

Minor Drainage Structures

The minor drainage structures will consist of pipe culverts, lined and unlined open drains. These will be provided for storm water drainage along the road that arises out of rainfall falling on the road surface and neighbouring areas.

The flood flows for the minor drainage structures will be calculated by applying Modified Rational Method formula:

$Q = 0.278CiA$ m^3/s

Where:

Q= Expected flow (m^3/s),

C= Run – off coefficient,

I= Average rainfall intensity (mm/h),

A = Area of road drained (km^2)

Hydraulic Design of Culverts/Bridges

The capacity of culverts will be derived from the principle of 'critical flow' in an open channel. The depth of water upstream of the culvert will be limited to the height of box culverts or the diameter of pipe culverts, to minimize the risk of over-topping of the road. For critical flow conditions and hence maximum discharge, the depth of water in a box culvert is taken as 2/3 H, where H is the height of the culvert and the critical velocity:

$Vc = (2/3\ g\ H)\ 1/2$ m/ sec.

Under these conditions, discharge per unit width of box culvert will be

$Q = 1.94H1.52$ m^3/sec.

The theoretical slope required to maintain critical flow will be determined from the Manning Formula:

$V = K.R2/3\ S1/2$

Where:

V=Velocity (m/sec.)

K=Roughness coefficient

R=Hydraulic radius

S=Slope

For pipe culverts, the critical depth, dc=0.6887 D

Where:

D = diameter of pipe

Critical velocity, Vc = (2g (0.3113D)) 1/2

Maximum discharge Q = 1.42D2.5 m^3/sec.

2.4 Street Lighting Works

The **Street Lighting works** shall comprise of installation of 2Nr. 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.

2.5 Estimated Budget

Table 9: Roads and Drainage

BILL No.	DESCRIPTION	AMOUNT
	WIYONI FOOTPATHS	
4.00	*SITE CLEARANCE AND TOPSOIL STRIPPING*	627,059.10
5.00	*EARTHWORKS*	8,176,158.45
8.00	*CULVERT & DRAINAGE WORKS*	10,621,640.51
9.00	*PASSAGE OF TRAFFIC*	1,398,509.08
12.00	*NATURAL MATERIAL FOR SUBBASE AND BASE*	*2,451,103.20*
16.00	*WEARING COURSE*	*8,192,409.60*
20.00	*ROAD FURNITURE*	9,003,229.97
	SUB - TOTAL 1	***40,470,109.91***

Table 10: High Mast Street lighting cost

BILL No.	DESCRIPTION	AMOUNT
2.0	FLOODLIGHTING AND OTHER SERVICES	2,992,100.00
3.0	CIVIL AND STRUCTURAL WORKS	1,133,100.00
	SUB TOTAL	**4,125,200.00**

Table 11: Environmental and Social Safeguards Cost for Witu, Wiyoni and Mokowe Settlements

BILL No.28 : ENVIRONMENTAL & SOCIAL SAFEGUARDS					
ITEM	DESCRIPTION	UNIT	QTY	RATE	AMT
28.01	Allow for a provisional sum for obtaining necessary licenses and approvals except for the ESIA for the project	Ls	1.00	500,000.00	500,000.00
28.02	Allow a provisional sum for creating awareness on E&S risks among the communities and workers	Ls	1.00	484,000.00	484,000.00
28.03	Allow for a provisional sum to undertake stakeholder engagement activities	Ls	1.00	3,240,000.00	3,240,000.00
28.04	Allow for the implementation of actions in the ESMP	Ls	1.00	5,600,000.00	5,600,000.00
28.05	Provide for rehabilitation and restoration of disturbed environments	Ls	1.00	6,120,000.00	6,120,000.00
28.06	Allow for a provisional sum for the project closure Environmental audit and submission to NEMA	Ls	1.00	715,000.00	715,000.00
Sub Total for Wiyoni					**5,553,000.00**

3 PROJECT ALTERNATIVES

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

3.1 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 Upgrade of Roads

3.2.1 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

3.2.2 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.

3.2.3 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.

3.3 Construction of Storm Water Drainage

3.3.1 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 ongoing maintenance.

3.3.2 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.

3.3.3 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.

3.4 Installation of High-Mast Lights

3.4.1 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.

3.4.2 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.

3.4.3 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.

3.5 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, solid waste collection and disposal points and installation of high-mast lights. This alternative is not feasible, given the strategic objectives of the projects in Wiyoni settlement. 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 Introduction

This section describes the project area's physical, biological and socio -economic environments. The project needs to put to consideration various environmental aspects as it shall make utility of environmental resources.

4.2 Biophysical Environmental Baseline

4.2.1 Physical Environment

Climate

Based on the Köppen-Geiger climate classification, Lamu county is said to have a climate between Tropical monsoon and Arid steppe hot climate. It is characterized by long and short rains with long rains, approximately 1100mm starting from late March and early June with May being the wettest month. Short rains, less than 500mm come between November and December decreasing to a minimum towards January and February and the period between January to March is usually the driest.

The coastal zone experiences mean annual temperatures ranging from 24^0C to 30^0C and mean annual minimum and maximum temperatures ranging from 24^0 to 34^0 C. The hottest months are January and March which is a dry season and the coolest season is between May and July. The mean relative humidity in the County is 75%. The total amount of evapo-transpiration is 2,230m per annum, with the highest values occurring in March and September and the lowest in May. The amount of precipitation during the months of May to July is high since it is the rainy season while lowest precipitation values are recorded between the months of January to February. The highest rainfall is recorded around the immediate area surrounding Wiyoni, and the western side of Lamu Island.

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.

Sunshine

In Lamu, there are on average 8.5 hours of sunshine per day. So, the sun shines 68% of the time. The month with the most daily hours of sunshine is March with an average of 8.3hours of sunshine. The month with the fewest daily hours of sunshine in Lamu is May with an average of 6.8 hours of sunshine a day. Around 2930 hours of sunshine are counted in Lamu throughout the year.

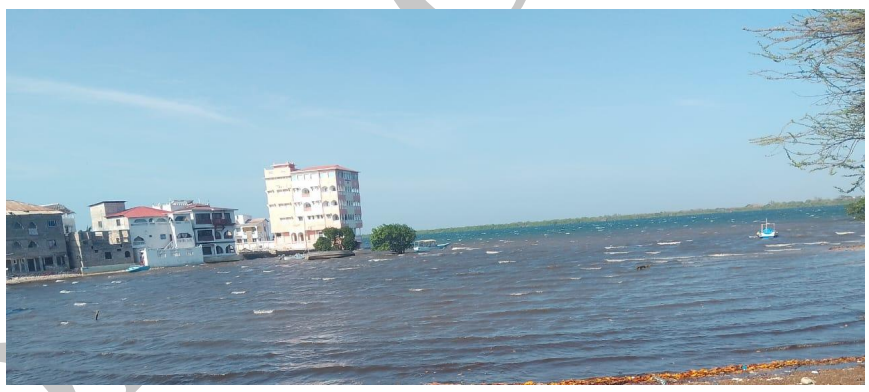


Figure 3:Proximity to the Indian ocean impacts the climate of Wiyoni settlement

Topography

The settlement is located 1km west of Lamu town and North West of Lamu Island. It is one of the 65 islands in Lamu archipelago extending from the Indian Ocean. It's about 5m above sea level. About 50 % the of land is covered by ranches. The project area is normally flat with vertical elevation ranging from zero to 50m above sea level. The main topographical features include coastal island and Dudol plains, sand dunes and the Indian Ocean. The landform/topography is higher level coastal plain, consisting of mostly flat to slightly undulating (0-4%) relief.

Geology
The terrain is made up of spontaneous geological depressions which are filled with water at times during rainy seasons and periods of high tides. Sections with such depressions have been given special attention during design and will continue during construction and future maintenance.

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

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 animals (donkeys), wheelbarrows, carts and motor bikes traversing the area.
In addition, grazing animals especially such as goats 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.

4.2.2 Biological Environment

Vegetation and Flora
Forests: Lamu County is home to several forests. However, the project site only has few scattered vegetation and planted trees but no well-mapped forest areas.

Grasslands: There are no grasslands except for a few scattered thickets in some areas of the project area.

Figure 4:Project site showing typical vegetation cover

Wetlands: There are no wetlands at the project sites as the area is predominantly covered by loose sands.

Agricultural crops: There are no significant agricultural crops grown in the project area.

Fauna
There are no significant animals in the project area apart from a few domesticated goats and donkeys used for transportation. A few people domesticate hens, and a very bird species could be sported in the project area towards the ocean.

4.3 Socio-economic baseline

4.3.1 Physical Environment Administrative Structure

Administration

The county has two constituencies, namely Lamu West and Lamu East. 3 Divisions of Lamu East are Faza, Kiunga and Kizingitini while the Lamu West Divisions are Amu, Hindi, Mpeketoni and Witu. The total number of locations in the county are 23 while the sublocations number 38. The project area falls within Lamu wWest Sub County covering two Wards i.e. Hindi/Magogoni and Mokowe.

Population

According to the 2019 National Population and Housing Census, Lamu County's total population was 143,920 with an area of 6,273 Km^2 and a population density of 26 people per Km^2. The Wiyoni settlement project area has a current estimate population of 8401 people. Population data acquired from KNBS Census.

4.3.2 Demographic Profile

A total of 60 respondents participated in the survey. A significant proportion of the respondents were youths aged between 26 – 35 years accounting for 16.7% of the total population of people aged above 18 years in this community. 26.7 % had attained a post-primary level of education (8 years of schooling). All in all, 93.3% of the respondents reported that they owned a mobile phone. This is a well-connected community and communication is easy, this connectivity can be positively utilized in development initiatives *(Table 9)*.

Table 12:Social-demographic profile of the respondents

Parameter	Percentage
Age of the Respondents (years)	
26-35 years	16.7%
36-45	36.7%
46-55	23.3%
56-60	13.3%
61 and above years	10.0%
Total	100.0%
Education Level	
1. None	13.3%
2. Incomplete Primary	23.3%
3. Complete Primary	26.7%
4. Incomplete Secondary	26.7%
5. Complete Secondary	10.0%
6. Post-Secondary	100.0%
Total	
Ownership of a mobile phone	
Yes	93.3%
No	6.7%

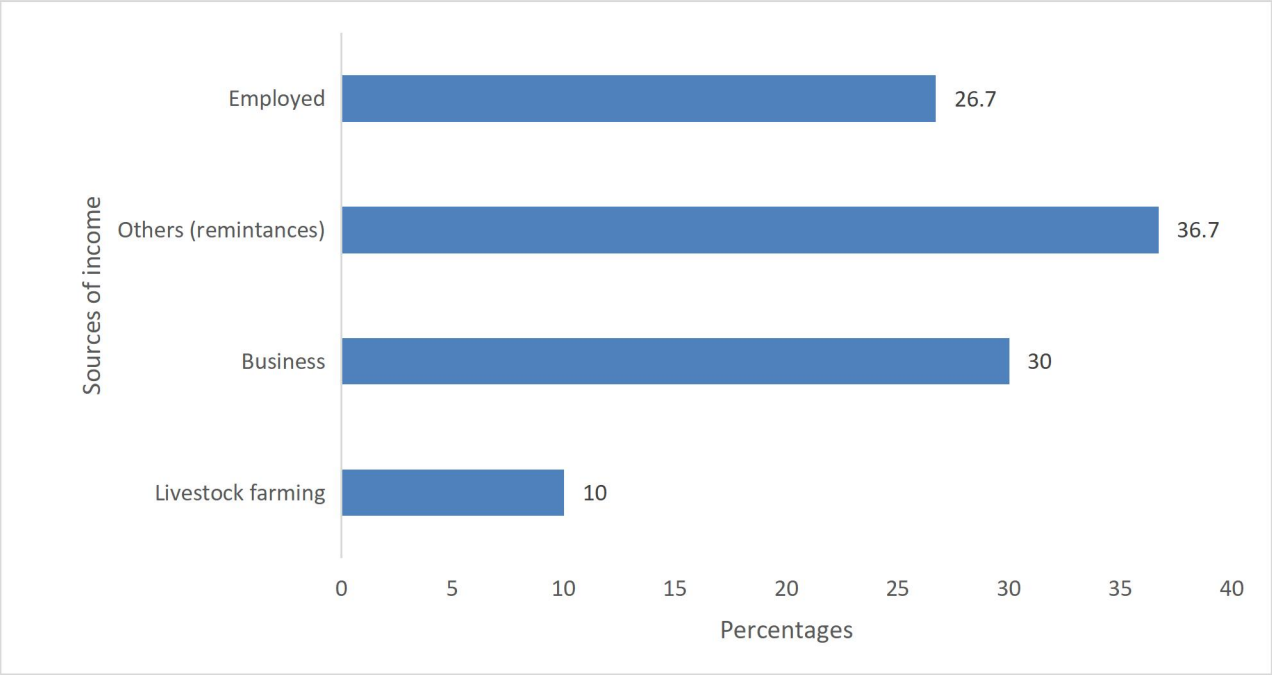
Total	100.0%

Source: Wiyaoni Settlements Survey Data, 2024

4.3.3 Sources of household income

The primary source of income includes remittances 36.7%, followed by business (30%). Employment 26.7% and farming 10%. This is profiled in *figure 5*

Figure 5:Profile of sources of household incomes

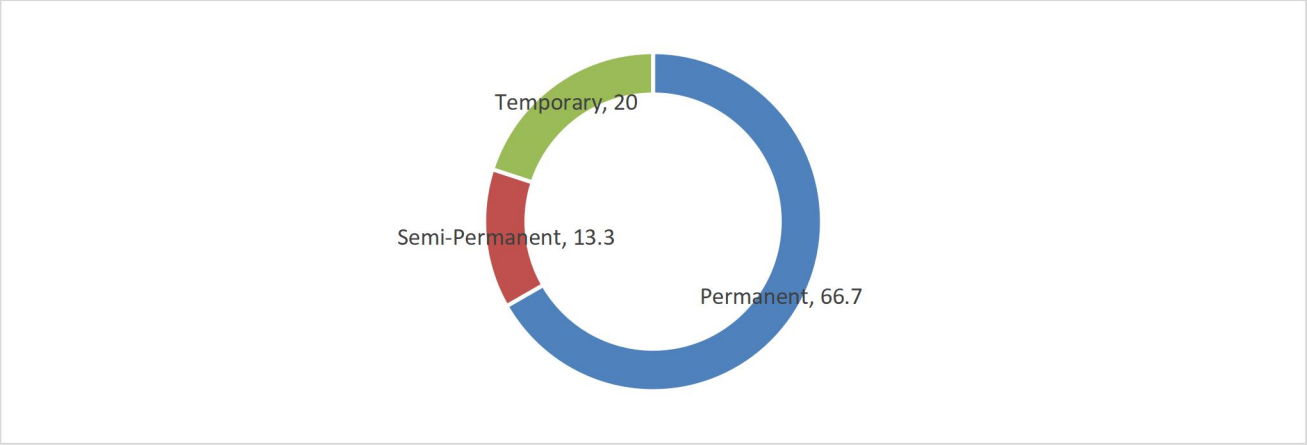


Source: Wiyoni Informal Settlements survey data, 2024.

4.3.4 Type of House Structure

Most residents,66.7% live in permanent house structures (i.e. cemented floor; stone wall; and iron sheet roof); while 20% lived in temporary makeshift structures and 13.3% in semi-permanent *(figure 6).*

Figure 6:Types of house structure



Source: Wiyoni Informal Settlements survey data, 2024.

4.3.5 Land Ownership

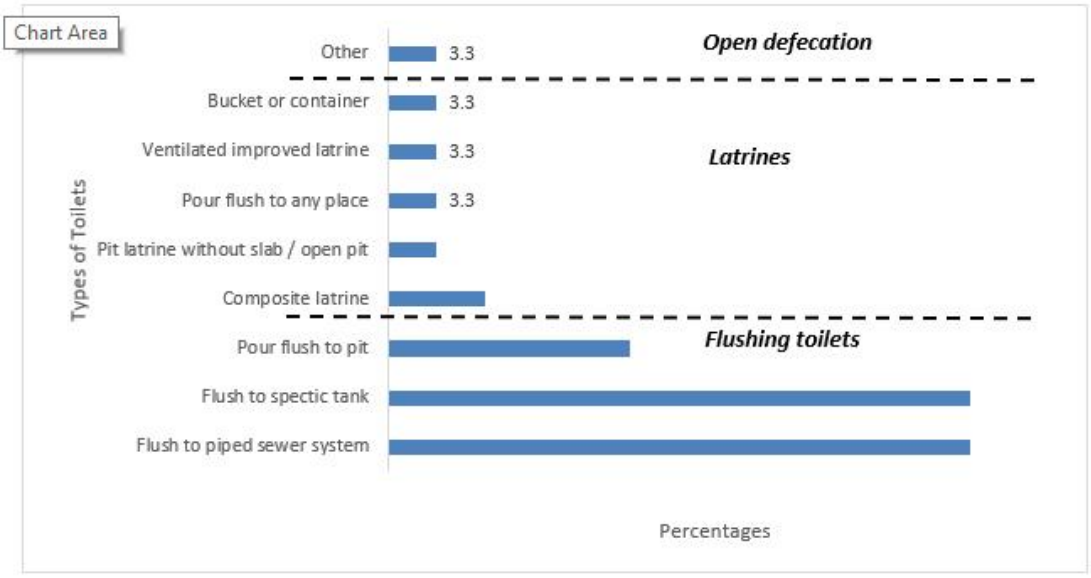
Land tenure system in Lamu County is not well defined because most of the land parcels have got no land owners with title deeds (unregistered). The project road traverses through settlement schemes such as Hindi/Magogoni Phase 1 and 2.

4.3.6 Sanitation

Types of toilets

53.3 % of the households that were visited had a toilet facility within the compound, while the 46.7 % reported using a communal toilet or nearby grounds. The survey established the presence of flushing toilets in Wiyaoni Settlement area which account for 80 % of the responses. In addition, it was observed the presence of latrines as well open defecation was still practices in certain quarters.by3.3 % *Figure 7* profiles the type of toilets in Wiyoni Settlement.

Figure 7:Types of sanitation facilities



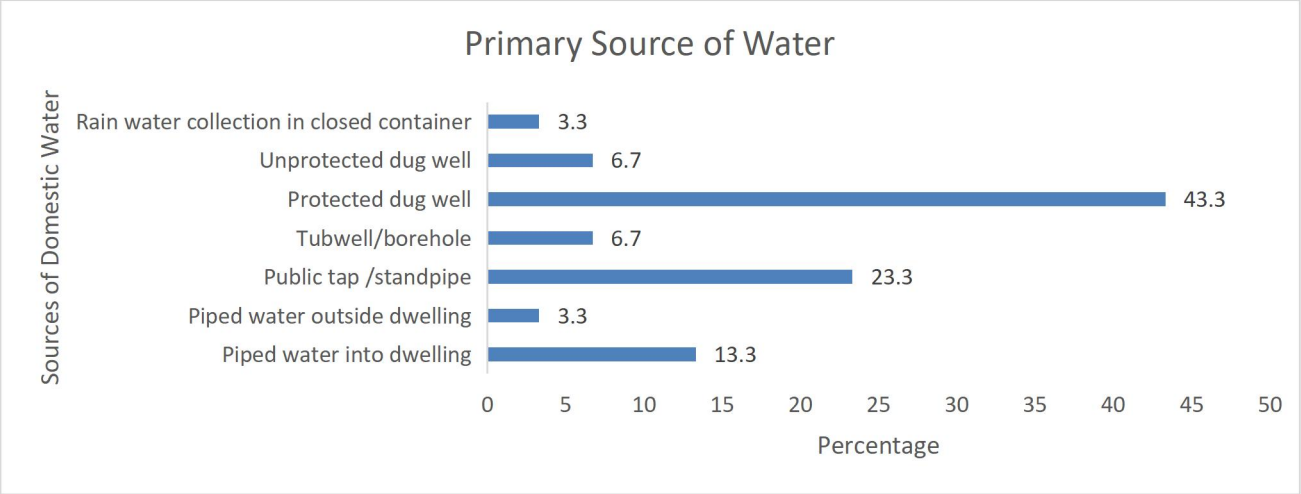
Source: Wiyoni Informal Settlements survey data, 2024.

4.3.7 Water Sources, Storage, Disposal, Quality and Reliability

Sources drinking of water

The principal source of domestic water for drinking and cooking in Wiyoni settlement is protected dug well which accounts for 43.3%, while public tap/standpipe accounted for 23.3% *(Figure 5).* Only 13.3% had water piped into their dwelling. Some of the sources are unprotected ,6.7%. This situation is far from satisfactory, this aspect of residents' life need to be given attention by providing clean treated drinking water.

Figure 8:Profile of the various sources of domestic water



Source: Wiyoni Informal Settlements survey data, 2024.

From the findings it is evident that WSPs can play an important role in the provision of water to the poor, being one of the leading secondary sources of drinking and cooking water. Thus, there is need for the WSP to ensure that it provides clean water and quality services to the residents.

4.3.8 Land use

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

Figure 9:weaved bags

4.3.9 Settlement Patterns

The Project area settlement pattern is concentrated within Lamu Township. The settlement patterns within the Project area is characterized by myriad of medium and low income residents with the areas occupied by low and medium residents depicting high population densities.

4.3.10 Source of Energy

Energy sources in the project area include biomass/ biogas, fossil fuels and electricity from the national grid. The choice of energy use depends on several factors including cost, income levels; the availability, and cultural preferences.

4.3.11 Safety in Wiyoni Settlement

Drugs and substance abuse, along with other unethical behavior, are contributing factors to the insecurity of Wiyoni settlement area. Nonetheless, the national police service collective and an interventionist approach to crime-scene resolution are used by national government administrators to manage crimes as they happen. The community members are aware of this system, which is in place. When necessary, the police make arrests, file charges, and take appropriate legal action.

4.3.12 HIV and AIDs

HIV and AIDS prevalence rate stands at 4.3per cent. AIDS related deaths are common and those mainly affected are within the productive age group of 15-49 years of age. It was also noted that the number of HIV/AIDS orphans is on the increase. Poverty is viewed as a major cause of HIV/AIDS. Poverty increases vulnerability of people with HIV, hence there is need to redirect resources towards support services to poor households. The situation is further aggravated by the fact that HIV/AIDS mostly affects people in the productive age leaving minors and the elderly people to take care of households. Progressive gains on poverty reduction may be reversed if concerted efforts are not urgently put in place to bring the HIV/AIDS pandemic under control. Implementation of the project thus needs to create comprehensive HIV/AIDS awareness among the workers along the project area.

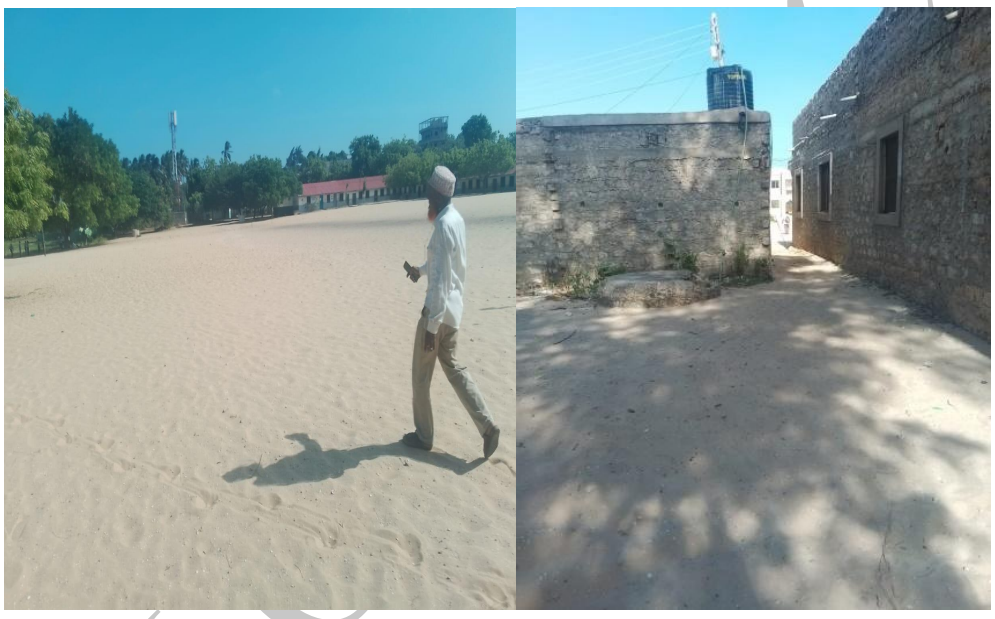


Figure 12: Current condition of walkways in Wiyoni settlement

5 POLICY, LEGAL AND INSTITUTIONAL FRAMEWORK

Based on the review of the ESMF and RPF, and results from the screening checklists, the applicable laws and regulations, policies, and KISIP 2 are as indicated below:

5.1 National Laws and Regulations

Table 13:National Laws

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	Any road upgrade project falls under the purview of this

Law/Regulation	Objective	Application
	manage, develop, rehabilitate and maintain all road projects	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 roads by motorists, among others.	Essential to ensure that traffic flow is 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.
5.1.1 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

Law/Regulation	Objective	Application
		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 country.	Overall, the Constitution of Kenya 2010 has a broad application across various sectors and aspects of governance, providing a foundation for building a just, democratic, and inclusive society.

5.2 County Laws and Regulation

Table 14:County Laws

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

Table 15:National Policies

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

Table 16:County Policies

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.

5.5 Sustainable Development Goals

Table 17: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.

Instrument	Objective	Application
SDG Goal 11	Sustainable cities and communities	The proposed project plans to improve/develop informal settlements of Wiyoni 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.

5.6 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.

5.7 World Bank Operational Safeguards

Table 18:World Bank 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	Outlines the institution's commitment to promoting sustainable development while

Instrument	Objective	Application
	preparation	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.
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.

5.8 KISIP 2 Instruments

Table 19:KISIP 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

6.1 Legal and Policy Provisions for Stakeholder Consultations

EMCA 1999 amended in (2015) through the Legal Notice No. 101: The Environmental (Impact, Audit and Strategic Assessment) Regulations, 2003, amended 2019.

The principal Act of Parliament is the Environmental Management and Coordination Act (EMCA) 1999 amended in 2015 and the subsequent Regulation, the Environmental Impact Assessment and Audit Regulations 2003

The regulation requires that during the process of conducting Scoping, Environmental Impact Assessment the Proponent shall in consultation with the Authority here in referred to National Environment Management Authority (NEMA); seek the views of persons who may be affected by the Project. In seeking the views of the public, after the approval of the scoping report, of the proposed project by the Authority, the proponent shall publicize the project and its anticipated effects and benefits by;

- Posting posters in strategic public places in the vicinity of the site of the proposed project informing the affected parties and communities of the proposed project;
- Publishing a notice on the proposed project for two successive weeks in a newspaper that has a nation-wide circulation;
- Making an announcement of the notice in both official and local languages in a radio with a nation-wide coverage for at least once a week for two consecutive weeks.
- Hold at least three public meetings with the affected parties and communities to explain the project and its effects, and to receive their oral or written comments; ensure that appropriate notices are sent out at least one week prior to the meetings and that the venue and times of the meetings are convenient for the affected communities and the other concerned parties; and
- Ensure, in consultation with the Authority that a suitably qualified co-coordinator is appointed to receive and record both oral and written comments and any translations thereof received during all public meetings for onward transmission to the Authority.

6.2 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. Incorporate the information collected in the ESIA study.
4. To sensitize the community on the project.

6.3 Methodology Used in the CPP

The Consultation and Public Participation (CPP) process is a policy requirement by the Government of Kenya and a mandatory procedure as stipulated by EMCA 1999 section 58, on EIA for the purpose of achieving the fundamental principles of sustainable development. The exercise was conducted in different ways, namely;

1. Consultative forums with key informants.
2. Field surveys and observations,
3. Administering of questionnaires.
4. Public meetings.

6.4 Notification of the Marginalized

The marginalized where notified through the Lamu County Officer from the respective ministry. The county officer communicates with the SEC Committee chairperson, who the informs the rest of his/her members. The SEC/GRC committees then inform the marginalized.

6.5 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 key informant interviews, with questionnaires, which were filled and signed as shown in

ANNEX ***2: Minutes***

MINUTES OF THE PUBLIC PARTICIPATION MEETING FOR THE KISIP 2 PROJECT IN HELD ON WIYONI 22ND 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 10AM 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)

.**Error! Reference source not found.** Consultations were done in form of key informant interviews, with questionnaires, which were filled and signed as shown in 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 meeting was held within the month of February, 2024, attendance of the meetings was from diverse sectors of the society as summarized below;

Table 20:Schedule of Public Consultation Meetings

Date	Meeting Venue	Stakeholder Consulted	Number of Meeting Attendance	Gender
22nd February 2024	Wiyoni village Wiyoni Hospital premises	County and Local Administration {Lamu West Constituency; and Public from Wiyoni, including CBO rep, teacher, public health representative.	11	Male: 7 Female: 4

6.6 Summary of issues raised in consultations during the assessment

Table 21 Wiyoni Focus Group Discussion

ISSUE	RESPONSE
Residents wanted to know what areas would be covered by the project.	EIA team informed the residents that these areas extended from Wiyoni Primary school to Maziarani covering a total of four footpaths 1013metres.
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	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

to improper waste disposal.	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 Wiyoni community are willing for the project to be rolled out and implemented immediately with less impacts to the community.

Figure 10:Consultative meeting with key stakeholders (Sub-county administrator, Imans, and public)

Figure 11:public consultation meeting

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

6.7.1 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 people as illustrated in table 4 below.

Table 22:Employment Opportunities to be provided by the Project

Description	No.
Casual Labourers	100
Skilled Staff	10
Plant Operators / Drivers	9
Managerial Staff	6

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

6.7.2 Improved Road Infrastructure, Drainage and Lighting

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 lighting of the community to improve security.

6.7.3 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.

6.8 Public Disclosure of ESIA, RAP, 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 Mosop Consituency.

This disclosure will be done early before commencement of Project Works, 60 days before Contractor's mobilization on site. In addition, PROJECT OPERATOR will ensure that the CPR 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 PROJECT OPERATOR. NEMA will require 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).

6.9 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 **table 5** below.

Table 23: 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) CPR, 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

6.10 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).

6.11 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

6.12 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

6.13 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 ENVIRONMENTAL AND SOCIAL IMPACTS ASSESSMENT 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.

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.

7.2 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.)
- Creating awareness to workers and the community on worker and project grievance redress mechanisms.

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.

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.

7.3 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

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

The following measures can be implemented to mitigate soil pollution

4. Any polluted soil should be handled with care for proper disposal.
5. Concrete mixing shall be done on concrete slabs or a large metal sheet or mortar boards.
6. Maintenance of vehicles to be done strictly at a designated place/Drip tray to be used to avoid oil spills.
7. 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 & 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 46: 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 47: 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 48: 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 49: 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.

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 50: 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 Wiyoni 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 51: 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

7.7.2 Street lighting

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 52: 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 53: 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-colored lights that are less disruptive to wildlife.

7.4.2 Anticipated Negative Impacts During Decommisioning Phase

Disruption of Services *(Low Medium)*

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

Table 54: 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 55: 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.

: 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 56: 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 57: 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.

7.5 Anticipated Negative impacts During Pre-Construction Phase

7.5.1 Roads and footpaths

Approval delays from NEMA and other Agencies *(Medium High)*

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 12: 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 *(Very High)*

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

Table 13: 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.

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 14: ***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 15: ***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

7.5.2 Drainages

Approval delays from NEMA and other Agencies *(Medium High)*

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 16: 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.

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 17: ***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 18: ***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

7.5.3 Street Lighting

Approval delays from NEMA and other Agencies *(Medium High)*

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 19: 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.

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 20: ***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 21: ***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

7.5.4 Solid Waste Management

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 22: ***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 23: ***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 Anticipated Negative Impacts during Construction

7.6.1 Roads and footpaths

Soil and Water Pollution *(Low)*

Use of construction chemicals, adhesives, sealants, additives and other construction-related chemicals could introduce contaminants into the soil, affecting its composition and quality. Additionally, accidental spills or leaks of construction chemicals, fuels, and lubricants. Dumping or improper disposal of construction debris, concrete waste, and hazardous materials on the other hand can lead to soil pollution. Improper disposal of concrete washout water which contains alkaline substances and may be contaminated with cementitious materials, can harm aquatic environments like rivers present at the project areas.

Table 24: Surface and ground 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)	**Low**	6

Proposed Mitigation measures

1. Store construction chemicals in designated areas with proper containment measures;
2. Develop a spill prevention and response plan to address accidental releases of hazardous materials;
3. Conduct soil and water sampling and testing before, during, and after construction to monitor soil quality especially at the operating sites;
4. Conduct educational programs for construction crews on proper soil management practices and the importance of preventing soil pollution;
5. Use designated areas for concrete washout, and provide proper containment and disposal methods. Consider using environmentally friendly concrete additives.

The following measures can be implemented to mitigate soil compaction

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

The following measures can be implemented to mitigate soil pollution

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

Air Pollution *(Very High)*

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 25: 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

4. 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.
5. 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.
6. 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 26: 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

3. Contractor and Supervision Team to liaise regularly with the Local Administration and Police Service to address any security and crime arising during project implementation.
4. 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 27: 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 their safety 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 28: 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

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 29: 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 30: 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.

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 31: 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 32: 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 33: 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 34: 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 35: 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.

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 36: 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

7.6.2 Drainages

Soil and Water Pollution *(Low)*

Use of construction chemicals, adhesives, sealants, additives and other construction-related chemicals could introduce contaminants into the soil, affecting its composition and quality. Additionally, accidental spills or leaks of construction chemicals, fuels, and lubricants. Dumping or improper disposal of construction debris, concrete waste, and hazardous materials on the other hand can lead to soil pollution. Improper disposal of concrete washout water which contains alkaline substances and may be contaminated with cementitious materials, can harm aquatic environments like rivers present at the project areas.

Table 37: Surface and ground 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	**Low**	6

(Consequence × likelihood)		

Proposed Mitigation measures

6. Store construction chemicals in designated areas with proper containment measures;
7. Develop a spill prevention and response plan to address accidental releases of hazardous materials;
8. Conduct soil and water sampling and testing before, during, and after construction to monitor soil quality especially at the operating sites;
9. Conduct educational programs for construction crews on proper soil management practices and the importance of preventing soil pollution;
10. Use designated areas for concrete washout, and provide proper containment and disposal methods. Consider using environmentally friendly concrete additives.

The following measures can be implemented to mitigate soil compaction

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

The following measures can be implemented to mitigate soil pollution

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

Air Pollution *(Very High)*

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 38: 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

7. 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.
8. 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.
9. 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 39: 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

5. Contractor and Supervision Team to liaise regularly with the Local Administration and Police Service to address any security and crime arising during project implementation.
6. 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 40: 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 their safety 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 41: 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

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 42: 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.

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 43: 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 45: 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 46: 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 47: 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 48: 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

7. Contractor will comply with provisions of EMCA 1999 and amendments 2015 (Noise and Excessive Vibrations Regulations of 2009)
8. 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.
9. 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.
10. Undertake Noise and Excessive Vibration Assessments.
11. Effective use of appropriate PPE by exposed workers and Proper maintenance of machines.
12. Any complaints received by the Contractor regarding noise will be recorded and communicated to the Supervising Engineer for appropriate action.

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 49: 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

7.6.3 Street Lighting

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 40: 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 their safety 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 41: 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

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 42: 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.

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 43: 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 45: 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 46: 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 47: 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.

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 49: 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

7.6.4 Solid waste Management

Soil and Water Pollution *(Low)*

Use of construction chemicals, adhesives, sealants, additives and other construction-related chemicals could introduce contaminants into the soil, affecting its composition and quality. Additionally, accidental spills or leaks of construction chemicals, fuels, and lubricants. Dumping or improper disposal of construction debris, concrete waste, and hazardous materials on the other hand can lead to soil pollution. Improper disposal of concrete washout water which contains alkaline substances and may be contaminated with cementitious materials, can harm aquatic environments like rivers present at the project areas.

Table 37: Surface and ground 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)	**Low**	6

Proposed Mitigation measures

1. Store construction chemicals in designated areas with proper containment measures;
2. Develop a spill prevention and response plan to address accidental releases of hazardous materials;
3. Conduct soil and water sampling and testing before, during, and after construction to monitor soil quality especially at the operating sites;
4. Conduct educational programs for construction crews on proper soil management practices and the importance of preventing soil pollution;
5. Use designated areas for concrete washout, and provide proper containment and disposal methods. Consider using environmentally friendly concrete additives.

The following measures can be implemented to mitigate soil pollution

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

Air Pollution *(Very High)*

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 38: 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.

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 40: 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 their safety 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.

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 42: 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.

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 43: 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 45: 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 46: 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 47: 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.

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 49: 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

4. Develop and implement a plan to manage the risk of SEA/SH.
5. Map the GBV referral pathways and create awareness among women and men on the risk of SEA/SH.
6. 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;

7. Constitute a Local Grievances Committee in consultation with all community segments and incorporate the existing local dispute resolution mechanisms.
8. Implement a workers' grievances mechanism.
9. Create awareness on the culturally appropriate and accessible GRM to all community segments including vulnerable individuals and households and CSOs.
10. Log, date, process, resolve, and close-out all reported grievances in a timely manner.
11. Ensure proportionate representation of disadvantaged persons in the local grievances committee.
12. 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;

6. Share project information widely and in a timely manner through diverse, feasible and accessible channels of communication e.g., public forums.
7. Introduce measures for affirmative action that would ensure especially persons with disability, the elderly and women have access to job opportunities.
8. Undertake recruitment transparently, while ensuring the inclusion of disadvantaged groups.
9. Develop and implementation of a stakeholder engagement plan.
10. 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:

9. A programmable timer shall control exterior lights.
10. Generator should be provided as a full backup energy source throughout the development.
11. Install and routine maintenance of energy efficient appliances e.g. LED bulbs etc.
12. Monitor energy use during construction and set reasonable limit.
13. Put off all lights immediately when not in use or are not needed.
14. The water booster set will contain inverter pumps for energy saving and precise control of flow and pressure rate.
15. Turn off machinery and equipment when not in use.
16. 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

7. Properly design and angle light fixtures to minimize glare.
8. Consider installing light shields or diffusers to control light direction.
9. Seek aviation lighting design principles
10. Use shielded fixtures and directional lighting to minimize light spillage.
11. Implement curfew times for non-essential lighting.
12. 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 Wiyoni 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

3. Conduct detailed hydrological studies to understand natural drainage patterns.
4. 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

3. Install motion sensors or timers to reduce lighting intensity during periods of low activity.
4. 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

5. Develop and implement a plan to manage the risk of SEA/SH.
6. Map the GBV referral pathways and create awareness among women and men on the risk of SEA/SH.
7. 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 Wiyoni 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

7.7.2 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

8. Develop and implement a plan to manage the risk of SEA/SH.
9. Map the GBV referral pathways and create awareness among women and men on the risk of SEA/SH.
10. 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 Wiyoni 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

11. Implement phased decommissioning to minimize disruption to services.
12. Provide alternative routes or transportation options for affected commuters.
13. 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

14. Conduct thorough environmental impact assessments prior to decommissioning.
15. Implement erosion and sediment control measures to prevent soil erosion and water pollution.
16. 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

17. Implement recycling and reuse programs for materials like concrete and asphalt.
18. Properly dispose of hazardous materials in accordance with regulations.
19. 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

4. Provide support and incentives for local businesses affected by decommissioning.
5. Offer compensation or assistance programs to mitigate financial losses.
6. 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

4. Enforce strict safety regulations and provide adequate training for workers.
5. Implement dust and noise control measures to minimize pollution and disturbance to nearby residents.
6. 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

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

4. Conduct thorough environmental impact assessments prior to decommissioning.
5. Implement erosion and sediment control measures to prevent soil erosion and water pollution.
6. 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

7. Implement recycling and reuse programs for materials like concrete and asphalt.
8. Properly dispose of hazardous materials in accordance with regulations.
9. 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

10. Provide support and incentives for local businesses affected by decommissioning.
11. Offer compensation or assistance programs to mitigate financial losses.
12. 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

13. Enforce strict safety regulations and provide adequate training for workers.
14. Implement dust and noise control measures to minimize pollution and disturbance to nearby residents.
15. 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

20. Implement phased decommissioning to minimize disruption to services.
21. Provide alternative routes or transportation options for affected commuters.
22. 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.

8 ENVIRONMENTAL AND SOCIAL MANAGEMENT AND MONITORING PLAN

8.1 Management Plan Principles

This project is geared towards enhancing social and economic benefits to the people living in the Project area however; the project should also observe environmental protection requirements in accordance to the established laws and regulations to ensure sustainability. To realize this goal, acceptability by a majority of the beneficiaries and minimal effects to the physical environment will require to be integrated in the project through constant consultations, evaluations and review of the design aspects throughout the project coverage. Among the factors that need to be considered in this particular project implementation will include:

- The contractor shall hire qualified community liaison officers who will be act as inter- phase between the contractor and community. The community liaison person will be responsible for implementing components of the Stakeholder engagement requirements which require continuous engagement of the community.
- Enhance integration of environmental, social and economic functions in the project implementation.
- Consider preventive measures towards possible social and economic disruptions that may arise from the project implementation in accordance with the laid down guidelines.
- The contractors and other players in the project activities be prevailed upon to implement the ESMP through a sustained supervision and continuous consultations.

8.2 Specific Management Issues

Management Responsibilities

In order to implement the management plan, it is recommended that a supervisor is identified to oversee environment and management aspects during construction of the project. The supervisor would also be expected to co-ordinate and monitor environmental management during construction and provide monitoring schedules during operations.

The contractor shall be required to submit, under due consideration of the ESMMP as part of the CPR the below listed management plans.

- Occupational health and safety plan
- Traffic management plan
- Public health and safety management plan
- The provisions for the worker's grievance mechanism
- Environmental and social monitoring plan (with further detail to the outline of monitoring indicators as presented in the ESMMP) below.

8.3 Environmental Management Guidelines

Upon completion and commissioning the priority projects, it will be necessary to establish appropriate operational guidelines on environmental conservation and social linkages to enable the operations' management identify critical environmental and social issues and institute appropriate actions towards minimizing associated conflicts.

Basically, the guidelines should cover among other areas environmental management programmes standard operation procedures, compliance monitoring schedule and environmental audit schedules as required by law. Social harmony of the facilities and associated component will be achieved through collaborations with the stakeholders at the project level.

8.4 Environmental Education and Awareness Rising

The county government field staff and the other beneficiaries will need to understand the basic environmental principles associated with the projects. In this regard, therefore, the following steps will need to be considered:

- Creation of liaisons on all matters related to environment management of the facilities once commissioned.
- Encourage contribution of improvement ideas from the beneficiaries on specific issues related to the management of the facilities.
- Establish initiatives that would instil a sense of ownership of the facilities and related components to all beneficiaries.

8.5 Decommissioning Process

Due to the long-term life of the intervention facilities and related components, a decommissioning audit will be undertaken at least 1 year before the process for any of the components commences, following a notice to decommission. The decommissioning process will be guided by a comprehensive decommissioning plan developed through the decommissioning audit process. However, the following features will need to be decommissioned upon completion of the works:

- Contractor's camp and installations that will need to be removed without compromising on the safety and general welfare of the immediate residents. Special care to be given to associated wastes and dust emitted in the process,
- Materials stores that will comprise fresh materials and used items. Each category will be moved safely out of site ensuring minimal or no impacts to the related environment and social setting,

Wastes and debris holding sites will be cleared with maximum re-use of the debris either on surfacing the passageways or other grounds such as schools and church compounds.

8.6 ESMMP

8.6.1 ESMMP for Preconstruction Stage

8.6.1.1 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

8.6.1.2 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

8.6.1.3 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. 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

8.6.2 ESMMP for Construction Phase

8.6.2.1 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 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.	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)
		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 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 (AirQuality Regulations 2014) Avoid carrying out dust generating activities especially during strong winds Use of covered trucks for material delivery to avoid	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)
		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. 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

Possible Impact	Impact Rating level	Management Actions	Monitoring Indicators	Target Areas and Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
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 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	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)
		with HIV/AIDS, promoting 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 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
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	Availability of security officers	Environmental and Safety Management Manager	Daily	900,000.00

Possible Impact	Impact Rating level	Management Actions	Monitoring Indicators	Target Areas and Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
		project implementation. Contractor to provide 24 hours' security to Workforce Camps, Yards, Stores and to the Supervising Team's Offices	Number of security concerns reported.	Lamu County Traffic 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

8.6.2.2 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 emission. Use of environmentally friendly fuels such as Low	Cases of respiratory complication at nearby health centre. Records of machine and vehicle maintenance	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)
		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 (AirQuality 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. Spraying of all earthwork's areas within 200 meters	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)
		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 disposal practices.	Clean, Organized, Neat Site Presence of waste collection receptacle Contract with NEMA Registered Waste Disposal Firm	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)
		Monitor waste generation and disposal practices to ensure compliance with the waste management plan. Practice waste recycling, re use and reduction of waste generation				
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
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.	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)
		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 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	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)
		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."				
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 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	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)
		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 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

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

8.6.2.3 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

Possible Impact	Impact Rating level	Management Actions	Monitoring Indicators	Target Areas and Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
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
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	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)
		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 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	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)
		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. 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	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.	Number of GBV cases reported and solved. GBV Awareness trainings	SEC GRC Contractor Lamu County Government Officials	Throughout Project	150,000.00

Possible Impact	Impact Rating level	Management Actions	Monitoring Indicators	Target Areas and Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
(SH)		Ensure the GRM is 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

8.6.3 ESMMP for Operational Phase

8.6.3.1 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. Enable the GRM to provide for	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)
		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 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	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)
		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.				

8.6.3.2 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 treatment, and solid waste management	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)
		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 stakeholder engagement plan. Engage stakeholders throughout the project phase as guided by the	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)
		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

8.6.3.3 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
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.	Awareness trainings conducted Grievance complaints documentation	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)
		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.	Availability of a GRM and SEC 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 limit. Put off all lights immediately when not in use or are not needed. The water booster set will contain inverter	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)
		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 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.	SEC, GRC, KISIP	Monthly	200,000.00
Light and Visual discomfort	Medium High	Properly design and angle light fixtures to minimize glare.		SEC, GRC, KISIP	Throughout Project	No additional cost

Possible Impact,	Impact Rating Level	Management Actions	Monitoring Indicators	Responsibilities	Monitoring Frequency	Estimated Budget(KShs)
		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.				
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

8.6.4 ESMMP for Decommissioning Phase

8.6.4.1 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	Number of services affected Duration of service disruptions. Percentage of planned	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)
		transportation options for affected commuters. Schedule decommissioning activities during off-peak hours to reduce impact on traffic flow.	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 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	Service disruption metrics and traffic flow management. Compliance with environmental regulations and effectiveness of restoration efforts.	KISIP,SEC,GRC	Throughout Decommissioning	100,000.00

Possible Impact	Impact Level	Management Actions	Monitoring Indicators	Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
		programs to mitigate financial losses. Develop alternative economic opportunities or infrastructure projects to offset any negative economic impacts.	Quantity of recycled 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 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.			

8.6.4.2 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	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

Possible Impact	Impact Level	Management Actions	Monitoring Indicators	Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
		activities.				
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. 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 pollution limits.	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.	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

8.6.4.3 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 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	Service disruption metrics and traffic flow management.	KISIP,SEC,GRC	Throughout Decommissioning	100,000.00

Possible Impact	Impact Level	Management Actions	Monitoring Indicators	Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
		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.	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.			
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 erosion and water pollution.	Completion and compliance of environmental impact assessments. Effectiveness of erosion and sediment control measures. Success of habitat restoration and native	Environmental Management Team/Consultant, KISIP	Throughout Decommissioning	300,000.00

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

9 GRIEVANCE REDRESS MECHANISM

9.1 Introduction

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 Wiyoni settlement project, 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 complaint handling system that reflects the needs, expectations and rights of complainants.

9.2 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:

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

9.3 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 28: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:

- Registration/receipt/Acknowledgment of Complaints
- Investigate and determine solution to the complaint
- Implementing the Redress Action;
- Verifying the Redress Action;
- Monitoring and Evaluation; and
- Recourse or Alternatives

Table 29: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

Step	Process	Description	Timeframe	Responsibility
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)

9.4 Worker Grievance Procedure

Contractor shall commit to enforce KISIP's comprehensive labour 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 behaviour 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 GRM Cost Estimate

Table 30: 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 Wiyoni 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 CHAPTER 9: CONCLUSION AND RECOMMENDATION

10.1 Conclusion

Through the assessment and evaluation of all potential environmental and social impacts of the proposed Wiyoni informal settlement upgrade project, it is concluded that the Project will have net ecological, economic, social and health benefits to residents of the target Project areas in Lamu West Constituency comprising its sub-locations, Lamu Township, and the environs. The Project is expected to provide adequate roads, drainage and high-masts security lighting to the area.

Project activities that are envisaged to have potential significant negative impacts at different phases of the project have been assessed in detail in this Report and appropriate Mitigation Measures proposed.

In order to mitigate the potential negative impacts and to make the Project environmentally and socially sounder, an Environmental and Social Management and Monitoring Plan (ESMMP) has been prepared. It includes the Mitigation Plan, the Monitoring and Enforcement Requirements; and the Responsible Persons/Organizations. All the recommendations/ mitigations mentioned in the assessment will be financed, and incorporated in the construction and supervision contracts.

The Main Findings from the assessment described in the Report are as follows:

1. The project design has ensured that the project is constructed within existing road reserves, therefore RAP will not be triggered.

2. The Environmental and Social Scoping undertaken for the project indicate that the investment will result in low impact on biological environment; however, the Project triggers World Bank Operation Policy (OP) 4.01 on Environmental Assessment. Provisional Budget of Kenya Shillings 800,000 is required for implementation of mitigation measures of potential negative environmental impacts identified in the report.

3. The overall objective of project is to improve the living conditions of people of Lamu West Constituency through provision of adequate and reliable walkways, drainage and high-masts security lighting for Wiyoni.

10.2 Recommendation

The project is recommended for implementation provided the mitigation measures identified in the study for the potential negative impacts are implemented by the proponent.

Storm water Drainage Construction:

Environmental Monitoring: 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.

Community Awareness: Conduct community sensitization sessions on potential dust and air quality issues. Develop and distribute information, education, and communication (IEC) materials to raise awareness.

Water Quality Management: Collaborate with local water authorities to ensure storm water drainage does not compromise water quality. Implement corrective measures promptly based on regular monitoring.

Lighting Design Guidelines: 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.

Stakeholder Engagement: Develop a stakeholder engagement plan specifically for the high-mast lights installation. Communicate project information widely and transparently.

Impact on Local Employment: Prioritize hiring locals for unskilled labour during the installation phase. Ensure fair and transparent recruitment processes.

Safety Measures: Implement safety measures during the installation of high-mast lights. Engage with the community to raise awareness and address safety concerns.

11 ANNEXES

ANNEX 1:Attendance list for a public consultation forum

ANNEX 2: Minutes

MINUTES OF THE PUBLIC PARTICIPATION MEETING FOR THE KISIP 2 PROJECT IN HELD ON WIYONI 22ND FEBRUARY 2024 AT THE CHIEF'S OFFICE.

Attendance
A full list of attendance is herewith attached.

Agenda
f) Introduction
g) Overview of the project
h) Discussions on the possible impacts of the project
i) Way forward
j) 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 10AM by the SEC chairperson after a word of prayer from one of the participants.	

Minutes prepared by;

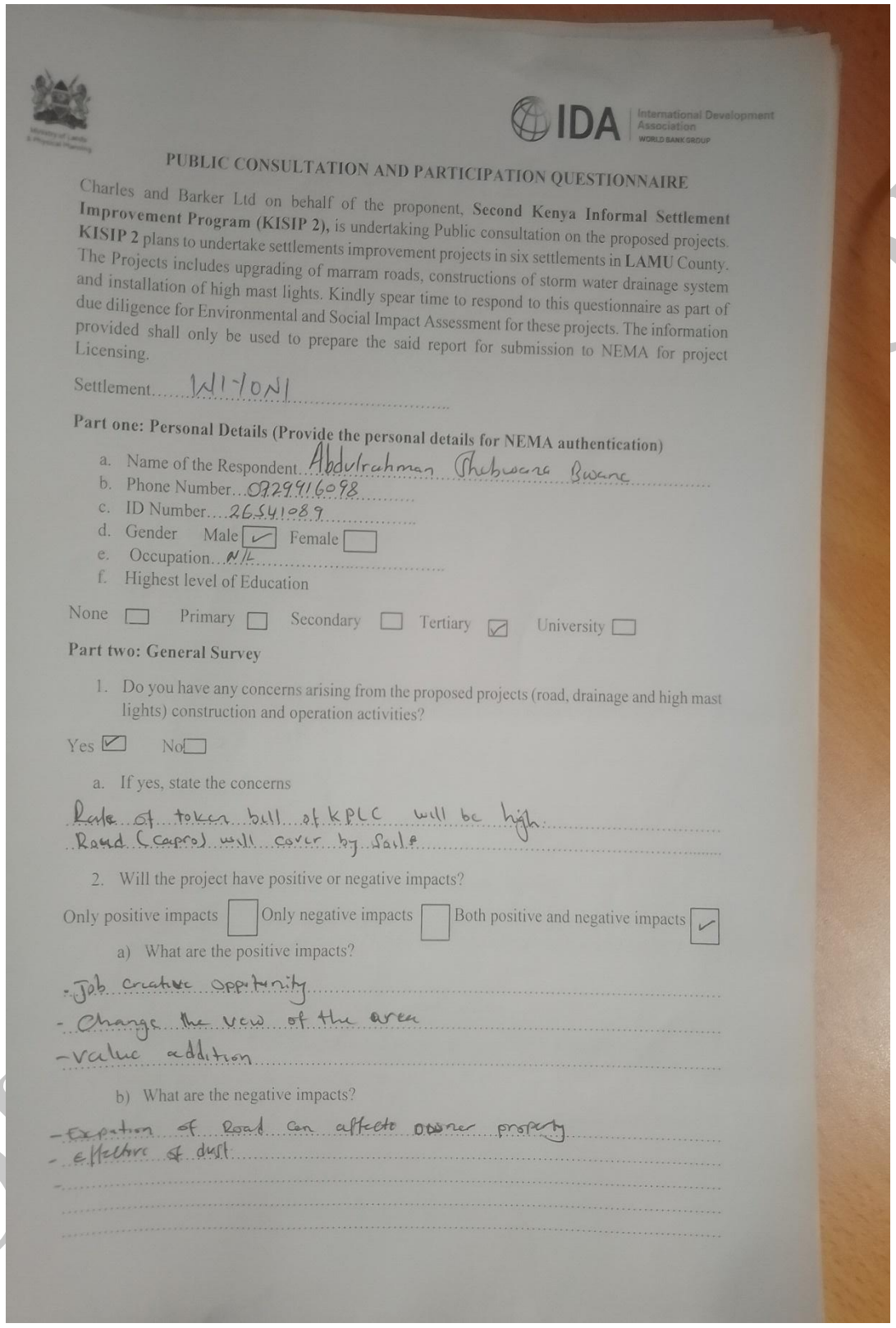
Name: Allan Kirombo

Signature:

Lead Expert;

Name: Charles Muyembe Lwanga, (NEMA 6417)

ANNEX 3:Questionnaires sample filled in



IDA International Development Association WORLD BANK GROUP

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: WITONI

Part one: Personal Details (Provide the personal details for NEMA authentication)

a. Name of the Respondent: Abdulrahman Shehwaro Bwana
b. Phone Number: 0729916098
c. ID Number: 26541089
d. Gender Male [✓] Female [ ]
e. Occupation: N/A
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

Rate of token bill of KPLC will be high.
Road (capro) will cover by sand

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?

- Job creative opportunity
- Change the view of the area
- value addition

b) What are the negative impacts?

- Expation of Road can affecte owner property
- effectore of dust

In your opinion, how can the negative impacts mentioned be mitigated?

- People of an area can wring mark
- Pop movement of the people
- Close of same of Pop of an area

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?

- Difficult to work due of sand
- Can reducing the number of jugolt

How could this be addressed?

.....

.....

What are the main concerns with storm water drainages?

No drainages System

.....

How can it be addressed?

Sto Stolen a proper drainages System

.....

b. What are the concerns with the current status of security lighting?

- Available but poor
- K.P.L.C is not Sufficely the light can through out in a proper way

c. How can it be addressed?

The Solar System will be better than K.P.L.C.

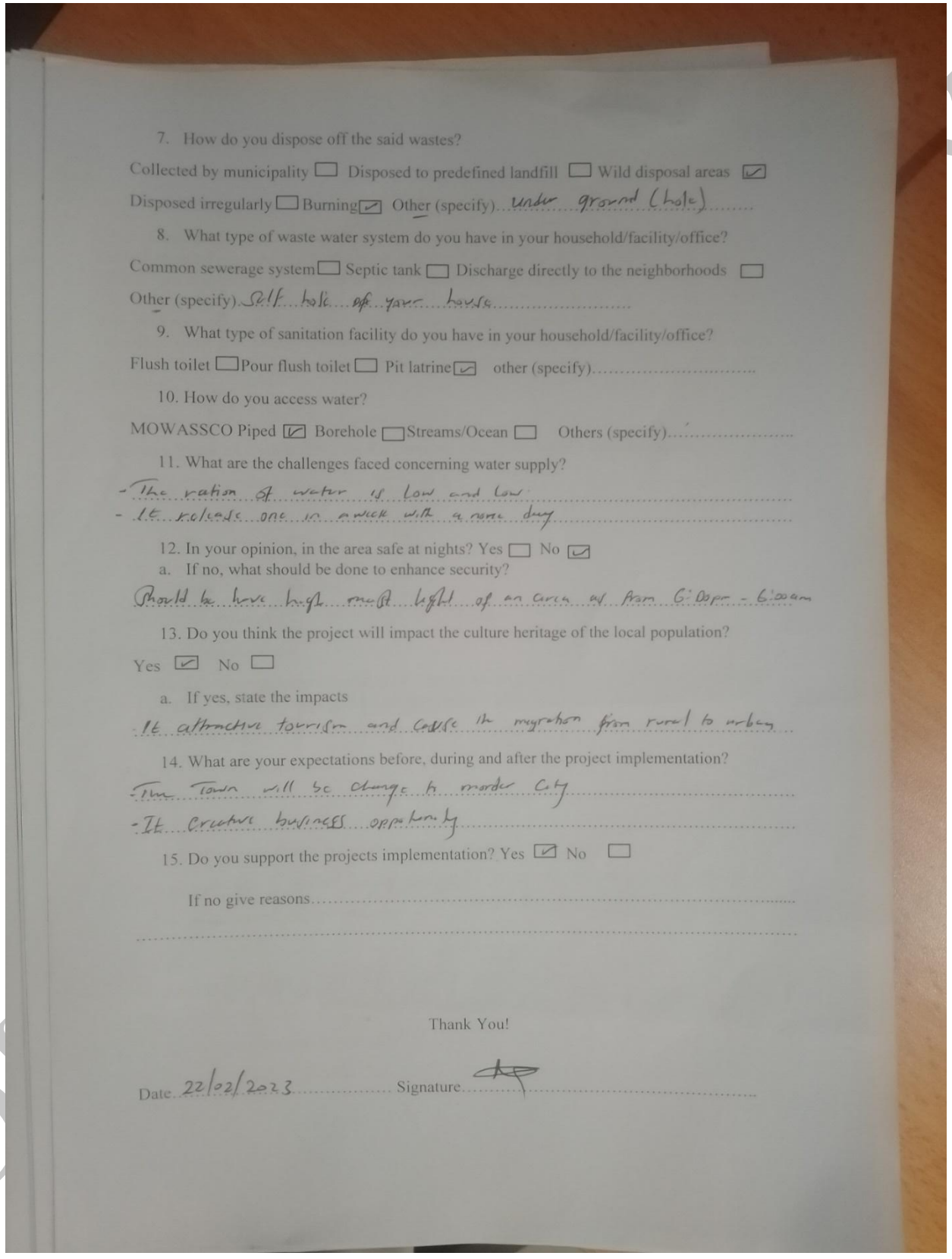
.....

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?

.....

.....



7. How do you dispose off the said wastes?

Collected by municipality ☐ Disposed to predefined landfill ☐ Wild disposal areas ☑

Disposed irregularly ☐ Burning ☑ Other (specify) under ground (hole)

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) Self hole of your house

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?

- The ration of water is low and low
- It release one in a week with a none day

12. In your opinion, in the area safe at nights? Yes ☐ No ☑

a. If no, what should be done to enhance security?

Should be have high mast light of an area at from 6:00pm - 6:00am

13. Do you think the project will impact the culture heritage of the local population?

Yes ☑ No ☐

a. If yes, state the impacts

It attractive tourism and cause the migration from rural to urban

14. What are your expectations before, during and after the project implementation?

- The Town will be change to morder city
- It creative business opportunity

15. Do you support the projects implementation? Yes ☑ No ☐

If no give reasons

Thank You!

Date 22/02/2023 Signature

ANNEX 4: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 5:Checklists

1: 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 KISIP 2 Project for Wiyoni settlement Walkway Paths, Drainage, Solid Waste, and Lighting infrastructures improvement in Lamu County within Lamu West Sub-County, Mkomani 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 subsequent assessment reports.
D. Project Location		
4. Is the proposed site a protected or reserved site (Provide proximity in kms) **5.** Biosphere Reserve **6.** National park **7.** Wildlife / Bird Sanctuary **8.** Wetland	No No No	Yes, contractor need to develop mechanism to protect the coast waters from pollution and the mangrove forest

9. Important Bird Areas **10.** Coastal area with corals **11.** Mangrove areas (or Estuary with, mangroves) **12.** Natural lakes **13.** Habitat of migratory birds (outside protected areas) **14.** Migratory Route of Wild Animals Birds **15.** Area with threatened/ rare/endangered fauna (outside protected areas) **16.** Area with threatened/rare/ endangered flora (outside protected areas) **17.** Reserved/Protected Forest **18.** Zoological Park /Botanical Garden	No No No No Yes No No No No No	
19. 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
20. 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, the settlement is located in coastline and has mangrove forest cover	Yes, Waste water disposal should be planned in advance
21. 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 project aims at improving the only existing infrastructures within the settlement that's help them in accessing the jetty and coastline. This will affect their accessibility	Yes, the project will affect the residents activities including their movement and businesses
22. 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
23. Are there any areas or features of historic or cultural importance on or around the location which could be affected by the	No	No

project?		
24. 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
25. 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	No
26. Are there any plans for future land uses on or around the location which could be affected by the project?	Currently, none	No
27. 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
28. 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
29. 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
30. Is the site already degraded (low groundwater, poor soil quality)?	No	No
31. Are there steep slopes in the proximity of the investment site?	No	No
32. Do people live on the proposed site?	No	No

33. Do indigenous peoples live on or near the site?	The settlement has several tribes. It's a cosmopolitan	No
34. 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 and water from the ocean during the high tides season	Yes, there is need to have proper drainage system installed before other improvements are made
35. Are there land title conflicts?	No, titles have been issued	No
36. Are there known archaeological, historical or other cultural property? Are any of these world heritage/ UNESCO designated etc.	No	No
E. Construction Impacts		
37. 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.)?	No	No
38. 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 marram 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
39. 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 marram and may affect the human health	Yes, contractor should prepare ESMMP to guide the operations
40. 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
41. Will the project release pollutants or any other hazardous, toxic or noxious substances to the air?	Yes, if not controlled fuels from machines to be used on site may pollute the environment	Yes, regular maintenance of equipment recommended

42. Will the project cause noise and vibration o release of light, heat energyor 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.
43. Will the project lead to risks of contamination of land or water fromreleases 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 Ocean and mangrove forest around which might be contaminated by oil spills	Yes, oil spills prevention mechanism recommended
44. 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
45. 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		
46. 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 nearby ocean	Yes, not very significance
47. Could it affect groundwater quality?	No	No
48. Could it affect quality (through sediment, wastewater, storm discharge or solid waste) of nearby surface waters (lake, rivers, streams)?	No	No
49. Will it affect water quantity in nearby water bodies (lake, river, stream)?	No	No
50. Are there nearby potable water sources that need to be protected?	No	No

G. Drainage Impacts		
51. 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 ocean	Yes, solid waste pollution to the nearby wetland should be addressed
52. Will it cause standing water, which could cause public health risks?	No, however it need to be monitored	No
53. Will erosion result in sediment discharge to nearby water bodies?	Yes, if not controlled there will be soil erosion leading to the ocean	Yes, contractor need to prepare erosion management plan
54. 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
55. Will infiltration patterns be affected?	No	No
H. Ecosystem Impacts		
56. Could the investment affect natural habitats or areas of high ecological value?	No	No
57. Could it affect natural characteristics of adjacent or nearby sites?	No	No
58. Could it affect wildlife or natural vegetation?	No	No
I. Socio-Economic Impact		
59. Will the project entail resettlement of population?	No	No
60. 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	Yes

	positively	
61. Will the project affect indigenous peoples?	No	No
62. Will it limit access to natural resources to local populations?	No	No
63. Will it have an impact on land use?	No	No
64. Will it induce further encroachment of nearby areas?	No	No
65. Will it cause any health impacts?	No	No
66. Will it disturb nearby communities during construction?	No	No
67. Could cultural resources be affected?	No	No
68. Could it affect nearby properties	No	No
J. Operation Impacts		
69. 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 to present environmental problems?	Yes, if not monitored well, the project may cause flooding as the construction site is flat and has no proper drainage system	Yes, the area is prone to flooding
70. 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		
71. Acquisition of private/community land?	No	No

72. Alienation of any type of government land including that owned by urbanlocal body?	No	No
73. Clearance of encroachment from government/ urban local body land?	No	No
74. Clearance of squatting from Government/Urban local body?	No	No
75. Number of structures, both authorized and/or unauthorized to be acquired/cleared?	None	None
76. Number of household to be displaced?	None	None
77. Details of village common properties to be alienated, Pasture land(acres)cremation /burial groundand others specify?	None	None
78. 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
79. 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
80. Are financial/in kind compensation measures expected to be needed?	No	No
L. Loss of Assets, Crops, fruit, household infrastructure and livelihood		
81. Will the project result in the permanent or temporary loss of Crops?	No	No
82. Fruit trees/coconut palms? Specify with numbers	No	No
83. Household assets/infrastructure? Specify with numbers	No	No
84. Loss of agriculture land? specify with	No	No

numbers		
M. Public and Occupational health and safety, welfare , employment and gender		
85. 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
86. Is the project being planned with sufficient attention to local povertyalleviation objectives?	Yes, the project is aimed at improving livelihood to locals	Yes, more public participation and interactions should be planned
87. Is the project being designed with sufficient local participation of womenin the planning design and implementation process?	Yes, there are extensive and all-inclusive public participation forums	Yes
88. 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 ESMMP should be prepared
89. 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
90. Will the project introduce new practices and habits?	No	No
91. Will the project lead to child delinquency (school drop-outs, childabuse, child labour, etc.?	If not monitored, the project may affect the kids schooling	No, but child labor management plan should be prepared
92. Will the project lead to gender disparity?	No, but need to be a key factor of consideration	No
93. 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		
94. Based on available sources, consultation with local Authorities, local knowledge and/ or observationcould the project alter?	None	None

95. Historical heritage site(s) or require excavation near the same?	No	No
96. Archaeological heritage site(s) or require excavation near the same?	No	No
97. Cultural heritage site(s) or require excavation near the same	No	No
98. Graves or sacred locations or require excavation near the same?	No	No
O. Result/Outcome of Environmental/ Social and Resettlement Screening Exercise		
Environment Impact Assessment Required		
Environment Impact Assessment Required	Yes. The project meets the EMCA schedule two projects and World Bank OP threshold for ESIA	
RAP category required (RAP/ARAP)	No RAP/ARAP	
P: Authorization		
Screening undertaken by: Alex Muriuki Designation Environmentalist	Signature  Date. *05/3/2024*	
Approved by Charles Muyembe Designation: LEAD ENVIRONMENTAL EXPERT	Signature  Date: *05/3/2024*	
PMU Confirmation by: ..... Designation.....	Signature..... Date.....	

Summary of features of project and its location indicating the need for a Comprehensive Project Report.

The project entails improvement through subsequent construction of Roads, Walkways path, Drainage, Waste Disposal points, and Street lighting infrastructures. Although the project will have a lot of benefits to the community like improved accessibility and security, the construction will also generate pollution in terms of noise and air, create discomfort and nuisance to locals that are likely to affect day to day business and livelihood activities, and if not well supervised may cause adverse Environmental and social vices. The project may likely affect the nearby Ocean waters and mangrove forest during waste water disposal. The CPR will be needed for this project in order to propose mitigation measures to the foreseen project impacts and develop ESMMP for the project. There is also the need to plan for implementation since the project area experiences flooding during rainy seasons.

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 Projects for Wiyoni settlement footpaths, Drainage, Solid Waste, and Lighting infrastructures improvement in Lamu County within Lamu West Sub- County,		
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	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, creation of jobs will improve livelihood and businesses within the settlement	Yes, though not very significant
14. Will the project affect indigenous peoples?	No	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?	No	No
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	No	No
31. Household assets/infrastructure? Specify with numbers	No	No
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 is needed	There is enough space for the proposed project
Any special conditions	Contractor should adhere to the construction design to avoid property destruction and boundary conflict with the residents	
P: Authorizations		
Screening undertaken by: Charity Gathuthi Designation: Sociologists	Signature..  Date....05/03/2024	
Approved by Charles Muyembe Designation: EHS Coordinator Lead Environmental Expert no 1283	Signature.....  Date....05/03/2024	
PCT Confirmation by : ..... Designation.....	Signature..... Date.....	
Summary of features of project and its location indicating No Project Affected Persons Therefore No RAP/ARAP required. However, close monitoring should be made to the contractor to ensure that constructions does not affect the nearby private structures due to the limited spaces of construction.		

ANNEX 6: 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~~ WITHOUT
Total Number of Project Affected Persons	NIL
Validated Number of PAPS	NIL

VALIDATING TEAM MEMBERS AND SIGNATURES

County representative	
Name	~~ARCH. OMAR AHMED SAGAFF~~
Function /Designation	COUNTY ARCHITECT / COORDINATOR
Signature	
Date	19/6/2024

KISIP National representative	
Name	
Function /Designation	
Signature	
Date	

Consultant Representative	Charles L. NUYEMBE
Name	
Function /Designation	Ind - ESG
Signature	
Date	19/6/2024