GOVERNMENT OF THE REPUBLIC OF KENYA

MINISTRY OF LANDS, PUBLIC WORKS, HOUSING AND URBAN DEVELOPMENT

State Department for 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 DEVELOPPEMENT

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

SITUATIONAL ANALYSIS REPORT FOR KINDUNGUNI SETTLEMENT

LIKONI SUB-COUNTY, MOMBASA COUNTY

DATE: JUNE 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 of 2003 amended 2019 of the Kenya Gazette Supplement No.56 of 13th June 2003, Legal Notice No. 101, and the World Bank OP 4.12 on involuntary settlement, 4.01 on environmental assessment, OP 4.11 on physical cultural resources, OP 4.10 on indigenous people and World Bank Safeguard Policy OP 17.50, 2001 among other World Bank policies.

This report is prepared for and on behalf of:

The Proponent

The 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 30113-00100

Nairobi - Kenya.

Designation ----------

Name ----------

Signature ----------

Date ----------

Lead Expert

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

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

Signature: ……

Designation: ESIA/AUDIT LEAD EXPERT REGISTRATION. NO 6417

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ARAP	Abbreviated Resettlement Action Plan
AFDB	African de Development Bank
AFD	Agence Francaise de Development
BoQ	Bill of Quantities
CPR	Comprehensive Project Report
DOSHS	Directorate of Occupational Health and Safety Services
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
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 Government of Kenya has received a credit from International Development Association (IDA) and Agence Française de Development (AFD) towards the cost of the Second Kenya Informal Settlements Improvement Project (KISIP 2)

KISIP 2 builds on the successes and lessons learnt of KISIP 1 and continues to support the interventions that have been successful. The overall project development objective of the KISIP 2 program is to improve access to basic services and tenure security of residents in participating urban informal settlement and strengthen institutional capacity for slum upgrading in Kenya in consultation with the community.

This Project, while concentrating on informal settlements, complements existing and past urban operations in Kenya to address the Urban infrastructure deficit and Urban institutional challenges. It supports the Governments' affordable housing agenda as it seeks to complement the demand-side and supply-side operations to improve housing affordability.

The Kidunguni Settlement Improvement Project is a strategic initiative aimed at enhancing infrastructure and amenities within the Kidunguni Settlement located within Likoni sub-county, Mombasa County, Kenya. The project encompasses road upgrades, drainage system improvements, installation of street lighting, these interventions are designed to elevate living standards, promote community development, and foster socio-economic growth in the area. The population of the settlement is approximated to be of 5,587 people.

Objectives of the ESIA

The main objective of the ESIA 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 Monitoring Plan for the proposed project.
- Preparation of a detailed Environmental and Social Management Plan (ESMP) for the proposed project.

Ministry of Transport, Infrastructure, Housing and Urban Development (MOTIH&UD) - State Department for Housing and Urban Development (SDFH&UD) (hereafter referred to as the Client) has engaged Charles Lwanga Muyembe (hereafter referred to as the Lead Consultant) to provide the Consultancy Services for Environmental and Social Impact Assessment (ESIA) Study of the Feasibility Studies, Preliminary and Detailed Designs and Preparation of Tender Documents for Kidunguni settlement Upgrade Project (hereafter referred to as the Project).

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).

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. 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.

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

Project Location and Description

Proposed infrastructure improvements include the upgrade of access roads, associated drainage structures and installation of high-mast lights. The Kindunguni Settlement, situated in Likoni Ward, Likoni Sub County, Mombasa County, is the focal point of the comprehensive infrastructure upgrade initiative. Nestled in a strategic location close to facilities such as the Likoni Ferry, situated 4km away from the settlement, connects Mombasa Island and the south mainland of Mombasa. The focal geographic coordinates of the project location are 4°05'49.2"S 39°38'40.7"E.

Scope of Works

The proposed projects for the Kidunguni Settlement encompass a comprehensive upgrade initiative that includes the construction of roads, footpaths, drainage systems, and streetlight works.

Table A- 1:Proposed project Summary description

Proposed Projects	**Description**		
	No of roads	**Width (Meters)**	**Total lengths (Meters)**
1. Roads	2	4-6	563.08
2. Drainage system	**Description**		
	Type		Total Length (Meters)

	Closed Drain	192.18	
3. Street Lighting- Installation off High Mast lighting	**Description**		
	No of High Mast lighting	**Height (Meters)**	**Luminous Radius (Coverage)(Meters)**
	3	30	150

Project Cost Estimate

1. **Roads, Footpaths, and Drainage System**

There are two roads prioritized by the project. The road improvement initiative involves six roads within the Kidunguni Settlement, each designated with a unique road number. The total length of these roads amounts to 563.08 meters. The proposed road works include the creation of carriage ways ranging from 4.0 to 6.0 meters in width. The pavement structure is designed to consist of a 300mm thick improved subgrade, compacted in two layers of 150mm to 100% Modified AASHTO T99 Maximum Dry Density (MDD). This is followed by a 200mm thick natural gravel material sub-base with a minimum CBR of 30%, a 150mm thick 2% Cement Treated Gravel Base, a 50mm sand/quarry dust layer course, and finally, an 80mm layer of heavy-duty concrete paving blocks. Additionally, the drainage system construction includes the installation of cross pipe culverts, access culverts, and shallow open drains to effectively manage storm water runoff.

Table A- 2: Proposed project Summary description

Bill No.	Description	Amount
4.00	Site Clearance and Topsoil Stripping	406,090.73
5.00	Earthworks	5,639,609.97
8.00	Culvert & Drainage Works	33,444,480.13
9.00	Passage of Traffic	1,408,319.09
12.00	Natural Material for Subbase and Base	2,520,672.00
14.00	Cement and Lime Treatment	798,622.10
15.00	Bituminous Surface Treatment	2,055,374.30
16.00	Wearing Course	4,199,358.00
20.00	Road Furniture	4,533,595.82
28.00	Environmental & Social Safeguards	21,760,000.00
	SUB - TOTAL 1	**76,766,122.14**

2. **Street Lighting Works**

The project incorporates street lighting works to enhance safety and security in the settlement. This involves the installation of 3 high mast lights, each featuring a 30-meter high steel tower. The lights come complete with a

lockable electrical control switchgear and power meter chamber, anchored on a substantial 3000mm by 3000mm concrete foundation. The radius of illumination for each high mast light spans an impressive 150 meters, contributing significantly to the overall safety and well-being of the community during nighttime.

Table A- 3: Street light summary description

Bill No.	Description	Amount
2.0	Floodlighting and other services	10,984,200.00
3.0	Civil and Structural Works	1,846,200.00
	SUB TOTAL	**12,830,400.00**

3. Sub Surface Drain

Table A- 4: Sub Surface Drain

Bill No.	Description	Amount
2.0	Kidunguni Sub Surface Drain	**44,608,222.08**
	SUB TOTAL	**44,608,222.08**

Project Activities and Processes

Projects to be Undertaken;

- Roads and Storm Water Drains
- High mast security lighting

Project Budget Summary

Table A- 4:Sub Surface Drain

Bill No.	Description	Amount
2	Roads and Drainage Works	76,766,122.14
3	High Mast Street Lighting	12,830,400.00
4	Sub Surface Drain	44,608,222.08
5	Grievance Redress Mechanism (Annual)	324,000.00
TOTAL		**134,528,744.22**

Socio-economic Baseline

The Kidunguni Settlement project, the climate of Mombasa is influenced by the semi-annual passage of the inter-tropical convergence zone (ITCZ) and the monsoons. The Northeast monsoon occurs from December to March, and the Southeast monsoon from May to October. The mean annual rainfall is 1038 mm, peaking in May and October. Average annual temperatures for the two seasons are 23.9°C and 28.5°C respectively.

The Project area has been influenced by development and is characterized by a belt of trees (coconut, indigenous, fruit), Grassland. There is presence of household trees some used for fencing and micro climate

component. There are mangrove forests occupy 1'465 ha at Tudor creek which is approximately 5km from the project site. The project area already has minimal Fauna, due to its highly urban nature, thus little vegetation may be affected by the proposed construction and rehabilitation works.

Current Situation

- **Water Infrastructure:** Many the residents have access to piped water, a small percentage access through rain water or streams while the rest did not have access to piped water.
- **Roads and Drainage:** Kidunguni settlement slopes steadily on either side to the lowlands with seasonal streams that drain runoff from the settlement. Internal access roads within the settlement are too narrow and there is encroachment with some plots not properly aligned.

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, Mombasa 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

Details of stakeholder consultations are presented in **PUBLIC PARTICIPATION** of this Report

Summary of Potential Positive Impacts

On a rating of 1-5 on its significance to the local community 1 being less significant 5 being most significant

Table A- 5:Summary of potential positive impacts

				Rating	Maximizing Measure
1	Positive	Short Term	Job Creation Increased	5	The contractor to outsource that are readily available at the project site without sabotaging the quality of work, Construction camps promoting local businesses for food and other ingredients
			Connectivity Enhanced Safety	4	Improving existing reporting mechanism in case incidents of insecurity are still there
			Flood Prevention	4	Doing a flood risk survey to assess areas prone to flood and place further mechanism for flood prevention
			Reduced Erosion	3	Creation of awareness to the public on how to further control erosion
			Increased Property Values	4	Proper development of incorruptible systems of buying and selling of land and removing the middle man in order the local can benefit Higher from sale of his/her land
			Improved Pedestrian Infrastructure	3	
			Access to Education	3	
			Access to Healthcare Social Cohesion	3	
			Prevention of Waterlogging	3	
			Aesthetic Improvement of Urban Areas	4	
			Community Development	4	
		Long term	Sustainable Development	4	Other CSR sustainable project e.g. improved sanitation to follow the success of the project
			Infrastructure	3	

			Resilience		
			Environmental Protection	3	
			Reduced Maintenance Costs	3	
			Improved Connectivity	4	
			Increased Revenue to the municipality, county, National and Regional Governments	3	
			After implementation of the Settlement Development Project it is likely to attract other community development projects.	3	

Summary of Negative Impacts

1. Potential for Soil Contamination
2. Dust and Air Quality Concerns
3. Aesthetic Impact on Surrounding Properties
4. Environmental Disturbance
5. Construction Waste Generation
6. Alteration of Drainage Patterns
7. Increased Congestion During Construction
8. Compromised Water Supply
9. Community Conflicts
10. Construction accidents:
11. Disruption of the Local Businesses
12. Noise and Air Pollution
13. Traffic Disruptions
14. Impact on Property Values
15. HIV/Aids/STI's
16. Energy Consumption
17. Environmental Pollution
18. Light pollution
19. Visual intrusion
20. Water Runoff Issues

21. Glare
22. Impact on Fauna
23. Social Disruption
24. Vandalism of the high Mast Lights
25. Habitat Loss and Fragmentation Soil Disturbance Air and Noise Pollution Waste

Mitigation Measures of these Potential Negative Impacts

1. The contractor adhering/complying to laws and regulations concerning labour, air, noise, and basic components of the projects.
2. The contractor's strict adherence to the Environmental Management Plan.
3. The Contractor's clear display of Road signs to avoid accidents and installation of barriers.
4. Construction activities will be limited to project sites / routes which already exist therefore limited destruction to vegetation cover.
5. Proper rehabilitation of the environment through replanting of vegetation after construction and decommissioning to handle habitat loss and fragmentation.
6. Installation of top Security and reporting mechanism to handle any issues of vandalism, or accidents etc.
7. Public Community awareness of potential disruption/diversions on road access, spread of HIV/Aids etc.
8. Construction wastes (residual earth, debris and scrap materials) to be removed for safe disposal and encourage recycling where possible (concrete debris for access road surfacing)
9. Proper Compensation of the PAPS according to RAP report and world bank guidelines.
10. Construction material sourced from within to ensure environmentally sustainable (approved accordingly) and avoid unnecessary pollution.
11. The contractor should generate a waste disposal plan.

ESMMP

ESMMP for Preconstruction Stage for Roads

Table A- 6ESMMP for Preconstruction Stage: Roads

Environmental impact	Impact level	Proposed Mitigation Measures	Monitoring Indicators	Responsibility	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 Mombasa Contractor	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 Mombasa Consultant KISIP	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	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	During designing Stage	250,000.00

ESMMP for Pre-construction Phase: Drainage

Table A- 7 ESMMP for Preconstruction Stage: Drainages

Environmental impact	Impact level	Proposed Mitigation Measures	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.	County Government of Mombasa 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.	County Government of Mombasa 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	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.	KISIP Contactor Consultant GRC SEC	SEC/GRC meetings	During designing Stage	250,000.00

ESMMP for Pre-Construction Phase: Streetlights

Table A- 8: ESMMP for Preconstruction Stage: Streetlights

Environmental impact	Impact level	Proposed Mitigation Measures	Monitoring Indicators	Responsibility	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 Mombasa Contractor	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 Mombasa Consultant KISIP	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	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	During designing Stage	250,000.00

ESMMP for Construction Phase: Roads

Table A- 9: ESMMP for construction Stage: Roads

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 Sulphur diesel.	Cases of respiratory complication at nearby health centre. Records of machine and vehicle	Environmental Consultants Contractor	Continuous	300,000.00

Possible Impact	Impact Rating level	Management Actions	Monitoring Indicators	Target Areas and Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
		Regular maintenance and service of construction machinery and equipment in accordance to manufacturer specifications to minimize the generation of hazardous gases. Providing PPEs such as nose masks to the workers in dusty areas on the site. Maintain regular training of all personnel on methods for minimizing air quality impacts during construction. Ensure a strict schedule plan for all equipment to avoid unnecessary trips and minimize idling of engines. Enforce of EMCA 2015 (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.	maintenance Low dust generation during construction Availability and use of Nose Masks			
Water Pollution	Low	Implement best management practices for construction activities to prevent runoff contamination. Ensure al machineries are serviced at a dedicated service	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)
		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				
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						

Possible Impact	Impact Rating level	Management Actions	Monitoring Indicators	Target Areas and Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
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 users Conduct regular training Document all near misses, incidents and accidents. Conduct risk assessments for all general, standard and	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)
		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 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	Environmental and Safety Management Manager Mombasa 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	Number of security concerns reported.			
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 Mombasa 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	Number of complaints from community due to lack of	Environmental and Safety Management Manager Contractor	Throughout Project	100,000.00

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

ESMMP for Construction Phase: 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 Sulphur diesel. Regular maintenance and service of construction machinery and equipment in accordance to manufacturer specifications to minimize the generation of hazardous	Cases of respiratory complication at nearby health centre. Records of machine and vehicle maintenance Low dust generation during construction	Environmental Consultants Contractor	Continuous	300,000.00

Possible Impact	Impact Rating level	Management Actions	Monitoring Indicators	Target Areas and Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
		gases. Providing PPEs such as nose masks to the workers in dusty areas on the site. Maintain regular training of all personnel on methods for minimizing air quality impacts during construction. Ensure a strict schedule plan for all equipment to avoid unnecessary trips and minimize idling of engines. Enforce of EMCA 2015 (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.	Availability and use of Nose Masks			
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.	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)
		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				
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.	HIV/AIDS awareness trainings Availability of VCT facilities Social awareness and	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)
		Establish a support system for individuals living with HIV/AIDS, promoting inclusivity and reducing stigma. Alias with local security administration for insecurity management	trainings			
Occupational Safety and Health issues	Moderate	Enforce strict safety protocols and provide regular training for all construction personnel. Conduct routine safety inspections and audits to identify and address potential hazards. Establish an emergency response plan to handle accidents promptly and efficiently. Provide all 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	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)
		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 Camps, Yards, Stores and to the Supervising Team's Offices	Availability of security officers on site	Environmental and Safety Management Manager Mombasa 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 Mombasa 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	Throughout Project	100,000.00

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

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

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

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 Mombasa; 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 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 Mombasa, KISIP, Contractor	Throughout Project	No additional cost

Possible Impact,	Impact Rating Level	Management Actions	Monitoring Indicators	Responsibilities	Monitoring Frequency	Estimated Budget(KShs)
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 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.	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)
		Develop and implementation of a stakeholder engagement plan. Engage stakeholders throughout the project phase as guided by the approved stakeholder engagement plan.				

ESMMP for Operation Phase: 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 Mombasa; 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 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 Mombasa, KISIP, Contractor	Throughout Project	No additional cost
Water Pollution/Contamination	Very Low	Prioritize integrated water management approaches that address both the root causes	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)
		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				
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.	SEC, GRC, KISIP	Monthly	200,000.00

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

ESMMP for Operation Phase: 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 Mombasa; 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 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 Mombasa, KISIP, Contractor	Throughout Project	No additional cost

Possible Impact,	Impact Rating Level	Management Actions	Monitoring Indicators	Responsibilities	Monitoring Frequency	Estimated Budget(KShs)
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 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.	Reduced and conservative use of energy	County Government of Mombasa, KISIP, Contractor	Throughout Project	300,000.00
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	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)
		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.				
Light and Visual discomfort	Medium High	Properly design and angle light fixtures to minimize glare. Consider installing light shields or diffusers to control light direction. Seek aviation lighting design principles Use shielded fixtures and directional lighting to minimize light spillage. Implement curfew times for non-essential lighting. Educate the community on responsible lighting practices.		SEC, GRC, KISIP	Throughout Project	No additional cost
Disturbance to Nocturnal Wildlife	Very Low	Install motion sensors or timers to reduce lighting intensity during periods of low activity. Choose warm-coloured lights that are less		SEC, GRC, KISIP	Throughout Project	No additional cost

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

ESMMP for Decommissioning Phase: Roads

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 Mombasa	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.	Adoption rate of recycled materials in new construction projects	Environmental Management Team/Consultant, KISIP	Throughout Decommissioning	250,000.00

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

Possible Impact	Impact Level	Management Actions	Monitoring Indicators	Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
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 Decommissioning Phase: 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 Mombasa	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. Replant native vegetation and restore habitats affected by decommissioning	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	Environmental Management Team/Consultant, KISIP	Throughout Decommissioning	300,000.00

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

ESMMP for Decommissioning Phase: 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 Mombasa	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. Replant native vegetation and restore habitats affected by decommissioning	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	Environmental Management Team/Consultant, KISIP	Throughout Decommissioning	300,000.00

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

Grievance Redress Mechanism

This section describes the project's Grievance Redress Mechanism (GRM). 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 individuals. This GRM complies with the Law of Kenya and international best practices. During the proposed implementation of Kidunguni 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.

Key Findings of the Situational Analysis Report

The need to formulate a Situational Analysis Report was triggered due to presence of Project Affected Persons (PAPs) not yet compensated in the previous KISIP 1 project. One of KISIP 1's core objective was to initiate land titling processes so as to pave way for the commencement of KISIP 2; where proposed project activities were to be implemented (Road and drainage improvement, installation of high-mast lights and supply of water).

The exercise concluded swiftly with identification of 12 PAPs having not been compensated for their structure. Any assets belonging to residents or members of Kindunguni settlement need to be regarded as affected person and qualify for compensation. The world bank safeguards have to be adhered to guide the consultant effectively.

The Situational Analysis Report of Kindunguni settlement informs the current status of the resettlement/compensation program. The consultant recommends a follow up with the county of Mombasa for the individuals affected. Nevertheless, the implementation of the proposed project could commence considering no adverse impact is registered.

Conclusion and Recommendations

In conclusion, the Comprehensive Project Report (CPR) has provided a comprehensive evaluation of the proposed project's potential environmental and social impacts. Through rigorous data collection, analysis, and stakeholder engagement, key findings have been identified, including both positive and negative impacts associated with the project. The report outlines a range of mitigation measures aimed at minimizing adverse effects on the environment and communities.

The commencement of the KISIP Kindunguni projects is recommended, with the understanding that the proposed mitigation measures and management strategies will be diligently executed and monitored. Consistent stakeholder engagement, routine environmental monitoring, and periodic audits will be integral components to ensure the project's success in minimizing negative impacts and maximizing positive contributions to the local community and environment.

All individuals affected by the project and meeting the specified deadlines are eligible for a combination of support packages to be provided prior to the project's impact and infrastructure development.

Sensitization and awareness sessions to be conducted with previously identified PAPs who have not yet received facilitation. The primary goal is to clarify reasons for non-payment and assess their continued eligibility for assistance.

Establish transparent communication channels between the County Government of Mombasa and KISIP to strengthen enforcement of the A-RAP compensation. The reasons behind some PAPs not receiving payment are unclear. The county should implement measures to prevent new entrants from seeking benefits from the project, considering the interests of local stakeholders.

1 INTRODUCTION

1.1... Project Background

The Government of Kenya has received a credit from International Development Association (IDA) and Agence Française de Development (AFD) towards the cost of the Second Kenya Informal Settlements Improvement Project (KISIP 2)

KISIP 2 builds on the successes and lessons learnt of KISIP 1 and continues to support the interventions that have been successful. The overall project development objective of the KISIP 2 program is to improve access to basic services and tenure security of residents in participating urban informal settlement and strengthen institutional capacity for slum upgrading in Kenya in consultation with the community.

This Project, while concentrating on informal settlements, complements existing and past urban operations in Kenya to address the Urban infrastructure deficit and Urban institutional challenges. It supports the Governments' affordable housing agenda as it seeks to complement the demand-side and supply-side operations to improve housing affordability.

1.2... Objectives of the ESIA

The main objective of the ESIA 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 Monitoring Plan for the proposed project.
- Preparation of a detailed Environmental and Social Management Plan (ESMP) for the proposed project.

1.3... 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.

1.4... Justification of the ESIA

The implementation of the proposed project shall have both socio-economic and environmental impacts on the project area. In order to alleviate any detrimental effects of the project, there is need to assess possible impacts of the development on the environment and the socio-economic attributes of the project area. At first, the proposed project will be evaluated against the framework provided by the Physical Development plan to ensure proper alignment. Then an Environmental Impact Assessment is conducted in accordance with the client's 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 area. The outcome of the ESIA 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.

1.5... Environmental and Social Impact and Assessment Team

Table 1: Team of expert

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

1.6... 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

1.6.1. 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.

1.6.2. 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 attached in the Appendices section as: **Appendix 4:Checklist**

1.6.3. 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. **Labour and Working Conditions (OP/BP 4.11):** This policy includes provisions related to involuntary resettlement, ensuring that affected workers are provided with adequate compensation, assistance with relocation, and opportunities for alternative employment or income-generation activities.

4. **World Bank Group Environment, Health and Safety Guidelines (EHSGs):** The World Bank Group Environment, Health, and Safety Guidelines (EHSGs) provide technical advice and guidance on best practices for managing environmental, health, and safety risks associated with various industries and sectors. These guidelines aim to assist project developers, financiers, and other stakeholders in identifying potential environmental and social impacts, as well as implementing measures to minimize or mitigate these impacts. The EHSGs cover a wide range of topics, including air and water pollution, biodiversity conservation, occupational health and safety, and community health and safety. They are based on international standards and best practices, taking into account the specific circumstances and requirements of different regions and industries. Overall, the EHSGs serve as a valuable resource for promoting sustainable development and responsible business practices across the globe.

5. **Operational Policy (OP 4.07) on Natural Habitats:** aimed at guiding projects financed by the World Bank to effectively manage and conserve natural habitats. This policy emphasizes the importance of protecting biodiversity and ecosystem services while promoting sustainable development. OP 4.07 outlines principles and standards for assessing and managing potential impacts on natural habitats throughout the project lifecycle. Key aspects covered include the identification of critical habitats, assessment of potential impacts, avoidance and minimization measures, and compensation for residual impacts. The policy also emphasizes the importance of stakeholder engagement, transparency, and accountability in natural habitat conservation efforts. By adhering to OP 4.07, project proponent 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 attached as appendix as **Appendix 4:Checklist.**

1.6.4. 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.

1.6.5. Desktop Study

Desktop study included document review on the nature of the proposed activities, project documents (Mombasa third County Integrated Development Plan (2023-2027)), designs (Mombasa Design Report), policy and legislative framework as well as the environmental setting of the area among others.

1.6.6. 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.

1.6.7. Public Participation

Public participation meetings were conducted specifically the project area. Random surveys and key stakeholder interviews 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.

Announcement of these meetings were aided by the County Social Officer in coordination with the consultant team through word of mouth and announcements during SEC meeting.

1.6.8. 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 in *Appendix 3:Questionnaires.*

1.6.9. Key Informant 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:

1.6.10. 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,

1.6.11. 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.

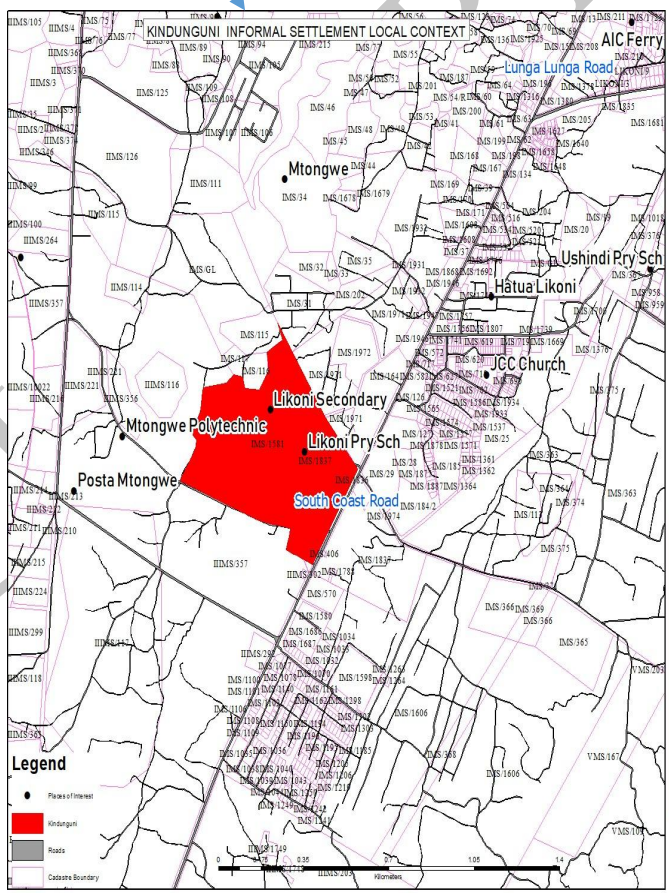
2. PROPOSED PROJECT DESCRIPTION

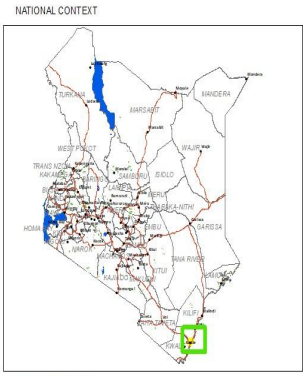
2.1. Project Location

The Kindunguni Settlement, situated in Likoni Ward, Likoni Sub County, Mombasa County, is the focal point of the comprehensive infrastructure upgrade initiative known as the Kindunguni Settlement Project. Nestled in a strategic location close to facilities such as the Likoni Ferry, which connects Mombasa Island and the south mainland of Mombasa, the settlement spans a size of 19 hectares. With an estimated population of 5,587 people, (with reference to Kenya National Bureau of Statistics(KNBS), the Kindunguni Settlement is divided into two clusters, Kidunguni and Menza.

The settlement enjoys a critical location, with major landmarks such as Likoni Secondary School and Mwahima Stadium bordering its periphery. The primary access to the settlement is a tarmac road leading to Mwahima Stadium off the Likoni – Ukunda Road, classified as an A-class road. The settlement's strategic position and dense population underscore the importance of the Kindunguni Settlement Project, which aims to uplift the community's living conditions and overall well-being.

Figure 1:Kidunguni location and administrative boundaries





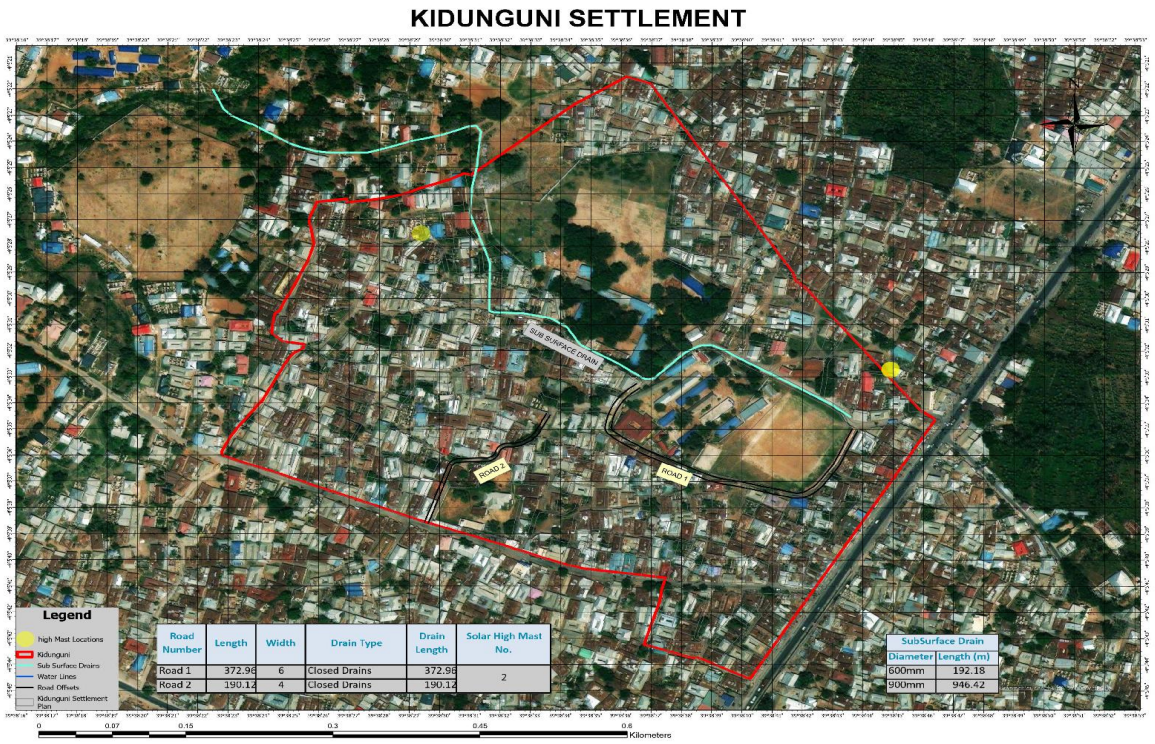


Figure 2:Infrastructure design map

2.2. Proposed Project Description

Proposed infrastructure improvements include the upgrade of access roads, associated drainage structures and installation of high-mast lights. The Kindunguni Settlement, situated in Likoni Ward, Likoni Sub County, Mombasa County, is the focal point of the comprehensive infrastructure upgrade initiative. Nestled in a strategic location close to facilities such as the Likoni Ferry, situated 4km away from the settlement, connects Mombasa Island and the south mainland of Mombasa. The focal geographic coordinates of the project location are 4°05'49.2"S 39°38'40.7"E.

The settlement enjoys a critical location, with major landmarks such as Likoni Secondary School and Mwahima Stadium bordering its periphery. The primary access to the settlement is a tarmac road leading to Mwahima Stadium off the Likoni – Ukunda Road, classified as an A-class road. The settlement's strategic position and dense population underscore the importance of the Kindunguni Settlement Project, which aims to uplift the community's living conditions and overall well-being.

The road works involve the construction of two main roads, namely Road 1 and Road 2, with a total length of 563.08 meters. These roads will feature varied widths ranging from 4.0 meters to 6.0 meters, specific to each alignment. The pavement structure will consist of several layers, including a 300mm thick improved subgrade compacted in two layers, a 200mm thick natural gravel material sub-base, a 150mm thick 2% cement-treated gravel base, a 50mm sand/quarry dust layer course, and finally, an 80mm heavy-duty concrete paving block. This robust pavement structure is designed to ensure durability and longevity. Its surfacing will consist of type II AC, Concrete Paving blocks.

Additionally, the drainage system construction works will involve the installation of cross pipe culverts, access culverts, lined open drains, and sub-surface drains with diameters of 900mm and 600mm. These drainage components are essential for effective storm water management, preventing flooding and ensuring the longevity of the road infrastructure. The total lengths of the drainage system within Kindunguni are 192.18 meters for the 600mm diameter drains and 946.42 meters for the 900mm diameter drains.

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

2.3. Project Objectives

1. **Construction of access roads, footpaths and walk ways:** Transform the existing marram road into national standardized road infrastructure ensuring durability and resilience to weather variations.
2. **Construction of associated drainage structures along constructed roads:** to improve settlement access.
3. **Encroachment Mitigation:** Strategically manage and mitigate encroachments to reclaim the road's intended width, enhancing safety and navigability.
4. **Installation of high mast lights:** to mitigate issues of insecurity.

2.4. Scope of Works

Table 2: Scope of works

<table>
<tr><td rowspan="2">Proposed Projects</td><td colspan="4">Description</td></tr>
<tr><td>No of roads</td><td colspan="2">Width (Meters)</td><td>Total lengths (Meters)</td></tr>
<tr><td>Roads</td><td>2</td><td colspan="2">4-6</td><td>563.08</td></tr>
<tr><td rowspan="3">Drainage system</td><td colspan="4">Description</td></tr>
<tr><td colspan="2">Type</td><td colspan="2">Total Length (Meters)</td></tr>
<tr><td colspan="2">Closed Drain</td><td colspan="2">192.18</td></tr>
<tr><td rowspan="3">Street Lighting- Installation off High Mast lighting</td><td colspan="4">Description</td></tr>
<tr><td colspan="2">No of High Mast lighting</td><td>Height (Meters)</td><td>Luminous Radius (Coverage)(Meters)</td></tr>
<tr><td colspan="2">3</td><td>30</td><td>150</td></tr>
</table>

2.5. Project Activities and Processes

Projects to be undertaken include:

- Upgrade of roads,
- Construction of storm water drainage
- Installation of high- mast lights

2.5.1. Road Upgrade and Drainage

Table 3: Road design works system

Road Number	Drawing Reference Name	Road Length (Metres)	Width (m)
Road 1	KISIP 2/msa/pp/kindunguni road 01	372.96	6
Road 2	KISIP 2/msa/pp/kindunguni road 02	190.12	4
Total		**563.08**	

The Road works entail:
Carriage way of varied widths between 4.0m to 6.0m specific to each Alignment
Pavement structure comprising of;

- 300mm thick improved subgrade compacted in two layers of 150mm to 100% MDD (AASHTO T99)
- 200mm thick Natural Gravel material Sub base, minimum CBR 30%
- 150mm thick 2% Cement Treated Gravel Base
- 50mm Sand/ Quarry dust layer course
- 80mm heavy duty concrete paving blocks

The Drainage system construction works shall include;

- Cross pipe culverts and access culverts
- Lined open drains
- Sub surface drains, 900mm and 600mm dia.

Table 4: Drainage works design system

Diameter	Length (m)
	Kindunguni
600mm	192.18
900mm	946.42

Road and Drainage Construction Activities
The major Works to be executed under the Contract comprise mainly of but are not limited to the following:

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

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

Road Functional Classification

Urban roads, other than bypasses have one main basic traffic service function. They provide access to land and properties within the urban area and therefore high speeds are unnecessary, and for safety reasons undesirable.

The existing roads manual classifies urban roads under class U while the Draft Roads and Bridges Design Manual Part 1, 2009 of Ministry of Roads, classifies urban roads into H, J, K, L, M, N and P. Roads for the settlements under consideration fall under class P and basically provides access to group of residential properties and comprising local residential streets. The traffic volumes are expected to be about 400 ADT (Average daily traffic) per 1000 population served.

Roads in the six settlements have various road widths. Preliminary designs have been carried out on roads with a planned width of 6 - 8m. However, consideration has been made for narrow roads of 3-4 m width to serve as one lane one-way carriageway.

Drainage Facilities Design

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

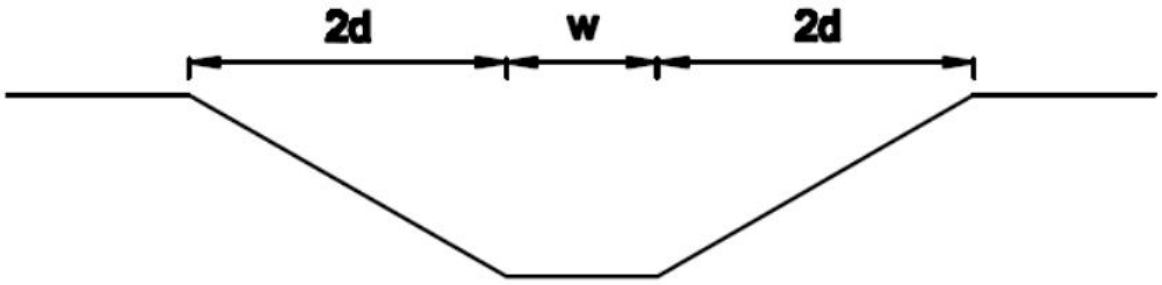


Figure 3:V-Shape Drain (H:V=2:1)

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

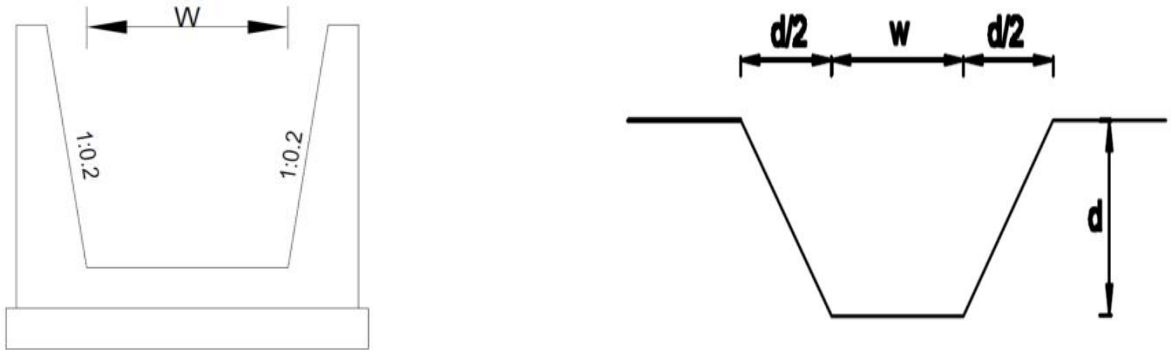


Figure 4:U-Shape Drain (H:V=1:2)

The topographical survey was carried out to obtain input for the preliminary design. This was carried out in the following sequence.

Traffic Surveys and Analysis

The traffic class adopted will be based on traffic studies provided in earlier design reports. Based on the poor state of the roads, relatively low economic activity and the insecurity in the project areas, traffic had not changed significantly since the last survey. Traffic Class T3 will be adopted for conceptual design. The Consortium shall carry out a comprehensive traffic study to ascertain present and future traffic.

Geometric Design

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

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

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

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

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

Table 5: Functional Road Characteristics (Urban Road Design Manual)

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

Design Speed

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

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

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

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

Design Vehicles

Table 6: Design Vehicle as a Design Control Parameter

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

Design Cross-sections

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

- Public roads to the settlement 6 – 9m
- Internal roads 3 - 4 m

The proposed cross sections (provided in the book of drawings) have a carriageway width of 3 -6m with 1m shoulders in road reserves of 9m as well as covered drains for additional space to cater for non-motorized traffic.

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 7: 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 8: Normal Travel Way Cross Slope

Surface Type	Range in cross slope rate, %
High	1.5 - 2
Low	2 - 6

Source: AASHTO Geometric design of highways, Exhibit 4.4

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

Junctions

Junctions and accesses were provided at required sections. The road is an urban road and therefore, unrestricted access is provided.
Most junctions were for residential accesses, but some were accesses to major and other existing urban roads in the area.
The turning radii provided fit the turning characteristics of passenger car with the minimum being 5m.

Side Slopes

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

Table 9L: 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

i. Accesses

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

ii. 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.

iii. Cycle tracks

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

iv. Road furniture

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

Materials Design

Pavement design carried out will be in accordance with Ministry of Works Part III "Materials and Pavement Design for New Roads" 1987. Design considered pavement traffic loading expected during the design life, sub grade soil strength, and materials locally available for pavement construction including those for base, sub base and surfacing.

Gravel
Earlier design reports indicated numerous sources of gravel materials for road construction along the project road, many within 500m of the existing road. The gravels selectively meet requirements for natural gravel sub-base and base, improvement with 2- 4% of either lime or cement recommended.

Sand
Sand for concrete is readily available on the project location.

Water
Water is available from boreholes around the project location. However, yields from the existing boreholes are not sufficient for road construction purposes. It is expected that water from MAWASCo will be required during construction.

Stone Sources
Hard stone quarries were noted in the centers within the Municipality. The proposed projects for the Kindunguni Settlement Project encompass the enhancement of roads and drainage systems, as well as street lighting works, aiming to significantly improve the infrastructure and overall living conditions within the settlement.

Ground Reconnaissance

A reconnaissance was carried out in order to familiarize with the ground conditions, terrain and logistical requirement in every settlement. Instructions for the reconnaissance included the project area, accuracy specified for the project, desirable spacing of control points, and connections to existing surveys including new GPS stations.

Control Point Monumenting

Inter-visible survey monuments were constructed within the project area randomly. The monuments were located on safe and stable grounds to ensure availability at both design and construction stages. The monument (beacons) was constructed with an IPC (Iron Pin in Concrete) above ground surface. The monuments had a conical shape with flat top of minimum width 20cm, minimum base 25cm and minimum length 30cm.

Equipment Used
The equipment used for the surveying included:

- Leica TCRA 1102 Total station.
- Geodetic GPS receiver (Leica 1200 series)
- Automatic levelling machine
- Handheld GPS receiver

Coordinate System used
The control points were connected to the national Grid (Kenyan)

- Universal Transverse Marcator (UTM)
- Latitudinal belt -M
- Reference ellipsoid for Kenya datum Arc 1960

Control points establishment

Primary, geodetic GPS, and secondary controls

The controls were established using Leica GPS 1200 Dual frequency geodetic receivers. This survey GPS equipment were able to receive both the L1 & L2 frequencies and therefore was able to correct for the anomalies in observations arising through ionosphere layer in the atmosphere. The controls readings were connected to the nation grid (UTM arc 1960). This was established by a highly precise surveying methods followed by a statistical adjustment to resolve all the measurements.

Primary, geodetic GPS, and secondary controls

Primary controls were established using Geodetic GPS. To connection the survey data to the nation grid (UTM arc 1960), Geodetic GPS controls were used during the survey. This was established by a highly precise surveying methods followed by a statistical adjustment to resolve all the measurements. Leica GPS 1200 Dual frequency geodetic receivers were used. The GPS equipment were able to receive both the L1 & L2 frequencies and therefore was able to correct for the anomalies in observations arising through ionosphere layer in the atmosphere.

The secondary horizontal control surveys were referenced to and tied to GPS primary horizontal control survey. Traverse observations were carried out using a Leica TC1102 total station in areas with thick vegetation and tall buildings and RTK secondary controls in open areas. A three-dimensional traverse connecting the GPS points was established. Angles were measured on both faces and the mean adopted. Distances were measured both ways and the mean adopted.

Vertical Controls (Benchmarks) and Vertical GPS Surveys

Elevations for all vertical control surveys were tied to that of primary GPS controls benchmarks, referenced and connected to the datum. The elevations of the marks at the two ends of the line were computed by the established zenith distance (vertical angle) methods (reciprocal or otherwise), taking into account instrument and target height. The resulting elevations were then used to convert the slope lengths to the horizontal and/or to mean sea level distances by standard procedures.

GPS-derived orthometric heights (elevations) are compiled from ellipsoid heights (determined by GPS observations) and modelled geoid heights (using an acceptable geoid height model for the area).

Detailed roads topographical surveying

Detail topographical survey was carried out for the full lengths of the roads and randomly within the settlements. The extent covered the existing right of way, and wide strip ranging from 10 – 20m across the road corridors (extending 5- 10m from the centre-line on the both sides). All topographical details like existing roads, tracks, drainage structures and buildings were picked.

Cross-sectional surveys

Cross-sections surveyed at 20m intervals and extend a minimum 20m wide strip (extending 10m from the centre-line on the both sides) along straight sections. Centreline of the existing road, carriageway limit, shoulders and embankment toe were surveyed carefully. At curve section of the alignment and where sudden changes in elevation are encountered, cross sections were surveyed at closer intervals in order to represent the true surface profile.

RTK surveying data

The data points on pave surface were located within 10mm horizontally and 7mm vertically while data points on original ground were located 20mm horizontally and vertically.

A GPS receiver was set on a known point (base station) and the other on a moving or rover platform. Surveying controller determined the amount of time required for a point collection fixed height tripod was used for the base station. A fixed height surveying rod of 2m was used for the rover pole. For accurate location coordinates capture, a minimum of five common satellites were observed by both base receiver and rover units.

The GPS site calibration had a maximum a vertical residual of 20mm for each horizontal RTK control stations and maximum vertical residuals of 15mm for each vertical control station.

New stations were occupied for a minimum of 30 epochs of data collected and precision of measurement was about 10mm horizontally and 15mm vertically.

Terrain Modelling

The surveying data collected was processed using Excel Microsoft Software to form an ASCII control point text file. This file was then loaded onto AutoCAD Civil 3D. The software also generated 3D lines joining same features such as ditches, road centrelines& edges and plotted symbols for single points such as trees, electric poles etc. Each feature was stored into its own layer to enable switching off and freezing unwanted layers during design. A Digital Terrain Model (DTM) with a 0.5m contour interval was generated.

Scanning, digitization and referencing of PID's

Digitizing and referencing of the PID's was executed in AutoCAD. Referencing was done by moving, rotating and scaling of the digitized boundaries till it fits on the ground survey plan.

Deliverables
CAD design files in AutoCAD Civil 3D DGN and AutoCAD DWG formats showing:

- Survey plan of the settlements showing roads buildings, rivers and vegetation.
- Contours at 0.5 meter, 1.0 meter and 5.0 meter intervals
- Project area surveyed.
- Control points.

2.5.2. Installation of High-Mast lights

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

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

Street Lighting Works

The street lighting works will include the installation of two high mast lights, each featuring a 30-meter high steel tower. These high mast lights will be equipped with a lockable electrical control switchgear and power meter chamber, ensuring efficient operation and maintenance. Additionally, a concrete foundation measuring 3000mm by 3000mm will be constructed to provide stability for the high mast lights. The radius of illumination for each high mast light is projected to be 150 meters, significantly enhancing visibility and safety within the settlement during night time hours.

2.6. Operation Phase Activities

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

2.7. Decommissioning Phase

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

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

2.8. Environmental Protection

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

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

2.9. Project Budget

Project cost estimation is a crucial element, and this chapter furnishes detailed estimates for infrastructure works based on preliminary designs. It encompasses material, labor, equipment costs, and other pertinent factors. Additionally, the chapter delves into the contract packaging approach, determining suitable contract types and procurement methods for executing the infrastructure works.

The cost estimates draw upon the guidelines outlined in the Cost Estimation Manual 2022-2023 from the Kenya Roads Board. The manual serves to guide Road Agencies (RAs) in developing project cost estimates for road maintenance works efficiently and consistently. The objective is to ensure transparency and harmonization that can be scrutinized by the public and other relevant government agencies.

It is essential to highlight that a 15% markup has been applied to the costs by the consultant. This adjustment aims to mitigate the impact of the current inflation observed in the country's prevailing economic conditions.

Summary of Project Cost

Table 10: Summary of cost

S/N	Description	Amount

1	Roads and drainage works	76,766,122.14
2	High mast street lighting	12,830,400.00
3	Sub surface drain	44,608,222.08
4	Grievance Redress Mechanism	324000.00
TOTAL		**134,528,744.22**

Roads and Drainage

Table 11: Estimated construction cost of Roads and drainage

S/N	Description	Amount
1	Site clearance and topsoil stripping	406,090.73
2	Earthworks	5,639,609.97
3	Culvert & drainage works	33,444,480.13
4	Passage of traffic	1,408,319.09
5	Natural material for subbase and base	2,520,672.00
6	Cement and lime treatment	798,622.10
7	Bituminous surface treatment	2,055,374.30
8	Wearing course	4,199,358.00
9	Road furniture	4,533,595.82
10	Environmental & social safeguards	21,760,000.00
	Sub total	**76,766,122.14**

Estimated Cost of Mast Lights

Table 12: Estimated construction cost of Mast lights

S/N	Description	Amount
1	Floodlighting and other services	10,984,200.00
2	Civil and structural works	1,846,200.00
	Sub total	12,830,400.00

Sub Surface Drain

Table 13: Estimated Sub Surface Drain costs:

S/N	Description	Amount
1	Kidunguni sub surface drain	**44,608,222.08**
2	**Sub total**	**44,608,222.08**

3. 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

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 marram 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.

3.1 Upgrade of Roads

Alternative 1: Patch and Repair

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

Pros:

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

Cons:

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

Alternative 2: Incremental Upgrade

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

Pros:

- Phased approach allows for flexibility.
- Minimizes immediate financial burden.

Cons:

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

Alternative 3: New Road Alignment

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

Pros:

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

Cons:

- Land acquisition challenges.
- Higher upfront costs.

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

3.2 Construction of Storm Water Drainage

Alternative 1: Green Infrastructure

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

Pros:

- Environmentally sustainable.
- Potential for community engagement.

Cons:

- Initial implementation costs may be higher.
- Requires ongoing maintenance.

Alternative 2: Traditional Drainage Systems

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

Pros:

- Proven effectiveness.
- Standardized construction methods.

Cons:

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

Alternative 3: Regional Detention Ponds

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

Pros:

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

Cons:

- Requires significant space.
- Potential impact on existing ecosystems.

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

3.3 Installation of High-Mast Lights

Alternative 1: Solar-Powered Lights

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

Pros:

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

Cons:

- Higher initial investment.
- Weather-dependent efficiency.

Alternative 2: Smart Lighting Systems

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

Pros:

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

Cons:

- Initial setup costs may be higher.
- Requires technological expertise.

Alternative 3: Decorative Lighting

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

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

Pros:

- Aesthetic enhancement.
- Community-focused design.

Cons:

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

3.4 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 Kindunguni 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 PHYSICAL, ENVIRONMENTAL AND SOCIO-ECONOMIC BASELINE INFORMATION

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.

4.1 Biophysical Environmental Baseline

4.1.1 Physical Environment

Climate

The climate of Mombasa is influenced by the semi-annual passage of the inter-tropical convergence zone (ITCZ) and the monsoons. The Northeast monsoon occurs from December to March, and the Southeast monsoon from May to October. The mean annual rainfall is 1038 mm, peaking in May and October. Average annual temperatures for the two seasons are 23.9°C and 28.5°C respectively.

The city is vulnerable to flooding because of its low altitude for a 4-6 km band extending from the coast inwards, which lies at an altitude between sea level and approximately 45m above sea level (UN Habitat 2010). The city has a history of disasters related to climate extremes, including floods that cause serious damage to property and even loss of life (Awuar et al. 2008).
As a seaport, Mombasa is subject to detrimental consequences of a fluctuating climate. Mombasa is experiences large floods due to the El nino effect which has affected more than 80,000 household's country wide.
Due to rising sea levels, the coastline has been eroding at 2.5–20 cm per year. This has increased the number of annual floods.

Wind

The surface wind speeds vary between 10.8Km/hr and 18Km/Hr. The windiest month of the year Within the settlement is May and June (18km/hr) while the month with the lowest wind speed is November (10.8Km/hr). Average wind speed 13.19kmh | 8.2mph.

Sunshine

In Mombasa, 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 Mombasa is May with an average of 6.8 hours of sunshine a day. Around 2930 hours of sunshine are counted in Mombasa throughout the year.

Geology, Topography and Soils

Mombasa County is located on coastal lowland with extensive low-lying areas rising from 8 m above sea level (m a.s.l.) in the east to about 100 m in the west. It can be divided into three main physiographic belts: the flat coastal plain, which is 6 kilometres wide and includes Mombasa Island, Kisauni on the northern mainland and Mtongwe to the south. The next belt is severely dissected and eroded, consisting of Jurassic shall overlain in places by residual sandy plateaus. These are found in the Changamwe area. Finally, the last belt consists of an undulating plateau of sandstone that is divided from the Jurassic belt by a scarp fault. Near the sea, the land is composed of Pleistocene Age coral reef, which is commercially exploited as a source of limestone for the cement industry. The seashore has extensive sandy beaches (Musingi et al. 1999).

Hydrology

There are two main rivers that drain into the coast - river Tana and River Sabaki. River Tana is the longest; originating from Mt Kenya and draining into the Indian Ocean, distance of about 850km. It has a catchment area of 132,000 km^2 and discharges annual average of 4.7 x 109 million m3 of freshwater and 3.0 million tonnes of sediments into the Indian Ocean with peak discharges during the rainy season from April to June. It enters the ocean at Kipini. About 30 km upstream, River Tana branches and the tributary proceeds to form the Tana delta.

4.1.2 Biological Environment

Fauna

The flora in certain areas consists of sparsely distributed deciduous bush lands and thickets with widely scattered trees. Among the dominant trees in these regions are species such as Tipuana tipu, Delonix regia, Phoenix roebelenii, Chamaerops humilis, and others.

Flora

Mombasa hosts a diverse range of fauna, including arthropods, chelicerates, arachnids, hexapods, insects, chordates, vertebrates, ray-finned fishes, amphibians, and birds. The local habitat is inhabited by various animals such as cats, cows, goats, ducks, guinea fowl, and chickens, alongside other species. Pigeons and doves are notable among the bird species that contribute to the overall fauna in the region.

1.1 Socio-Economic Baseline

Kindunguni Settlement zone is located on the south coast of Mombasa island bordering mainland zone s like Likoni. Economic activities revolve around tourism, fishing, and commercial activities are major sources of employment. Poverty and unemployment levels are high in many neighbourhoods, especially the informal settlements. Issues like crime, poor sanitation, drug abuse exist due to lack of amenities and opportunities. The settlements display a unique blend of African, Arab, and Indian influences in culture, architecture, and language. In summary, while the settlements exemplify mixed ethnics grouping, the socioeconomic divides are immense, requiring urban planning and inclusive development efforts.

4.1.3 Administration and Political Unit

Kenyan counties are divided into sub-counties and a further 290 constituencies, then 1450 Wards (to coincide with the County Assembly Wards of the County Government), and Villages. Kindunguni settlement is located within Likoni ward.

Table 14: Administration units

Likoni sub-locations:	Ward	Land Area (sq. KM)
	Likoni	9.3
	Bofu	1.5
	Likoni 203	1.1
	Timbwani	6.7

Source: 2019 Kenya Population and Housing Census. Volume II: Distribution of Population by Housing Units.

4.1.4 Population

Population data acquired from KNBS Census records (2019) indicates the population of the Republic of Kenya is approximately 43 million. The population of Mombasa County is 939,370 including 486,924 males and 452,446 females. Since the population of Mombasa County is increasing rapidly, the total population is estimated to reach 1.2 million by 2017. The principal industries in Mombasa County are tourism (hotel industry), shipping industry and various private institutions. In addition, the Government of Kenya is also one of the principal sources of employment.

The distribution of household by household size

In Kindunguni settlement, 48.6% of the households had 1 to 5 people who lived in one household. Table below shows the distribution of households by gender of household heads and by household size.

Table 15: Profiling of selected household parameters

Household Family Size Characteristic	Proportion, %

Number of usual household members as at the time of conducting the survey	
1-5 people (within KNBS tally, 2022 KDHS Report)	48.6%
6-8 people	24.3%
9+ people (large family size)	27.0%
Total number of household members 19+ years**	100.0%
Total number of adolescents (aged 14 to 18 years)**	58.8%
Total number of children (aged 5-14 years)**	26.8%
Total number of babies (aged 0-4 years)**	23.5%
Average household size	5 persons
Dependency ratio[1]	**73%**

*Source: Lamu settlements survey data, 2024. (** - De jure i.e. usual members).*

From the table above, the average household size of 5 persons is comparable to the number of KDHS (2019) of 4 persons for the coastal area and 4.3 from the 1999 population census (KNBS, 2009). This implies that informal island residents have fairly large families and dependents. From the table, the average household size of 5 persons is comparable to the number of KDHS (2019) of 4 persons for the coastal area and 4.3 from the 1999 population census (KNBS, 2009). This implies that residents have fairly large families and dependents. This affects the standard living and leans towards poverty.

Sources of income

Economic activities are small retail business and a number of them are engaged in fishing as fishermen. These contribute heavily to the local economy both in employment provision and income generation. Most of employment opportunities arise from these main economic ventures. Over 85% of the male adults had one form of employment while 15% female members, had some engagement in some income generating activities (IGAs).

Access and Control of Household Assets by gender

The gender issues that were assessed and analyzed were mainly on access to and control of assets; With regard to access and control of assets, the analysis showed the use and authority over assets in a household as shown in the sections below. Of significant note, is that, children and women have limited control of household assets. Table below illustrates how members have access and control to the various household assets.

Table 16: Profile of access and control of household assets

Type of Household Assets	Access to:			Control of		
	Man	Woman	Children	Man	Woman	Children
Vehicles	x			x		
Equipment	x			x		
Rentals /commercial buildings	x	x		x	x	
Boda Boda	x	x		x		
Land / farm	x	x		x	x	
Chickens	x	x			x	
Bicycles	x	x	x	x	x	
Animals	x			x		

Source: Kindunguni Informal Settlements survey data, 2024.

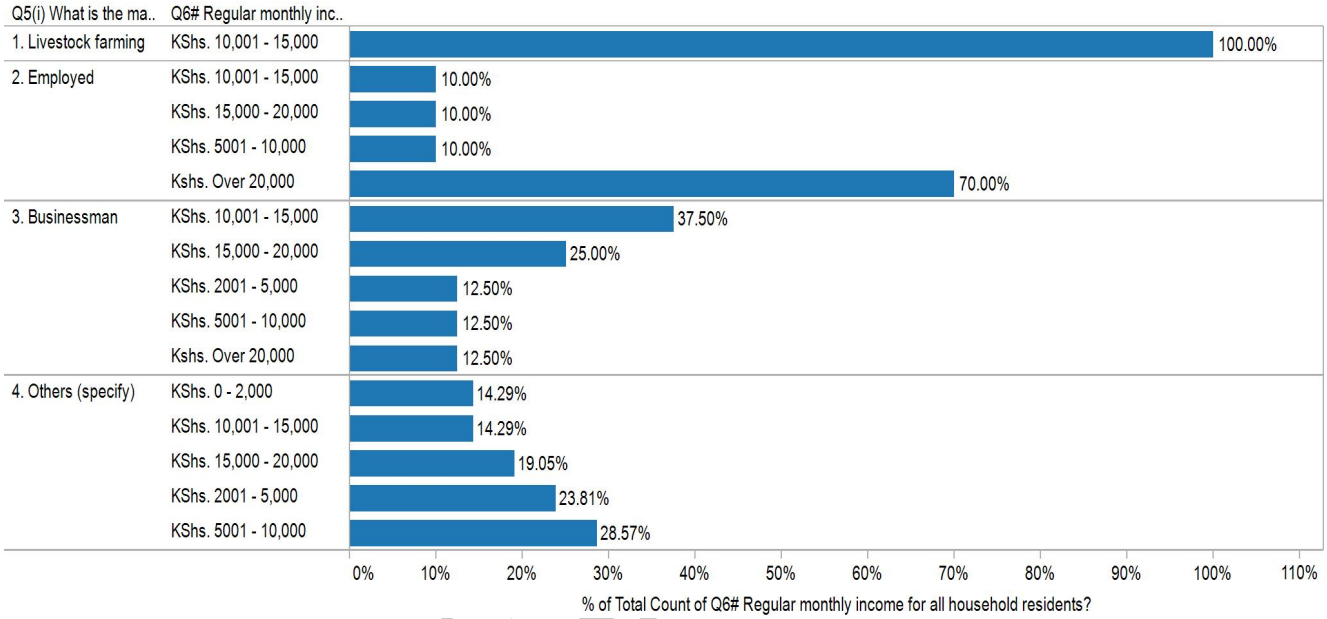
The above profile shows that men are powerful at the household level as they control the most important and valuable household assets/ goods. This makes them as the main decision-makers. With regard to participation

in development and improvement, there will be a need to create room and focus on women and children in order to have total participation of all stakeholders.

Sources of Income and earning equivalent

It was observed there was variation between income sources and the amount earned per month. 100% of those who relied on livestock earned less than KSHS. 20,000 per month. Also 70% of the employed earned over KSHS. 20,000 per month; the business community had 37.5% earning between KSHS. 10,000 to 15,000 per month *(Figure 3).* This range of earning shows the inequality that exist in the settlement, most people are generally poor as they earn less than a dollar a day.

Figure 1: Distribution of income amount earned through various sources

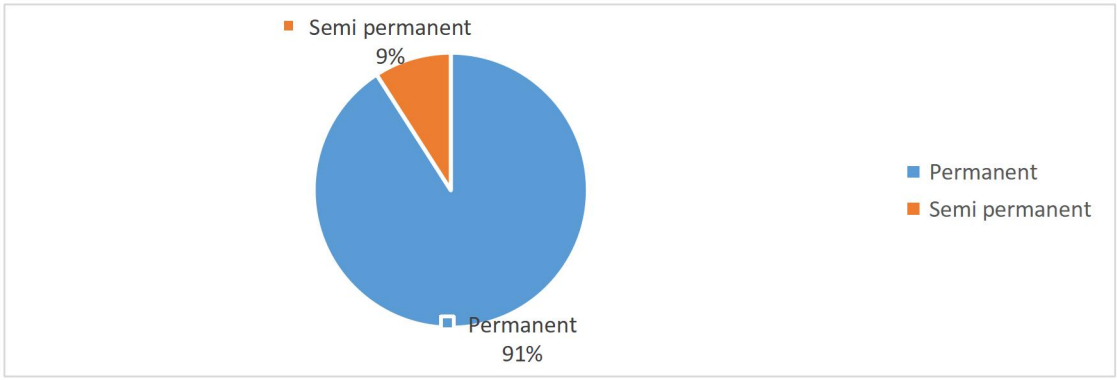


Source: Kindunguni Informal Settlements survey data, 2024.

Type of House Structure

Over 91% of the respondents live in permanent house structures (i.e. cemented floor; stone wall; and iron sheet roof), the housing situation is satisfactory as even the semi-permanent 9% are mostly Swahili houses that suitable for the coastal region. *(Figure 6).*

Figure 2: Types of house structure



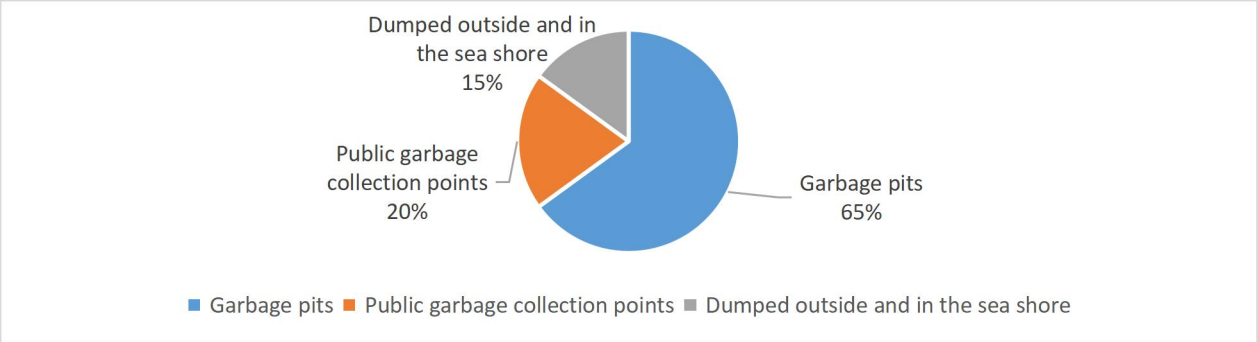
Source: Kindunguni Informal Settlements survey data, 2024.

4.1.5 Methods of garbage disposal

Garbage disposal methods varied 65% have garbage pits, 20% through public garbage collection points and 15 % dumped outside and in the sea shore as illustrated by *figure 7* below. There is a poor drainage system in

the settlement, some areas flood long after the rains. The walkways are littered with donkey excreta, though cleaning services are available.

Figure 3: Methods of garbage disposal



Source: Kindunguni Informal Settlements survey data, 2024.

4.1.6 Transport

Kindunguni has one tarmac road starting from Likoni primary school towards Mtongwe and stops just before joining the main cabro road to Mtongwe. Access to other areas within the settlement is by dusty, rough or muddy roads. The roads are encroached upon and are too narrow to let wastewater and runoff run freely. The settlement enjoys a strategic location close to facilities such as the Likoni Ferry which connects Mombasa Island and south mainland of Mombasa. The main access to the settlement is the tarmac road that leads to Mwahima Stadium off Likoni – Ukunda Road which is an A-class road.

4.1.7 Water and Sanitation

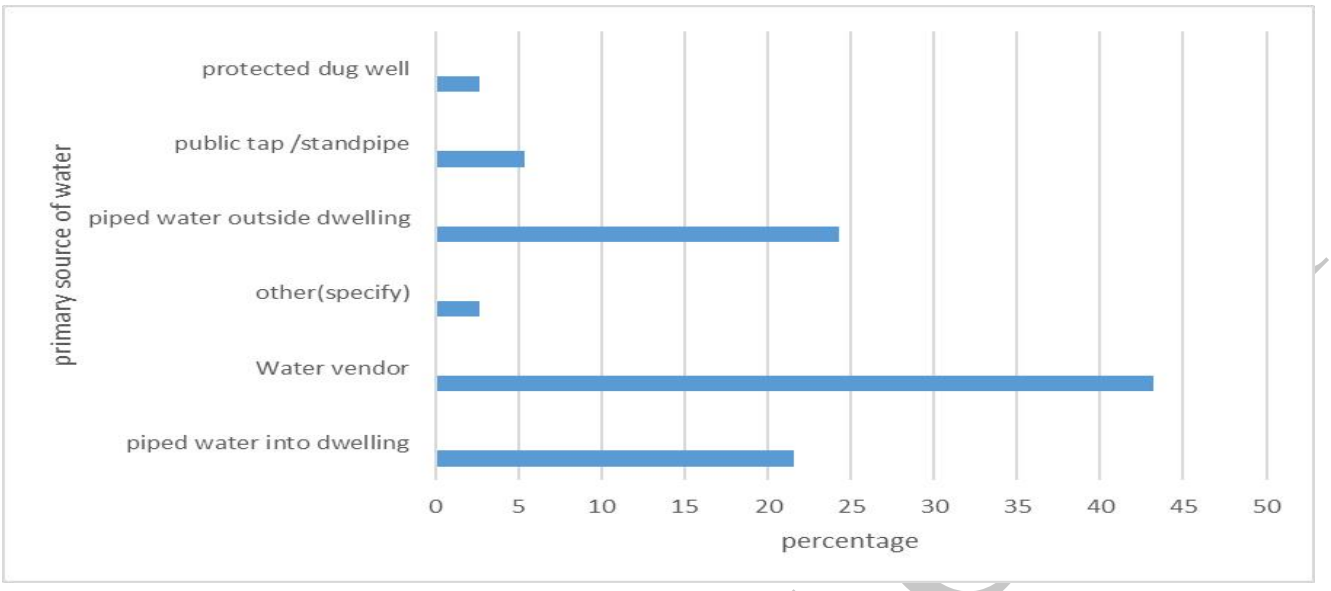
Without its own source of water, Mombasa relies on water supplied by giant pipes from Mzima springs in Taita Taveta County, Baricho in Kilifi County and Tiwi boreholes in Kwale County. The Sabaki River, one of Kenya's largest, runs into the Indian Ocean 110 kilometers north of Mombasa. It is the nearest source of bulk freshwater supply for the city. Water supply in the county is mainly by MOWASCO.

The settlement has access to piped water and others access water through shallow wells and boreholes. However, seventy percent (70%) of the residents do not have access to piped water. and instead purchase water from water vendors. Water infrastructure can be found all along the designated paths and roads. Local water service providers play an important role in the provision of water as piped systems are the leading source of drinking and cooking water.

4.1.8 Sources Drinking of Water

The principal source of domestic water for drinking and cooking in the Kindunguni settlement is the piped water into dwellings which accounts for 21.6%, while water vendor accounted for 46% *(Figure 8).* Water from unprotected wells is usually used for cleaning purposes.

Figure 4: Profile of the various sources of domestic water



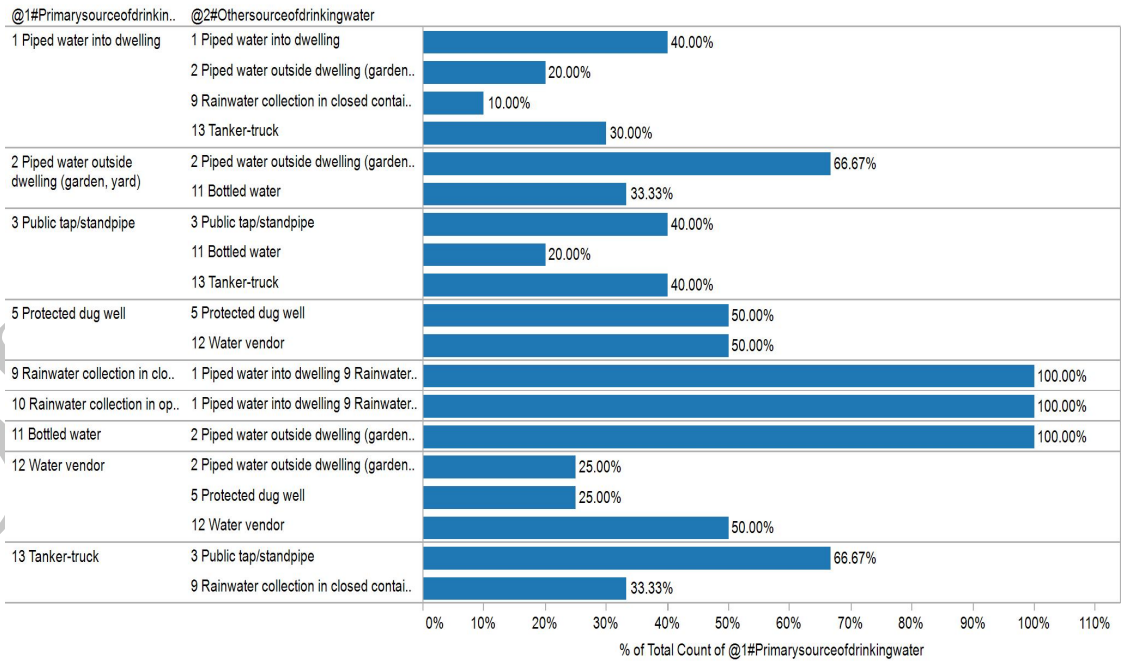
Source: Kindunguni Informal Settlements survey data, 2024.

From the findings it is evident that WSPS play an important role in the provision of water as piped systems are the leading source of drinking and cooking water. Thus, there is need for WSPS to ensure that they provide clean water and quality services to the residents. However, during construction, it is important that water infrastructure is protected.

Alternative Sources of Water due to Climate Change

The survey established that among the households that had water piped into either their dwelling or compound, there was consistency in the sources of water occasioned by climate/weather pattern changes. However, among households whose primary source was either boreholes / wells, or public standpipe, there were changes in sourcing the commodity from either vendors or homes with piped water *(figure 9).*

Figure 5: Alternative sources of water occasioned by climate/weather patterns changes

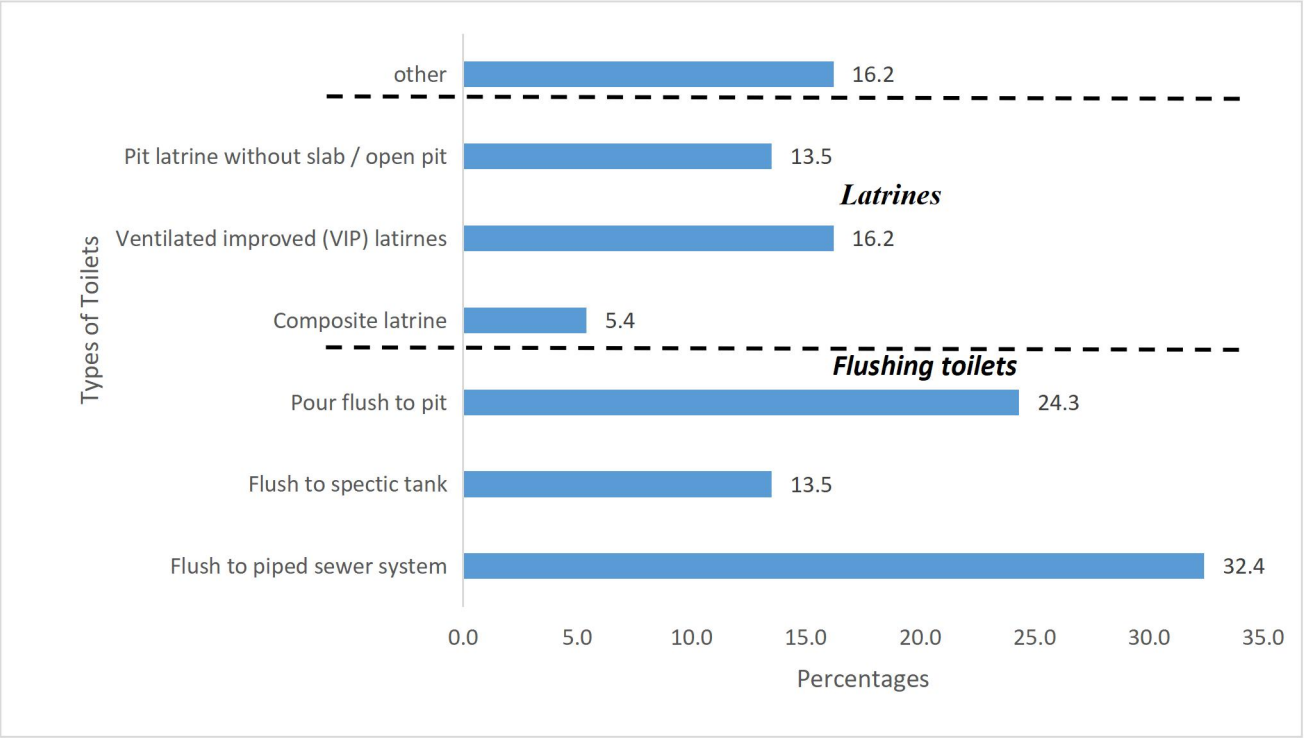


Source: Kindunguni Informal Settlements survey data, 2024.

Types of Toilets

Over 98% of the households that were visited had a toilet facility within the compound, while the 16.2% reported using a communal toilet or nearby grounds. The survey established the presence of flushing toilets in Kindunguni Settlements which accounted for 70.2% of the responses. In addition, it was observed the presence of latrines in form of having a slab and an open pit, still practiced in certain quarters. *Figure 16* profiles the type of toilets in Kindunguni Settlements survey.

Figure 6: Types of sanitation facilities



Source: Kindunguni Informal Settlements survey data, 2024.

This appears to be a good practice of disposing human waste. Using open pits as shown above (done by some few) is a hazardous practice. This segment of the population needs to be sensitized on sound hygiene practices. Deliberate effort between the community, civic bodies and development partners should see the up scaling of the VIP as the latrine of choice for the residents of the informal settlements.

4.1.9 Drainage

The drainage system here is non-existent and people dispose waste carelessly all over their surroundings. Kindunguni settlement has a poor drainage system with runoff collecting at a point just before the Kenya Navy base. This makes it difficult to access homesteads located across the stream, a situation that necessitates for improvisation with a temporary bridge which is sometimes washed away and residents must wade across. Waste water is disposed in open spaces, street surfaces and even directly to water bodies. This is potentially hazardous and therefore calls for the improvement of the drainage system.

4.1.10 Safety in Kindunguni Settlement Area

In Kindunguni settlement area, drug and substance abuse among other unethical behavior contribute to insecurity in the settlement.

However, the national government administrators handle crimes as they occur through the national police service collective and interventionist approach to resolving crimes as they occur. This system is intact and well understood by the community members, when need arises the police arrest and take for prosecution and redress measures.

Crime hotspots in Kindunguni Settlement Area

The leader in the settlement were involved in the mapping of crime hotspots in the settlement. Crime hot spot is Mweza are where murder and robbery with violence are a common occurrence.

Gangs of youth's attack and rob people at night in Mweza Therefore, the contractor will need to be informed of these occurrences, the fact that gangs exist means crime rates will increase especially with the coming in of construction labor force. The hot spots are marked in the GIS map which is a separate out in this project of Kindunguni Settlement Zones

The settlement has at most one floodlight located at a road junction. However, the settlement is too large to have one floodlight since the area is associated with insecurity issues.

5. POLICY, LEGAL AND INSTITUTIONAL FRAMEWORK

1.2 National Laws and Regulations

Table 17: 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 manage, develop, rehabilitate and maintain all road projects	Any road upgrade project falls under the purview of this legislation.
Public Roads and Roads of Access Act 1972 revised 2010 Cap 399	Safeguards the right of the public use public roads constructed.	The project entails public road upgrades of the informal sentences

Law/Regulation	Objective	Application
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.
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 Mombasa County Government
Urban Areas and Cities (Amendment) Act, 2017.	Denotes the creation of integrated development plan for every county	The proposed project should be integrated in the County Integrated Development plan
National Construction Authority ACT No. 41 of 2011	Encourages the standardization and improvement of construction techniques	The project involves construction activities
Sustainable Waste Management Act 2021	Provide guidelines on solid waste management on project cycle	Mitigate potential solid waste productions during construction stages and the entire proposal on waste management systems
Children Act (2001), revised 2016	Children are being protected from child labour and all forms of violence	Construction camps are likely to interact with children it is mandatory the follow the law to avoid child exploitation. This act also prevents SE
Employment Act, 2007	Aims to regulate the relationship between employers and employees, ensuring fair labor practices and protecting the rights of workers.	This Act shall apply to all employees employed by any employer under a contract of service and shall not apply to; (a) the armed forces; the National Youth Service; and an employer and the employer's dependents where the dependents are the only employees in a family undertaking.
Sexual Offences Act (2006)	Protection of all persons from harm from unlawful sexual acts,	Sexual vices are expected to impact the society and as such a

Law/Regulation	Objective	Application
	and for connected purposes.	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.

1.3 County Laws and Regulation

Table 18: County Laws

Law	Objective	Application
Mombasa 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

1.4 National Policy Framework

Table 19: 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	Guarantee safe and peaceful working environment	During construction and demolition phase of the project there will be employment.

Policy	Objective	Application
and Strategies for Kenya		

1.5 County Policy Framework

Table 20: County Policies

Instrument	Objective	Application
Mombasa 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.

1.6 Sustainable Development Goals

Table 21: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.

Instrument	Objective	Application
SDG Goal 10	Reduced inequalities	Services provided by each project infrastructure is intended to be accessible to all for example the roads constructed.
SDG Goal 11	Sustainable cities and communities	The proposed project plans to improve/develop informal settlements of Kindunguni settlement, Mombasa 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.

1.7 Multilateral Environmental Agreements

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

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

United Nations Framework for Convention on Climate Change (UNFCCC)

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

Vienna Convention for the Protection of Ozone Layer

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

Convention on Biological Diversity (1992)

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

African Union- Agenda 2063

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

African Charter on the Rights and Welfare of the Child.

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

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

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

1.8 World Bank Operational Safeguards

Table 22:World Bank Safeguard Policies

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	Identification and assessment of potential impacts on physical and	Outlines the institution's commitment to promoting

Instrument	Objective	Application
Resources	cultural resources during project preparation	sustainable development while safeguarding physical and cultural resources affected by Bank-financed projects.
World Bank's Access to Information, 2015 (Amended)	To enhance transparency, accountability, and stakeholder engagement in Bank-financed projects.	Applied to all WB projects.
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.

1.9 KISIP 2 Instruments

Table 23: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

This chapter delineates the procedures involved in public consultation to identify the principal issues and impacts related to the proposed project. Input was solicited from local residents, stakeholders, surrounding institutions, and development partners—individuals or entities with a vested interest or potential impact from the proposed project. This was achieved through the administration of questionnaires and conducting interviews, as outlined in the Environment Management and Coordination Act, 1999. Section 17 of the Environmental (Impact Assessment and Audit) Regulations 2003 explicitly mandates an ESIA to "seek the views of persons who may be affected by the proposed project."

The Environmental Assessment Policy of the World Bank Group (OP 4.01, January 1999) mandates the consultation of project-affected groups and local non-governmental organizations (NGOs) during the impact assessment process regarding potential environmental and social impacts. The objective of such consultation is to incorporate local perspectives into the formulation of environmental and social management plans, as well as project design. Ongoing consultation during project execution is also mandated.

The following section succinctly outlines the results of the consultations for the ESIA, affirming that the project complies with these stipulated requirements.

6.1 Objectives of The Consultation and Public Participation (CPP)

The objective of the consultation and public participation was to:

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

6.2 Methodology

The following techniques and instruments were used for public consultations: site survey and assessment, conducting a public meeting (barazas) for the Kinduguni community and administration of general questionnaires. The issues were captured through administering of questionnaires and a formal meeting for stakeholders, focus group discussions, interviewing technical persons (informants) from the key departments and community members.

The marginalized where notified through the Mombasa County Officer from the respective ministry. The county officer communicated with the SEC Committee chairperson together with GRC committee members who then informed the rest of the members and other Chaani residents through word of mouth.

Official minutes were formulated after the meeting and are therefore attached in this report for reference.

6.2.1 Stakeholder Schedule

Table 21: Summary of Stakeholder schedule

Meeting Venue	Date	Participants	Gender	
			Male	Female
Chiefs Office conference room	23rd May 202	Local authority (1), Youth (3), Women (4), Elders (6), Business community (2) and consultant.	10	3

The attendees gave a candid view of the proposed project. The views reflect different interests and positions in the community. They expressed appreciation to the proponent for the proposal of installation of the High Mast Flood Lights since it will benefit the residents. The environmental experts incorporated the raised concerns and views of all stakeholders and the affected people in this EISA Comprehensive Project Report.

Table 22: Public barasa crucial agendas raised.

Attendee	Issues raised	Consultant Response
Bakari Kea	What kind of roads will be constructed?	Most roads will be cabro based (Paving blocks).
Bakari Kea	Will culverts be installed?	Yes. Culverts will be installed alongside the drainage facility to facilitate crossing and hinder damage of road by flowing water.
Abdalla Salim	How will the contractor secure his construction material?	Contractor will hire local security personnel.
Abdalla Mkullu	Will the locals be hired to perform manual tasks?	Manual works and unskilled laborers will be hired from the local area to increase livelihoods of the settlement.
Tajiri	Will there be underground drainage?	According to the designs, there will not be such installation. However, if the engineer/contractor deems it appropriate, adjustments can be made in the designs.
Abdalla Salim	How does one address conflict when it arises between contractor's men and the locals?	Report to sec chair/GRC who will relay the message to the county officers responsible and appropriate action will be undertaken.

Below are some of the positive impacts that they highlighted;

- Creation of short- and long-term employment opportunities
- Improvement in security issues and reduction in crime rate
- Increased business hours hence improved living standards of the people
- Increased revenue both to county and national governments due to increased business/working hours
- Social life will be improved with residents able to host visitors for longer hours in the evenings.
- Improved access to toilets at night enhancing hygiene and sanitation.

6.2.2 Analysis of data collected through Questionnaires

The participants were given a total of 35 questionnaires to fill and a total of 28 responses were received. Kiswahili was used as the medium of communication even the questionnaires were written in English. This was mainly done at the places where meetings were held and along random individuals found within the settlement.

6.2.3 Statistical analysis responses

Table 23: Statistical analysis responses

Response	Number	Percentage
Approved the project	13	100%
Disapproved the project	0	0%

Photography

Still digital photographs were taken as evidence of site visit and reality on the ground during the time of field assessment. Photography is a very useful tool in data collection. It represents a true picture on the ground as it was at the time of visit.

Photograph Plate 1: Public participation meetings at Kidunguni – Chief's Office

Source: public consultative meeting photography.

Outcome of Consultative Public Participation

- **Employment**: This is a key benefit of any project that host communities can gain from a proposed project during construction phase and at operation phase. They thus expressed the need for the proponent to observe the following with regard to employment. Those responsible for project implementation ensure that youth from the area are given priority (60-70%) in recruiting labour force. While recruiting employees during the operation phase there is need to consider local population skilled in various issues.
- **Project Implementation**: Given the immense benefits that the proposed project will produce, the community members urged the proponent to hasten so that the community can start benefitting from it. Those living in towns are especially very keen on the transportation aspect on their environment on storm waste water management, and street lighting.
- **Manual labour**: Community suggested that as much as is practically possible, machinery should not be used where manual labour can be used to increase employment opportunities for the community.
- **Reduced pollution**: The residents living around the project location felt that regular sprinkling of water and road maintenance will help curb the problem of air pollution by dust emission during construction and from potholes. The major source of pollution for the environment was identified to be dust emissions. This has led to loss of aesthetic value of the environment. The proposed project if implemented and operated as envisioned will arrest this pollution
- **Participation in the life of the community**: The proponent has become part and parcel of the local community. There is thus need to fully participate in the life of the local community in improving the life of the people.
- **Remuneration**: Contractors should be advised not to underpay local people who will be employed on casual basis.
- **Open communication**: To avert unnecessary conflicts, there is need for prompt communication to all stakeholders. This could be through the use of the local administration and any information or clarification about stakeholders' position on project need to be promptly availed to any interested party. Any complaints need to be handled through the structured grievance redress mechanism as presented in this report.

- **Project acceptance and support**: There was a near unanimous support for the proposed project. This was as a result of clear explanation of what is proposed and the way forward in the implementation process. The community understood that the project is feasible in all aspects. In addition, the project will spur growth in the area. The local administration indicated that he and the entire community would support the project as long as it promoted development in the area. The community has no objections for the project since there are similar projects in other parts of the country that have benefited the residents.
- **Compensation:** The community from Kindunguni settlement expressed a concern regarding the compensation for marked houses set for section demolitions. This indicated a need for a robust Compensation and Resettlement Action Plan (RAP). The RAP outlined clear and fair compensation mechanisms for affected households, ensuring that those losing their homes due to the project are adequately compensated. The compensation package took into account the market value of the properties, any associated relocation costs, and other related expenses.
- **Increase in the spread of STD, HIV and AIDS:** The residents along the proposed road corridor expressed concern that there would be an increase in incidences of sexually transmitted diseases including HIV and AIDS especially during construction of the road as a result of increased prostitution. The project proponent will need to work jointly with appropriate county and county government public health agencies in order to come with a comprehensive STD, HIV and AIDs control programme during the construction and operational phases of the project.

6.2.4 Project acceptance and support

There was a unanimous support for the proposed project. This was as a result of clear explanation of what is proposed and the way forward in the implementation process. The community understood that the project is feasible in all aspects. In addition, the project will spur growth in the area. The local community leaders indicated that it and the entire community would support the project as long as it promoted development in the area. The stakeholders have no objections for the project since there are similar projects in other settlements/estates within Mombasa County that has benefitted the residents.

6.2.5 Recommendations

The locals were emphatic especially on the need to consider local population first while recruiting unskilled laborers during the construction especially on non- technical jobs. They also said that the Contractors should be advised not to underpay local people who will be employed on casual basis. To avert unnecessary conflicts, there is need for prompt communication to all stakeholders. This could be through the use of the local administration and other such forums. Any information or clarification about stakeholders' position on project need to be promptly availed to any interested party.

Key recommendations and mitigation measures made by the local people is included in the EMP so that responsibilities and budget for mitigation can be allocated.

6.3 General Questionnaire Findings

A total of 30 Kindunguni settlement residents were actively engaged in an informative questionnaire to obtain crucial data on issues ranging from solid waste disposal, water supply, transport and access and security. A filled sample questionnaire is annexed in this report as *Appendix 2: Sample Filled in Questionnaires*
The following is a tabular presentation of showcasing key findings from the 30 respondents.

Table 26:Questionnaire findings

Do you support the Improvement Project?		
Yes	Not Sure	No
1000%	0%	0%

Table 27: Questionnaire findings 2

Will the project accrue more positive impacts or negative impacts?		
More of Positive	Not Sure	More of Negative impacts
95%	0%	5%

The respondents were later engaged to state what form of positive impacts and negative impacts they would expect once the proposed projects are implemented and operational. The following are highlighted responses from the respondents;

Table 28: : Predictive impacts by questionnaire respondents

Possible impacts that may arise:	
Positive Impacts	Negative Impacts
Easy access within the settlement	Noise during construction
Growth of business activities	Dust and waste from construction activities
Creation of new business opportunities	Poor aesthetics during construction
Increased security	Temporary displacement of business
Improved quality of life	Social disruption
Reduction in flooding during rainy seasons	Potential construction accidents
Aesthetic improvement	Community division over project scope
Support of night time business	
Increase supply of water	
Access to affordable clean water	

6.4 Summary of Analysis

Table 29: summary of CPP findings

Form of Participation	Participants	Date	Summary of Issues
General Questionnaire	30 Randomly selected from members from the general public	12th February 2024	• Narrow and unmaintained road situation. • Clogging of drainage facilities and flooding. • Non-functioning street lighting. • Shortage of water supply. • Creation of skilled and unskilled labour during project implementation • Growth and development of the settlement. • Proper compensation of project affected persons.

Public Meetings/ Key stakeholder/informant Interviews	Representatives from: • People with disabilities • Youth • Religious leaders • Public institutions leaders • Women leaders	23rd May 2024	• Insecurity • No-existent drainage and solid waste disposal system. • insufficient fresh water supply. • Poor solid waste disposal. • Lack of special schools for disabled children. • Encourage members in the settlement to participate in more public consultation meetings. • More sensitization exercises. • Creation of employment • Environmental degradation • Drug and substance abuse among the youth. • Lack of youth empowerment. •
Socio-economic Survey	Members of the general public and sampled households.		• Poor waste water disposal system. • Flooding of certain areas in the settlement. • insufficient of fresh water for drinking. • Relocation of some water infrastructure to prevent damage from project implementation. • Minimize demolition of permanent houses. • Rise and growth of criminal gangs in the settlement

6.5 Public Disclosure of ESIA, RAP, CPR 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.

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 ESIA Reports are available throughout the project area. During the disclosure period, interested and affected parties will submit their final comments and concerns about the Reports.

The Reports and information will also be disclosed at the ESIA Stage by NEMA and during Project Implementation Stage by 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).

6.6 Construction, Operation and Decommissioning Phase Consultations

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

Table 30: Stakeholder Consultations during Project Construction and Operation Phase

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

6.7 Community Relations in Construction Phase

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

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

The objectives of the Community Relations Programme will be to:

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

6.8 Construction Contractor's Role in Community Liaison

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

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

6.9 Community Relations in Operational Phase

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

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

6.10Decommissioning

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

7. IDENTIFICATION OF ENVIRONMENTAL AND SOCIAL IMPACTS AND MITIGATION MEASURES

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 24: Impact Classification Criteria

Impact Level	Definition
Low	Negligible Impact: The activity or event is expected to have minimal or insignificant consequences on the environment, social well-being, or project objectives.
	Localized Impact: The effects are confined to a small area or a limited number of individuals or resources, and are easily manageable with routine measures.
	Temporary Impact: The effect is short-lived and reversible, with no long-term or permanent alterations to the environment or social conditions.
Medium	Moderate Impact: The activity or event may result in noticeable changes to the environment, social well-being, or project objectives, but these are generally manageable with appropriate measures.
	Regional Impact: The effects extend beyond the immediate project area, potentially impacting a broader geographical area or a larger population, requiring specific management strategies.
	Potential for Reversible Impact: While the impact may be significant, it has the potential to be mitigated, restored, or rectified over time with proper intervention.
High	Significant Impact: The activity or event is expected to lead to substantial and potentially irreversible changes to the environment, social well-being, or project objectives, necessitating intensive management efforts.
	Widespread Impact: The effects are extensive, reaching a large area or a significant portion of the population, potentially affecting critical resources or services, requiring comprehensive management actions.
	Long-term Impact: The consequences are enduring and may persist even after the project has concluded, potentially influencing future generations or the overall sustainability of the area.

Table 25: Impacts Consequences

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

Disastrous / Extremely harmful	5	National	5	Post closure / permanent	5

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

Table 26: Impacts Likelihood

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

Total Rating of Impact Likelihood = Rating of Frequency/Duration of Activity + Rating of Impact Frequency
The definitions used in the impact assessment are given below:

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

Table 27: Significance Rating Matrix

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

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

Table 28: Negative Impacts ratings and associated colour codes

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

7.1 Anticipated project positive impacts during Pre-construction Phase

7.1.1 Roads & Drainage

Inclusivity in decision making

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

Enhancement

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

Employment for surveys especially enumerators

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

Enhancement

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

7.1.2 Street lighting

Inclusivity in decision making

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

Enhancement

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

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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 During Pre-Construction Phase

7.5.1 Roads

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 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 *(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 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.

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

7.5.2 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 33: 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 34: 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 35: 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 36: 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 37: 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 38: 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 39: 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 40: 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 41: 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 42: 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 43: 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 44: 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 45: 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 46: 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 47: 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 48: 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 49: 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 50: 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 51: 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 52: 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

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 53: 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 54: 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 55: 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 56: 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 57: 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 58: 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 59: 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 60: 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 61: 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 62: 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 63: 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 64: 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 65: 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 66: 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 67: 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 68: 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 69: 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 70: 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 71: 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 72: 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 73: 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 74: 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.

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 75: 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.

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 76: 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 77: 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 Majaoni 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 78: Alteration of natural drainage patterns impacts rating

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

Mitigation measures

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

7.7.3 Street Lighting

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

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

Table 79: 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 80: 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 81: 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 82: 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:

2. A programmable timer shall control exterior lights.
3. Generator should be provided as a full backup energy source throughout the development.
4. Install and routine maintenance of energy efficient appliances e.g. LED bulbs etc.
5. Monitor energy use during construction and set reasonable limit.
6. Put off all lights immediately when not in use or are not needed.
7. The water booster set will contain inverter pumps for energy saving and precise control of flow and pressure rate.
8. Turn off machinery and equipment when not in use.
9. 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 83: 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 84: 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.

7.8 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 85: 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 86: 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 87: 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 88: 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 89: Health and safety concerns impacts rating

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

Mitigation measures

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

7.8.2 Drainages

Disruption of Services *(Low Medium)*

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

Table 90: 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

4. Implement phased decommissioning to minimize disruption to services.
5. Provide alternative routes or transportation options for affected commuters.
6. 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 91: 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 92: 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

4. Implement recycling and reuse programs for materials like concrete and asphalt.
5. Properly dispose of hazardous materials in accordance with regulations.
6. 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 93: 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 94: 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.

7.8.3 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 95: 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

7. Implement phased decommissioning to minimize disruption to services.
8. Provide alternative routes or transportation options for affected commuters.
9. 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 96: 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 97: 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 98: 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 99: 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.

Communicate potential risks to the public and provide guidance on safety precautions.

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

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

8.1 Purpose and Objectives of ESMMP

The ESMMP describes the range of environmental and social issues associated with the project and outlines corresponding management strategies that will be employed to mitigate potential adverse environmental impacts. The ESMMP conveys the Project's environmental and social constraints. The project will comply with all local laws and regulations, which seek to ensure that the road construction and operation does not adversely affect the environment and social community resources.
The project supervision may periodically revise the ESMMP in consultation with the Contractor, and subject to the approval from National Environment Management Authority (NEMA). The revisions may be made to accommodate changes in work, weather, and general conditions. The ESMMP should be made available to all the project staffs.
The objectives of the ESMMP are:

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

8.2 Auditing of the ESMMP

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

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

8.3 Responsibilities for the Implementation of the ESMMP

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

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

8.3.1 Kenya Informal Settlement Improvement Project (KISIP)

KISIP will be responsible for:

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

8.3.2 National Environment Management Authority (NEMA)

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

8.3.3 The Contractor(s)

The Contractor will be responsible for:

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

8.3.4 **Supervising Consultant**

The Supervising Consultant will be responsible for:

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

8.3.5 **Directorate of Safety and Health Services (DOSHS)**

DOSH will be responsible for:

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

8.3.6 **Mombasa County Government**

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

8.3.7 **Mitigation of Design Stage Impacts**

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

8.4 Environmental and Social Monitoring and Management Plan

8.5.1 ESMMP for Preconstruction Stage

8.5.1.1 Roads

Environmental impact	Impact level	Proposed Mitigation Measures	Monitoring Indicators	Responsibility	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 Mombasa Contractor	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 Mombasa Consultant KISIP	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	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	During designing Stage	250,000.00

8.5.1.2 ESMMP for Drainages

Environmental impact	Impact level	Proposed Mitigation Measures	Monitoring Indicators	Responsibility	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 Mombasa Contractor	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 Mombasa Consultant KISIP	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	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	During designing Stage	250,000.00

8.5.1.3: ESMMP for Streetlights

Environmental impact	Impact level	Proposed Mitigation Measures	Monitoring Indicators	Responsibility	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 Mombasa Contractor	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 Mombasa Consultant KISIP	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	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	During designing Stage	250,000.00

8.5.2 **ESMMP for Construction Phase (Roads, drainage and street lighting)**

8.5.2.1 ESMMP for Roads

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 Sulphur diesel.	Cases of respiratory complication at nearby health centre. Records of machine and vehicle	Environmental Consultants Contractor	Continuous	300,000.00

Possible Impact	Impact Rating level	Management Actions	Monitoring Indicators	Target Areas and Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
		Regular maintenance and service of construction machinery and equipment in accordance to manufacturer specifications to minimize the generation of hazardous gases. Providing PPEs such as nose masks to the workers in dusty areas on the site. Maintain regular training of all personnel on methods for minimizing air quality impacts during construction. Ensure a strict schedule plan for all equipment to avoid unnecessary trips and minimize idling of engines. Enforce of EMCA 2015 (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.	maintenance Low dust generation during construction Availability and use of Nose Masks			
Water Pollution	Low	Implement best management practices for construction activities to prevent runoff contamination. Ensure al machineries are serviced at a dedicated service	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)
		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				
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						

Possible Impact	Impact Rating level	Management Actions	Monitoring Indicators	Target Areas and Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
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 users Conduct regular training Document all near misses, incidents and accidents. Conduct risk assessments for all general, standard and	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)
		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 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	Environmental and Safety Management Manager Mombasa 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	Number of security concerns reported.			
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 Mombasa 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	Number of complaints from community due to lack of	Environmental and Safety Management Manager Contractor	Throughout Project	100,000.00

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

8.5.2.2 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	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)
		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.				
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	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)
		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 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 with HIV/AIDS, promoting inclusivity and reducing stigma. Alias with local security administration for insecurity management	HIV/AIDS awareness trainings Availability of VCT facilities Social awareness and trainings	Sociologists Environmental and Safety Management Manager Contractor	Throughout Project	300,000.00

Possible Impact	Impact Rating level	Management Actions	Monitoring Indicators	Target Areas and Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
Occupational Safety and Health issues	Moderate	Enforce strict safety protocols and provide regular training for all construction personnel. Conduct routine safety inspections and audits to identify and address potential hazards. Establish an emergency response plan to handle accidents promptly and efficiently. Provide all workers with appropriate full protective gear. These include working boots, overalls, helmets, earmuffs, masks, and gloves. Make available a fully equipped First aid kit that is manageable by a trained qualified first aider. Use of signage's at work construction site for communication to non-workers and other road users Conduct regular training Document all near misses, incidents and accidents. Conduct risk assessments for all general, standard and high risk jobs Engage only qualified personnel on operating or conducting high risk jobs Issue work permits after risk assessment is 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	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)
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 Camps, Yards, Stores and to the Supervising Team's Offices	Availability of security officers on site	Environmental and Safety Management Manager Mombasa 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 Mombasa 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	Throughout Project	100,000.00

Possible Impact	Impact Rating level	Management Actions	Monitoring Indicators	Target Areas and Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
				coordinator		
Risk of excluding some beneficiaries due to unfriendly infrastructure designs	High	The implementation of the infrastructure assumed universal design. Disseminate this information to the beneficiaries through public participation forums	Number of beneficiaries engaged during the public participation meetings	KISIP Contactor Consultant	Initial and Ongoing	200,000.00

8.5.2.3 ESMMP for Streetlights

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

Possible Impact	Impact Rating level	Management Actions	Monitoring Indicators	Target Areas and Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
Occupational Safety and Health issues	Moderate	Enforce strict safety protocols and provide regular training for all construction personnel. Conduct routine safety inspections and audits to identify and address potential hazards. Establish an emergency response plan to handle accidents promptly and efficiently. Provide all workers with appropriate full protective gear. These include working boots, overalls, helmets, earmuffs, masks, and gloves. Make available a fully equipped First aid kit that is manageable by a trained qualified first aider. Use of signage's at work construction site for communication to non-workers and other road users Conduct regular training Document all near misses, incidents and accidents. Conduct risk assessments for all general, standard and high risk jobs Engage only qualified personnel on operating or conducting high risk jobs Issue work permits after risk assessment is 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	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)
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
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 Mombasa County Government Officials	Throughout Project	150,000.00
Disruption to Public Services	Low Medium	Coordinate with relevant public service providers to adapt services during construction. Communicate service disruptions in advance to minimize inconvenience for residents. Establish a hotline or platform for residents to report service disruptions and address concerns.	Number of complaints from community due to lack of certain services	Environmental and Safety Management Manager Contractor Relevant County Government department with help of KISIP County coordinator	Throughout Project	100,000.00
Risk of excluding some beneficiaries due to unfriendly infrastructure designs	High	The implementation of the infrastructure assumed universal design. Disseminate this information to the beneficiaries through public participation forums	Number of beneficiaries engaged during the public participation meetings	KISIP Contactor Consultant	Initial and Ongoing	200,000.00

8.5.3 ESMMP for Operational Phase (Roads, drainage and street lighting)

8.5.3.1 ESMMP for Roads

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 Mombasa; 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 Mombasa, 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 that would ensure especially persons with	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)
		disability, the elderly and women have access to job opportunities. Undertake recruitment transparently, while ensuring the inclusion of disadvantaged groups. Develop and implementation of a stakeholder engagement plan. Engage stakeholders throughout the project phase as guided by the approved stakeholder engagement plan.				

8.5.3.2 ESMMP for Drainages

Possible Impact,	Impact Rating Level	Management Actions	Monitoring Indicators	Responsibilities	Monitoring Frequency	Estimated Budget(KShs)
Gender-Based Violence and Sexual Exploitation and Abuse (SEA) and Sexual Harassment (SH)	Medium high	Develop and implement a plan to manage the risk of SEA/SH. Map the GBV referral pathways and create awareness among women and men on the risk of SEA/SH. Ensure the GRM is SEA/SH-responsive.	Number of GBV cases reported and solved. GBV Awareness trainings	County Government of Mombasa; 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 Mombasa, 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 Promoting sustainable agricultural practices to reduce runoff and pollution Strengthening regulatory frameworks and enforcement mechanisms to prevent	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)
		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 approved stakeholder engagement plan.	Number of stakeholders involved and proof of their support.	SEC, GRC, KISIP	Monthly	200,000.00
Alteration of Natural Drainage Patterns	Very Low	Conduct detailed hydrological studies to understand natural drainage patterns. Design drainage systems that mimic natural flow to reduce environmental impact		SEC, GRC, KISIP	Quarterly	200,000.00

8.5.3.3 ESMMP for Streetlights

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

Possible Impact,	Impact Rating Level	Management Actions	Monitoring Indicators	Responsibilities	Monitoring Frequency	Estimated Budget(KShs)
		aspects such as GBV, as well as anonymity.				
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 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.	Reduced and conservative use of energy	County Government of Mombasa, KISIP, Contractor	Throughout Project	300,000.00

Possible Impact,	Impact Rating Level	Management Actions	Monitoring Indicators	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.	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 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		SEC, GRC, KISIP	Throughout Project	No additional cost

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

8.5.4 ESMMP for Decommissioning Phase (Roads, drainage and street lighting)

8.5.4.1 ESMMP for Roads and footpaths

Possible Impact	Impact Level	Management Actions	Monitoring Indicators	Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
Disruption of Services	Low Medium	Implement phased decommissioning to minimize disruption to services. Provide alternative routes or transportation options for affected commuters. Schedule decommissioning activities during off-peak hours to reduce impact on traffic flow.	Number of services affected Duration of service disruptions. Percentage of planned versus unplanned disruptions.	SEC, GRC, KISIP, County Government of Mombasa	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

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

8.5.4.2 ESMMP for Drainages

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

Possible Impact	Impact Level	Management Actions	Monitoring Indicators	Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
		measures to prevent soil erosion and water pollution. Replant native vegetation and restore habitats affected by decommissioning activities.	compliance with erosion control practices Survival rates of replanted native vegetation			
Waste Generation	*Low Medium*	Implement recycling and reuse programs for materials like concrete and asphalt. Properly dispose of hazardous materials in accordance with regulations. Encourage contractors to minimize waste generation through efficient construction and decommissioning practices.	Adoption rate of recycled materials in new construction projects Compliance with hazardous waste disposal regulations Implementation of practices to reduce packaging waste, excess materials, and unnecessary disposal.	Environmental Management Team/Consultant, KISIP	Throughout Decommissioning	250,000.00
Economic Loss	Low Medium	Provide support and incentives for local businesses affected by decommissioning. Offer compensation or assistance programs to mitigate financial losses. 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	Medium	Enforce strict safety regulations and	Adherence to safety regulations and incident	KISIP,SEC,GRC	Throughout Decommissioning	200,000.00

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

8.5.4.3 ESMMP for Street lighting

Possible Impact	Impact Level	Management Actions	Monitoring Indicators	Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
Disruption of Services	Low Medium	Implement phased decommissioning to minimize disruption to services. Provide alternative routes or transportation options for affected commuters. Schedule decommissioning activities during off-peak hours to reduce impact on traffic flow.	Number of services affected Duration of service disruptions. Percentage of planned versus unplanned disruptions.	SEC, GRC, KISIP, County Government of Mombasa	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	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)
		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. Replant native vegetation and restore habitats affected by decommissioning	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	Environmental Management Team/Consultant, KISIP	Throughout Decommissioning	300,000.00

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

9. GRIEVANCE REDRESS MECHANISM

This section describes the project's Grievance Redress Mechanism. The overall objective of the GRM is to establish an effective communication channel among project stakeholders for providing a timely and efficient two-way feedback mechanism to address any grievances and complaints against the project from multiple stakeholders and Project Affected. This GRM complies with the Law of Kenya and international best practices. During the proposed implementation of Kidunguni projects, grievances, complaints as well as disputes are expected to arise from several stages of the project including design and implementation phase.
Effective and timely response to community complaints is essential for maintaining good community relations. KISIP is committed to having an effective complaints handling system that reflects the needs, expectations and rights of complainants.

8.5 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.

8.6 The Three Tier of Grievance Redress Mechanism

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

1) Informal Resolution

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

2) Formal Resolution

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

3) Appellate or Escalation Level

If the aggrieved party is not satisfied with the resolution provided at the formal level, they may have the option to escalate the matter to a higher authority or an appellate body. This tier involves a review of the previous decisions or actions taken, and it may include a reconsideration of the grievance based on new evidence or

arguments presented. The appellate or escalation level provides a final opportunity for a fair and impartial review of the grievance before a decision is made.

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

8.7 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 36: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 37: Grievance Redress Mechanism

Step	Process	Description	Timeframe	Responsibility

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

8.8 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.

8.9 GRM Cost Estimate

Table 38: 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 Kidunguni settlement, and is dependent on the total project duration, which is estimated to be 12 months, making the total cost to **KSHS. 324,000.**

10. CONCLUSION AND RECOMMENDATIONS

11.1 Conclusion

The Environmental and Social Impact Assessment (ESIA) for the Kidunguni projects under KISIP II has been undertaken following international best practices, regulatory mandates, and principles of stakeholder engagement. The study's objective was a thorough evaluation of the potential environmental and social impacts linked to the project. It sought to identify mitigation measures and formulate an effective Environmental and Social Management Plan (ESMP) to provide guidance for the project's implementation.

In summary, the Kindunguni Settlement Project represents a transformative initiative aimed at enhancing the overall quality of life for the community through the construction of critical infrastructure, including roads, drainage systems and street lighting. While these improvements are poised to bring about positive socio-economic impacts, it is essential to acknowledge and address potential challenges associated with resettlement, demolition, and environmental concerns.

Moreover, the project aligns with regional development goals, promising positive socio-economic impacts for the residents of Kindunguni settlement. Beyond the physical enhancements, the construction activities are expected to generate employment opportunities, further stimulating the local economy.

In conclusion, the Comprehensive Project Report (CPR) has provided a comprehensive evaluation of the proposed project's potential environmental and social impacts. Through rigorous data collection, analysis, and stakeholder engagement, key findings have been identified, including both positive and negative impacts associated with the project. The report outlines a range of mitigation measures aimed at minimizing adverse effects on the environment and communities.

Furthermore, the ESIA process has facilitated transparency, accountability, and inclusivity by incorporating stakeholder feedback and adhering to regulatory requirements. Overall, based on the findings and recommendations presented in the CPR, it is evident that the proposed project can proceed in a manner that promotes environmental sustainability, social responsibility, and long-term positive outcomes for all stakeholders involved. However, ongoing monitoring, compliance, and adaptive management strategies will be essential to ensure that the project's objectives are achieved while mitigating any unforeseen impacts that may arise during implementation.

11.2 Displacement Impacts

It is evident that some resident of the area will be affected by the project therefore triggering a resettlement plan.

Therefore, the ESIA concludes that, through the implementation of the proposed Environmental and Social Management Plan, the projects planned for Kindunguni settlement in Likoni sub-county are well-positioned to yield positive outcomes while effectively addressing potential adverse impacts. The thoroughness of the assessment, along with robust stakeholder engagement and a clearly defined ESMMP, signifies a commitment to environmental and social responsibility.

11.3 Key Findings

Situational Analysis Report

The exercise concluded swiftly with identification of 12 PAPs having not been compensated for their structure. Any assets belonging to residents or members of Kindunguni settlement need to be regarded as affected person and qualify for compensation. The world bank safeguards have to be adhered to guide the consultant effectively.

The Situational Analysis report of Kindunguni settlement informs the current status of the resettlement/compensation program.

Asset Verification Exercise

Together with KISIP officials, Mombasa County officers and the consultant, an asset verification exercise was conducted to verify the total number of PAPs and discrepancies were identified and need to to rectified was adamant.

The initial exercise conducted by the consulted on the month of March identified 11 PAPs. However, after the verification exercise it was discovered that 1 individual was not identified hence increase in number of PAPs from 11 to 12.

Further investigations with the SEC chair of Kindunguni and county officials discovered that this same individual was in fact a PAP and compensation was made. Therefore, he no longer qualifies for the facilitation. This prompted the consultant to formulate a separate report to inform the main report (CPR) and project implementers of this development.

The number of PAPs reduced again from 12 to the final 11.

The report in mention is attached in the appendix for reference as

Positive Outcomes

Anticipated benefits to the local community encompass job creation, economic opportunities, and enhancements in infrastructure.

Adverse Consequences

Nevertheless, the project introduces potential negative impacts that necessitate careful management to mitigate adverse effects.

Mitigation Measures

A thorough set of measures has been identified and integrated into the ESMMP to effectively address potential negative impacts. These measures span various areas, including water quality, traffic management, aesthetic concerns, and others.

Stakeholder Involvement

The ESIA process gave precedence to engaging stakeholders, ensuring the incorporation of concerns and expectations from local communities, authorities, and other pertinent parties. Ongoing communication is facilitated through established feedback mechanisms.

Adherence to Regulations

The project design conforms to pertinent regulations and standards, ensuring alignment with environmental and social requirements. The ESMP includes measures aimed at preventing, minimizing, or offsetting adverse impacts.

Risk Oversight

The project has undergone a comprehensive evaluation of potential risks, including soil contamination, water quality concerns, and disruptions to public services. The ESMP incorporates strategies to effectively manage and monitor these risks throughout the project lifecycle.

Illuminate Crime and safety hot spots

To guarantee proper security for the workers and equipment, it is necessary to identify the areas that are high for crime and to make sure that the workforce for upcoming projects is well-informed. The local police service office will need to be contacted.

Hence, based on the implementation of the suggested Environmental and Social Management Plan, Kenya Informal Settlement Improvement Project in Kidunguni is projected to yield favourable outcomes while effectively

addressing potential adverse impacts. The inclusive assessment, along with robust engagement with stakeholders and a well-defined ESMP, underscores a dedication to environmental and social responsibility.

11.4 Recommendation

After conducting a thorough Environmental and Social Impact Assessment (ESIA) of the proposed project, it is recommended for implementation. The ESIA process involved comprehensive evaluations of potential environmental and social impacts, as well as the development of mitigation measures to address identified risks. Through stakeholder consultations, data collection, and analysis, the ESIA has provided valuable insights into the project's potential effects on the environment, communities, and livelihoods. The recommended implementation of the project is based on the following key findings:

Project Affected Persons (PAPs): Any assets belonging to residents or members of Kindunguni settlement need to be regarded as affected person and qualify for compensation.

The consultant recommends a follow up with the county of Mombasa for the individuals affected. Nevertheless, the implementation of the proposed project could commence considering no adverse impact is registered.

Mitigation Measures: The ESIA has identified feasible and effective mitigation measures to minimize adverse impacts on the environment and local communities. These measures include pollution control measures, biodiversity conservation efforts, and community development initiatives.

Compliance with Regulations: The project design aligns with relevant environmental and social regulations, standards, and best practices. It demonstrates a commitment to environmental stewardship, social responsibility, and sustainable development.

Stakeholder Engagement: Meaningful engagement with stakeholders, including local communities, indigenous groups, and regulatory authorities, has been a cornerstone of the ESIA process. Their feedback and input have been incorporated into the project design and mitigation measures.

Beneficial Outcomes: The proposed project is expected to generate positive socioeconomic benefits for the local communities, such as employment opportunities, infrastructure development, and enhanced access to services.

The commencement of the KISIP Kindunguni projects is recommended, with the understanding that the proposed mitigation measures and management strategies will be diligently executed and monitored. Consistent stakeholder engagement, routine environmental monitoring, and periodic audits will be integral components to ensure the project's success in minimizing negative impacts and maximizing positive contributions to the local community and environment.

11. REFERENCES

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12 APPENDICES

Appendix 1: Situation Analysis Report

Situation Analysis
Report -Kindunguni

Appendix 2: Report on Error Rectification in Kindunguni Settlement

REPORT ON ERROR RECTIFICATION IN THE KINDUNGUNI SETTLEMENT (LIKONI SUB-COUNTY) ASSET REGISTER

Introduction

The purpose of this report is to detail the findings of an error in the Asset Register Verification exercise for KISIP 2 project; identify affected individuals, and propose a revised asset register. The goal is to ensure that only those eligible receive payments and to maintain the integrity of our processes.

Error Identification

During the formulation of the final Comprehensive Report, it was discovered that one Project Affected Person (PAP) was misclassified as an uncompensated PAP due to miscommunication between SEC Chair representative by the name "Mr. White" who mistakenly indicated to the KISIP officials and consultants, that an individual by the name, Mr. John Mwatika, is an uncompensated PAP.

Therefore, through telephone communication by the consultant and the Mombasa county officer sociologist, it has been confirmed by the SEC chair that the said individual has been duly compensated and no longer qualify for compensation package.

Methodology for Error Detection

- The error detection process involved:
- Reaching out to the Mombasa County officer to confirm the situation.
- Using initial asset register records provided by the county of Mombasa.
- Confirming the allegations by the SEC chair (Bakari Kea Saburi)

Analysis and Findings

Misclassified Individual: Mr. John Mwatika was erroneously marked as eligible.

Corrective Measures

- To address these issues, the following steps were taken:
- Seeking guidance and recommendation from the KISIP officials.
- Counter checking names in the initial asset register and the final register formulated during the verification exercise.
- Excluding the name of John Mwatika from the list and formulating a new register.

Revised Payment List

The revised asset register has been generated after implementing the corrective measures. The total number of individuals eligible for compensation has been adjusted from 12 to 11. The updated register has been attached for reference.

Implications and Recommendations

The implications of the error might have led to potential financial losses and credibility issues. To prevent future occurrences, the following recommendations are made:

- Implement automated data validation tools to reduce manual errors.
- Conduct periodic checks and cross-checks of payment records.
- Carry out exercises with verified officials.

Conclusion

The identified error has been rectified, resulting in a revised and accurate asset register. Adhering to the recommendations will help mitigate similar issues in the future, ensuring the integrity of our processes.

Prepared by:

Michael Morse Momanyi

Environmental Consultant

30th May 2024

Sociologist:

Charity Gathuthi

Signature:

Date: 30th May 2024

Appendix 3: Checklist

ESMF Checklist

Questions to be considered	Yes/No. Briefly Describe	Is this likely to result in a significant effect? Yes/No/? -why
Brief Project Description The Kindunguni Settlement Project, located in Likoni sub-county, Mombasa County, Kenya, is a comprehensive initiative aimed at uplifting the living standards and infrastructure of the local community. This transformative project focuses on upgrading crucial elements such as roads, drainage systems, waste disposal sites, and street lighting within the settlement. The primary goal is to enhance overall community development, mobility, safety, and socio-economic well-being. The project aligns with regional development objectives, promising positive impacts on the daily lives of residents, improved connectivity, and sustainable growth for the Kindunguni settlement. To ensure responsible and sustainable implementation, the project undergoes a thorough Environmental and Social Impact Assessment (ESIA) to identify and address potential challenges while maximizing the positive outcomes for stakeholders and the local population.		
A: Triggers to EMCA		
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		
Does the project trigger one or more of the World Bank Safeguard policies	Yes, Follows in Category B of World Bank OP	Yes
C. GoK Policies and Laws applicable		
Does the project fall under/trigger any other GoK Policies and Laws?	Yes, it triggers some Government Acts and Policies like The Water Act 2016 and Public Health Act Cap 242 among others	Yes, these policies need to form the literature review for the ESIA
D. Project Location		
4. Is the proposed site a protected or reserved site (Provide proximity in km)? • Biosphere Reserve • National park • Wildlife / Bird Sanctuary • Wetland • Important Bird Areas • Coastal area with corals • Mangrove areas (or Estuary with, mangroves) • Natural lakes • Habitat of migratory birds (outside protected areas) • Migratory Route of Wild Animals Birds • Area with threatened/ rare/endangered fauna (outside protected areas) • Area with threatened/rare/ endangered flora (outside protected areas)	 No No No No No Yes, Appx 700Km Yes, App 800M No No	None

• Reserved/Protected Forest • Zoological Park /Botanical Garden	No No No No No	
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?	Yes, the project is 1km to Likoni Ferry	No
Are there any other areas on or around the location which are important or sensitive for reasons of their ecology e.g. wetlands, watercourses, coastal zone, mountains, mangroves, forests or woodlands, migratory routes, which could be affected by the project?	Yes, Coastal Zone is less than 700m from the settlement. Coastal zone is likely to be used for waste water discharge	Yes, Waste water disposal should be planned in advance
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. This will affect their accessibility	Yes, the project will affect the residents activities including their movement and businesses
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
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
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
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 project is located in a densely populated area with very many formal and informal settlements	Yes, some houses were demolished for the development but RAP is still ongoing

Are there any plans for future land uses on or around the location which could be affected by the project?	Currently, none	No
Are there any areas on or around the location which are densely populated or built up, which could be affected by the project?	Yes, the whole project area is densely populated with all areas built up	Yes, the population within the project location is very high
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
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
Is the site already degraded (low groundwater, poor soil quality)?	No	No
Are there steep slopes in the proximity of the investment site?	Yes, there is a stream separating Kindunguni and Menza	Yes, its effect will be felt during the proposed bridge construction and drainage design
Do people live on the proposed site?	Yes, It's a human settlement region	Yes, residents will be 100% affected by the project
Do indigenous peoples live on or near the site?	Yes, it's a mix of indigenous and foreign people	No
Is the site vulnerable to natural hazards (in floodplain, near volcano, on seismic fault, near coastline in hurricane zone)?	Yes. The area is prone to flooding because of its poor existing drainage system	Yes, there is need to have proper drainage system installed before other improvements are made
Are there land title conflicts?	No, titles have been issued	No
Are there known archaeological, historical or other cultural property? Are any of these world heritage/ UNESCO designated etc.	No	No
E. Construction Impacts		

Will construction, operation or decommissioning of the project involve actions which will cause physical changes in the locality (topography, land use, changes in water bodies, etc.)?	Yes, topography of the land will change due to construction of drainage and roads	No, not of high significance
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 externally. Water will be highly used in the operations	Yes, water resource need to be well planned to avoid conflict and shortage
Will the project involve use, storage, transport, handling or production of substances or materials which could beharmful 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 asphalt may affect the human health	Yes, contractor should prepare ESMP to guide the operations
Will the project produce solid wastes during construction or operation ordecommissioning?	Yes, there will be high production of solid waste	Yes, waste management plan should be prepared before the operations
Will the project release pollutants or any other hazardous, toxic or noxious substances to the air?	Yes, if not controlled fuels from asphalt mix plans and machines to be used on site may pollute the environment	Yes, regular maintenance of equipment recommended
Will the project cause noise and vibration o release of light, heat energy or electromagnetic energy?	Yes, the machine operations and movements will cause noise and excessive vibration to residents neighboring construction sites	Yes, baseline survey for noise and excessive vibration should be recommended and regular monitoring.
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 coastal waters which might be contaminated by oil spills	Yes, oil spills prevention mechanism recommended
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
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		

Could the investment result in a modification of groundwater levels by altering flows, paving surfaces or increasing water extraction?	Yes, the project area is flat and need to be modified to drain water to the coastline	Yes, not very significance
Could it affect groundwater quality?	No	No
Could it affect quality (through sediment, wastewater, storm discharge or solid waste) of nearby surface waters (lake, rivers, streams)?	Yes, discharge to the existing stream separating Kindunguni and Menza will affect the water quality of the stream	Yes, Proper waste water disposal techniques should be enacted
Will it affect water quantity in nearby water bodies (lake, river, stream)?	No	No
Are there nearby potable water sources that need to be protected?	No	No
G. Drainage Impacts		
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 stream	Yes, solid waste pollution to the nearby ocean should be addressed
Will it cause standing water, which could cause public health risks?	No, however it need to be monitored	No
Will erosion result in sediment discharge to nearby water bodies?	No	No
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	No
Will infiltration patterns be affected?	No, the area has coral rocks which are poor in infiltration	No
H. Ecosystem Impacts		
Could the investment affect natural habitats or areas of high ecological value?	No	No
Could it affect natural characteristics of adjacent or nearby sites?	No	No
Could it affect wildlife or natural vegetation?	No	No
I. Socio-Economic Impact		
Will the project entail resettlement of population?	No	No
Will the project affect People's property or livelihoods/income?	Yes, some properties will be affected. The RAP is ongoing	Yes, RAP should be monitored

Will the project affect indigenous peoples?	Yes, the project will lead to interaction between the locals and the from groups during and after the projects activities	No, significant impact will be noticed since the area is cosmopolitan
Will it limit access to natural resources to local populations?	No	No
Will it have an impact on land use?	No	No
Will it induce further encroachment of nearby areas?	No	No
Will it cause any health impacts?	No	No
Will it disturb nearby communities during construction?	Yes, materials will be transported through the nearby settlements	Yes, transportation and interactions should be monitored
Could cultural resources be affected?	No	No
Could it affect nearby properties	Yes, transportation of materials and construction need to be well managed to prevent destruction of nearby roads and houses	Yes, traffic management plan for transportation of materials and construction should be developed
J. Operation Impacts		
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 drainage system	Yes, the area is prone to flooding
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 activities in 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		
Acquisition of private/community land?	Yes, A-RAP was formulated during KISIP I	Yes, A-RAP should be implemented fully and PAPs compensated before implementation of the project.
Alienation of any type of government land including that owned by urbanlocal body?	No	No
Clearance of encroachment from government/ urban local body land?	No	No

Clearance of squatting from Government/Urban local body?	No	No
Number of structures, both authorized and/or unauthorized to beacquired/cleared?	Yes, 12 structures will be partially cleared	Yes. A situational report to be formulated to inform the progress of the A-RAP.
Number of household to be displaced?	Yes, 12 households will be partially affected	Yes. A situational report to be formulated to inform the progress of the A-RAP.
Details of village common properties to be alienated, Pasture land(acres)cremation /burial groundand others specify?	None	None
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
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
Are financial/in kind compensation measures expected to be needed?	Yes. A situational report to be formulated to inform the progress of the A-RAP.	Yes. A situational report to be formulated to inform the progress of the A-RAP.
L. Loss of Assets, Crops, fruit, household infrastructure and livelihood		
Will the project result in the permanent or temporary loss of Crops?	No	No
Fruit trees/coconut palms? Specify with numbers	No	No
Household assets/infrastructure? Specify with numbers	No	No
Loss of agriculture land? specify with numbers	No	No
M. Public and Occupational health and safety, welfare , employment and gender		
Is the project likely to provide local employment opportunities, including employment opportunities for women?	Yes, unskilled laborers will be sourced locally	Yes, Labor management and influx plan should be prepared
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
Is the project being designed with sufficient local participation of women in the planning design and implementation process?	Yes, there are extensive and all-inclusive public participation forums	Yes

Will the project affect/lead to traffic and Pedestrian Safety?	Yes, the project aims at improving the only access roads and infrastructures to the settlement	Yes, OHS management plan and ESMP should be prepared
Will the project interfere with the normal health and safety of theworker/employee/public?	Yes, health and safety will be a key consideration for employees and locals	Yes, OHS management plan should be prepared
Will the project introduce new practices and habits?	No	No
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
Will the project lead to gender disparity?	No, but need to be a key factor of consideration	No
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		
Based on available sources, consultation with local Authorities, local knowledge and/ or observationcould the project alter?	None	None
Historical heritage site(s) or require excavation near the same?	No	No
Archaeological heritage site(s) or require excavation near the same?	No	No
Cultural heritage site(s) or require excavation near the same	No	No
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		
Environmental and Social Impact Assessment Required	Yes. The project meets the EMCA schedule two projects and World Bank OP threshold for ESIA	
RAP category required (RAP/ARAP)	Yes	A situational analysis report will be formulated to inform a preceding A-ARAP that was carried out during the previous KISIP I.
P: Authorization		

Screening undertaken by: **Charity Gathuthi** Designation.....***Sociologist***	Signature  Date.....***05/03/2024***.....	
Approved by.....**CHARLES**....**Muyembe.....** Designation .***EHS COORDINATOR***.....	Signature....  Date... ***05/03/2024***.....	
PMU Confirmation by: ..... Designation.....	Signature..... Date.....	
Summary of features of project and its location indicating the need for EIA The project entails improvement through subsequent construction of Road, Drainage, Waste Disposal Sites, and Street lighting infrastructures. The construction will cause resettlement and demolition of some structures, generate high level pollution in terms of noise and air, create discomfort and nuisance to locals, affect day to day business and livelihood activities, and if not well supervised may cause flooding and social vices. The project will also affect the stream separating Kidunguni and Menza during waste water disposal. The EIA/ESIA will be needed for this project in order to propose mitigation measures to the foreseen project impacts and develop ESMP for the project		

Resettlement Policy Framework (RPF) Screening Checklist for Kidunguni Settlement

Questions to be considered	Yes/No. Briefly Describe	Is this likely to result in a significant effect? Yes/No/? -why
Brief Project Description The Kindunguni Settlement Project, located in Likoni sub-county, Mombasa County, Kenya, is a comprehensive initiative aimed at uplifting the living standards and infrastructure of the local community. This transformative project focuses on upgrading crucial elements such as roads, drainage systems, waste disposal sites, and street lighting within the settlement. The primary goal is to enhance overall community development, mobility, safety, and socio-economic well-being. The project aligns with regional development objectives, promising positive impacts on the daily lives of residents, improved connectivity, and sustainable growth for the Kindunguni settlement. To ensure responsible and sustainable implementation, the project undergoes a thorough Environmental and Social Impact Assessment (ESIA) to identify and address potential challenges while maximizing the positive outcomes for stakeholders and the local population.		
A. Triggers to WB Safeguard Policies		
1. Does the project trigger one or more of the WB Safeguard policies? Op 1.12	Yes, Falls in Category B of World Bank OP	Yes
B. GoK Policies and Laws applicable		
2. Does the project fall under/trigger any GoK Policies and Laws?	Yes, it triggers some Government Acts and Policies like Constitution of Kenya 2012, Labor Relation Act of 2012 among others	Yes
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 project aims at improving the only existing infrastructures within the settlement. This will affect their accessibility	Yes, the project will affect the residents activities including their movement and businesses
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 project is located in a densely populated area with very many formal and informal settlements	Yes, some houses were demolished for the development but RAP is still ongoing
7. Are there any areas on or around the location	Yes, the whole project area is densely	Yes, the population

which are densely populated or built up, which could be affected by the project?	populated with all areas built up	within the project location is very high
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. Churches, Mosques, hospitals, and schools will be affected by the project	Yes, plans need to developed before the project to ensure flow of services
9. Do people live on the proposed site?	Yes, It's a human settlement region	Yes, residents will be affected by the project
10. Do indigenous peoples live on or near the site?	Yes, it's a mix of indigenous and foreign people	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	Partial households and business assets will be affected
14. Will the project affect indigenous peoples?	Yes, the project will encourage urbanization.	Yes, it will give both positive and negative interactions
15. Will it limit access to natural resources to local populations?	No	No
16. Will it have an impact on land use?	No	No
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, transportation of materials and construction need to be well managed to prevent destruction of nearby roads and houses	Yes, traffic management plan for transportation of materials and construction should be developed
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?	Yes, 12 structures will be cleared	Yes ARAP will be required
25. Number of household to be displaced?	Yes, 12 households will be affected	Yes, ARAP is required
26. Details of village common properties to be alienated, Pasture land (acres) cremation /burial ground and others specify?	No	No
27. Describe existing land uses on and around the project area (e.g. Community facilities, agriculture, tourism, private property)?	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
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, the project is likely to benefit both gender including the vulnerable groups	Yes
34. Is the project being planned with sufficient attention to local poverty alleviation objectives?	Yes, the project has aimed at recruiting most of the locals into the opportunities available	Yes, sensitization is being done through the local groups to allow them take advantage of the opportunities
35. Is the project being designed with sufficient	Yes, Women have been part of the project	Yes, more

local participation of women in the planning design and implementation process?	from technical team to the local committees	sensitization continues
H. Historical, Archaeological, or cultural Heritage sites		
Based on available sources, consultation with local Authorities, local knowledge and/ or observation could the project alter?	No	No
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	No
Any special conditions	A situational analysis report will be formulated to inform a preceding A-ARAP that was carried out during the previous KISIP I.	
P: Authorization		

P: Authorization		
Screening undertaken by: **Charity** Designation: Sociologist	Signature: Date: 15/02/2024	
Approved by: Charles Muyembe Designation: Lead EHS & ESIA Expert	Signature: Date: 15/02/2024	
PMU Confirmation by:…….. Designation.....	Signature..... Date.....	
Summary of features of project and its location indicating the need for RAP The proposed projects at Kindunguni settlement include access roads, associated drainage structures and streetlights, security lighting, solid waste collection and disposal point, and a box culvert over the stream dividing Kidunguni and Menza. From, the assessment, the project will warrant preparation of Situational report to inform the previous A-RAP		

report generated from KISIP 1 for 12 uncompensated PAPs.

***Appendix 4*: Filled Sample of General Questionnaires**

PUBLIC CONSULTATION AND PARTICIPATION QUESTIONNAIRE

Charles and Barker Ltd on behalf of the proponent, Second Kenya Informal Settlement Improvement Programme (KISIP 2), is undertaking public consultation on the proposed projects. KISIP plans to undertake settlements improvement projects in six settlements in Mombasa 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: KINDUNGUNI

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

a. Name of the Respondent: Ali Ramadhan
b. Phone Number: 0722159518 c. ID Number: 2512?246
d. Gender Male ☑ Female ☐ e. Occupation: Chief
e. Highest level of Education

None ☐ Primary ☐ Secondary ☑ Tertiary ☐ University ☐

Part two: General Survey

1. Do you have any concerns arising from the proposed projects (road, drainage and high mast lights) construction and operation activities?

Yes ☐ No ☑

a. If yes, state the concerns

....

....

2. Will the project have positive or negative impacts?

Only positive impacts ☑ Only negative impacts ☐ Both positive and negative impacts ☐

3. What the positive impacts?

Development of roads
Employment of youths in area

4. What are the negative impacts?

....

....

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

ALI R... MWAMANJI
CHIEF
...TION
S...
LIKI...
12/05/2024

.....

.....

6. What is your preferred mode of transport in the area?

Walking ☐ Motorbike ☑ Vehicle ☐ Donkey ☐ Other (specify).....

7. 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 roads?

Accessibility

b. How can it be addressed?

.....

c. What are the main concerns with storm water drainages?

No drainage System

d. How can it be addressed?

.....

e. What are the concerns with the security lighting?

No light in the area

f. How can it be addressed?

.....

8. Which road type would you prefer? Tarmac ☐ Marram ☐ Gravel ☐ Cabro ☑

9. Kindly list the types of solid wastes produces in your household/facility/office

Plastic

Food Leftovers

10. How do you dispose off the said wastes?

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

Disposed irregularly ☐ Burning ☐ Other (specify).....

11. 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).....

12. What type of sanitation facility do you have in your household/facility/office?

Flush toilet ☐ Pour flush toilet ☐ Pit latrine ☑ other (specify).....

13. How do you access water?

MOWASSCO Piped ☐ Borehole ☑ Streams/Ocean ☐ Others (specify).....

14. What are the challenges faced concerning water supply?

.....Salty Water.....

15. In your opinion, is the area safe at nights? Yes ☐ No ☐

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

.....

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

Yes ☐ No ☑

a. If yes, state the impacts

.....

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

.....Proper infrastructure in the area.....

.....

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

Thank You!

Date..... Signature.....

Appendix 5:Attendance List of Public Meeting

Appendix 6: Filled Sample of Key Stakeholder Questionnaire

WOMEN'S HEADEAR.

KIDUNAUN KISSIP-2 COAST INFORMAL SETTLEMENTS
KEY INFORMANT CHECKLIST

Good Morning,
We are from the County Government of-------. We are going round soliciting for views from the residents of this settlement on the priorities and intended projects. Therefore we are kindly asking you to answer the following questions to help us capture the views of the residents. Thank you.

Name of respondent	Sex	Age	Occupation	Length of stay in the settlement
JANE KERUBO	F	55	BUSINESS WOMAN	42 YRS

1) What are the **5** things that you like about the way your settlement is today (be specific)

	Things I like
1	Friendly neighbourhoods.
2	Good local leaders.
3	Good business Practices.
4	Affordable living Standards.
5	

2) What are the **5** things that you do not like?

	Things I don't like about my settlement and why	why
1	Poor infrastructure	-Poor roads & lack of Street lights
2	Insecurity	- Lack of Street lights.
3	Pollution of Environment.	-Poor drainage & disposal syste
4	Shortage of Fresh water	-Poor Planning ~~by~~ authorities
5	Drug Abuse	-Lack of job opportunities.

3) Give us your view on the proposed KISSIP_2 projects?

The project will improve economic activities in the Settlement and lead to Creation of employement among the residents.

4) What will be the major positive impacts of the proposed projects,

a	Better drainage System.
b	Creation of employment.
c	Improvement of Security
d	Growth of business

5) How will you support the proposed projects?

Through:
Mobilizing the ~~Women~~ to be Part of the project
Creating awareness among the residents about the benefits of the project.

6) Any suggestions on how the projects should be implemented

Involvement of the Community representatives on every Step of the project

1

Appendix 7: Minutes Public Participation Meeting

MINUTES OF THE PUBLIC PARTICIPATION MEETING FOR THE KISIP 2 PROJECT IN KINDUNGUNI SETTLEMENT HELD ON 23RD MAY 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) Adjournment

MINUTES

MIN	DESCRIPTION	ACTION
1.0	**Introduction to the meeting**	
	SEC Chairperson Bakari Kea called the meeting to order at 1 PM, followed by a volunteer's prayer. He welcomed all participants and introduced the consultant. Participants then introduced themselves and their interests. In his remarks, Kea acknowledged the need for the proposed project, thanked the County Government for its support, and expressed gratitude to attendees for discussing local infrastructure issues.	
2.0	**Overview of the project**	
	The consultant, provided a comprehensive overview of the project, outlining all its stages. He informed the meeting that the KISIP 2 project focuses on upgrading informal settlements by constructing roads, managing solid waste, implementing drainage systems, and installing street lighting. The project's primary components include road construction, drainage systems, solid waste management, and the installation of high mast street lights. He then presented the potential benefits and negative impacts of the project. Attendees were encouraged to delve deeper into both the positive and negative implications, considering how the project might affect them.	
3.0	**Discussions on the possible impacts of the project**	
	All participants were already familiar with the project, as it is a highly anticipated and necessary development for the community. The poor road network has negatively affected residents, forcing them to navigate inadequate roads within the settlement.	

The EIA team engaged the community in identifying potential positive and negative impacts of the project on both the host community and the environment.

Positive impacts discussed

The project enjoys full support from the residents, who expect to reap numerous benefits from its implementation. Some of the anticipated positive impacts mentioned include, but are not limited to:

- ✓ Enhanced road infrastructure, drainage systems, and solid waste collection and disposal
- ✓ Increase in access and with ease
- ✓ Decrease in criminal activities
- ✓ There will be creation of employment across the project cycle,
- ✓ Improved public health and safety
- ✓ Increased property values in the surrounding areas

Negative impacts discussed

The community identified some of the negative impacts of the project that they perceive will face them. They include the following;

- ✓ Construction activities will involve machinery that generates noise and significant dust
- ✓ Conflicts between contractor and locals over improper disposal of construction waste
- ✓ Occupational health concerns will be significant, particularly during the construction phase.
- ✓ The influx of outside workers may lead to an increase in sexually transmitted diseases, theft and other social vices
- ✓ Air pollution.
- ✓ Inadequate stakeholder engagement and exclusion of disadvantaged and vulnerable groups.

Proposed Mitigation measures

The consultant addressed the locals' concerns and provided solutions for the anticipated impacts. Some of the proposed mitigation measures included:

- ✓ Offering guidance and counselling within the project area.
- ✓ Employing locals in the project implementation.

	✓ Ensuring the safety of construction workers by establishing a first aid area and an injury reporting mechanism. ✓ Including appropriate safety measures in the O&M manual for the operation phases;	
4.0	**Way forward**	
	The meeting unanimously agreed to proceed with the project's implementation, acknowledging its significance not only to themselves but also to the entire sub-county. This decision was subject to addressing a few identified negative impacts. The ESIA consultant representative expressed gratitude to the attendees for their presence and backing. He emphasized the positive intentions of both KISIP and the County Government for the project area, including forthcoming economic improvement initiatives.	
5.0	**Appreciation**	
	The SEC chair concluded by thanking all the members for attending and gave a vote of thanks specifically to the consultant who made the engagement possible. He later reiterated that they are eagerly awaiting for the project implementation and proposed fast tracking	
6.0	**Adjournment**	
	There being no further business to be undertaken, the meeting was adjourned at 3.30 PM by the SEC chairperson after a word of prayer from one of the participants.	

Minutes prepared by;

Name: Michael Morse Momanyi

Signature:

SEC Chair:

Bakari Kea Saburi

Lead Expert;

Name: Charles Muyembe Lwanga, (NEMA 6417)

Muyembe.

Appendix 8: 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

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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