GOVERNMENT OF THE REPUBLIC OF KENYA

MINISTRY OF LANDS, PUBLIC WORKS, HOUSING AND URBAN DEVELOPMENT

State Department of Housing and Urban Development

SECOND KENYA INFORMAL SETTLEMENT IMPROVEMENT PROJECT (KISIP 2)

Financed by:

IDA International Development Association WORLD BANK GROUP

AFD AGENCE FRANÇAISE DE DÉVELOPPEMENT

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

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

COMPREHENSIVE PROJECT REPORT (CPR)

CHANGAMWE SUB-COUNTY, MOMBASA COUNTY

DATE: JULY 2024

CONSULTANT

STUDIO GALLI INGEGNERIA HEADQUATER ITALY Via della Provvidenza, 15 35030 – Sarmeola di Rubano (PD) – Italia SGI STUDIO GALLI KENYA Coral Bells Apartments, Suite A608 Off Kiambu Road P.O BOX 21053 - 00100 - G.P.O Nairobi	**In Joint Venture With**	East African Engineering Consultants Lenana Court off Lenana Road, House No.3 Kilimani P.O. Box 30707-00100 Nairobi, Kenya Tel: +254-20-2714514/5 Email: info@eaecgroup.com, eaeckenya@gmail.com

DOCUMENT CONTROL

Document Reference Number **2309701**

DOCUMENT REFERENCE NUMBER – 2309701					
n°	**REVISION**	**DATE**	**WRITTEN**	**APPROVED**	**REMARK**
0	Emission	March 2024	East Africa Engineering Company		
1	Emission	May 2024	East Africa Engineering Company		
2	Emission	JULY 2024	East Africa Engineering Company		

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 Chaani settlement upgrade project.

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

Signature: ……

Designation: ESIA/AUDIT LEAD EXPERT REGISTRATION. NO 6417

TABLE OF CONTENTS

LIST OF TABLES A-

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

LIST OF ABBREVIATIONS

AFD:	**Agence Française de Développement**
ARAP:	**Abbreviated Resettlement Action Plan**
BoQ:	**Bill of Quantities**
CEM:	**Cost Estimation Manual**
CIDP:	**County Integrated Development Plan**
CPR:	**Comprehensive Project Report**
CESMMP:	**Contractor's Environmental and Social Management Plan**
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**
ESAAP:	**Environment and Social Audit Action Plan**
EMCA:	**Environmental Management and Coordination Act**
IDA:	**International Development Association**
KISIP 2:	**2nd Kenya Informal Settlements Improvement Project**
MOWASSCo:	**Mombasa Water Supply and Sanitation Company**
GoK:	**Government of Kenya**
GDP:	**Gross Domestic Product**
GHG:	**Green House Gases**
GRC:	**Grievance Redress Committee**
HSP:	**Health and Safety Plan**
MLPWHUD:	**Ministry of Lands, Public Works, 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**
PAPs:	**Project Affected Persons**
PCR:	**Physical Cultural Resources**

PCT:	**Project Committee Team**
PDO:	**Project Development Objectives**
PRSP:	**Poverty Reduction Strategy Paper**
RAP:	**Resettlement Action Plan**
RPF:	**Relocation Policy Framework**
OP:	**Operation Policy**
OSHA:	**Occupational Health and Safety Act**
SEC:	**Settlement Executive Committee**
SDH&UD:	**State Department of Housing and Urban Development**
SDG:	**Sustainable Development Goals**
SUP:	**Socially Uplifting Project**
ToR:	**Terms of Reference**
VMGP:	**Vulnerable Marginalized Groups Plan**
WB:	**World Bank**

EXECUTIVE SUMMARY

Overview

The Government of Kenya has secured a credit facility from the World Bank for the Second Kenya Informal Settlements Improvement Project (KISIP 2). These funds will be utilized for Consultancy Services, including Infrastructure Upgrading Plans, Detailed Engineering Designs, Procurement Documents, Resettlement Action Plan (RAP), Environmental and Social Impact Assessment (ESIA) Reports, and Vulnerable Marginalized Groups Plan (VMGP), if applicable. The consultancy services will also oversee infrastructure construction in informal settlements across Lamu, Kilifi, Mombasa, Kwale, and Taita Taveta counties.

Aligned with the Environmental Management and Coordination Act (EMCA) and World Bank Operation Policy, the project adheres to the assessment of social and environmental impacts, proposing effective mitigation measures. The accompanying report includes a comprehensive Environmental Social Management Plan (ESMMP) to guide relevant project actors and implementers in addressing the resulting impacts.

ESIA reports are essential components mandated by national and international environmental laws, ensuring compliance with sustainable development, biodiversity protection, and community well-being. The process assesses alternative project options, aiding decision-makers in selecting the most sustainable option.

Objectives of the ESIA

The specific objectives are: -

1. 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.
2. Preparation of a detailed Environmental Monitoring Plan for the proposed project.
3. Preparation of a detailed Environmental and Social Management Plan (ESMMP) for the proposed project.

Scope of the Study

In order to identify the potential environmental and social impacts, and to come up with the proper mitigation measures for the proposed service road and a storm water drainage, installation of high Mast lights the consultant used both conventional and participatory approaches. In conducting this exercise, the consultant undertook:

1. Visiting the project site, and consulting with the local communities, and other relevant key stakeholders.
2. Carrying out a comprehensive assessment ensuring all environmental concerns and views of all parties/persons likely to be affected by the project are taken into consideration.
3. The reviewing of preliminary designs for the proposed project to get acquainted with environmental issues in the project site vicinity.
4. The planning and preparing of a time schedule for the activities to be undertaken for the ESIA.
5. Developing an environmental management plan with mechanisms for monitoring and evaluating the compliance and environmental performance, which include the cost of mitigation measures and the timeframe of implementing the measures.
6. Publicizing the project and its anticipated effects by posters in strategic places, publishing a notice in both official and local languages in the Kenyan Gazette and one of the local dailies.
7. Liaising with NEMA for compliance with all mandatory and regulatory requirements relating to the ESIA.

Terms of References (ToR)

The consultant had the responsibility of aligning the outputs with professional and legal standards, in accordance with the mandate of NEMA (National Environmental Management Authority). All deliverables were presented using modern techniques and technology. Furthermore, the process of generating data, involved a consultative approach to ensure authenticity and ownership, encompassing the following specific tasks. The following were the activities the consultant was tasked to perform.

The following activities were accessed and carefully undertaken to carefully formulate a detailed ESIA.

1) Desk Study
2) Community mobilization and sensitization.

- Discuss benefits/impacts to the beneficiaries of the project and other stakeholders and hear their perspectives on the matter.
- Discuss cut-off date with persons affected by the implementation of the project
- Work closely with the community representatives commonly referred to as Settlement Executive Committees [SECs] to ensure that the process of tenure regularization process interprets the expressed needs of the community.
- Prepare reports, minutes and any other documentation on deliberations made during discussions

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) Prepare a Land Information System (LIS) for each informal settlement that is compatible with the GIS system in KISIP 1.

ESIA Approach; Stakeholder Engagement and Public Participation

The World Bank Group's Environmental Assessment Policy (OP 4.01, Revised April 2013) requires the engagement of project-affected groups and local non-governmental organizations (NGOs) throughout the impact assessment process to address potential environmental and social impacts.

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. to integrate local perspectives into the development of environmental and social management plans, as well as the overall project design.

1. **Environmental and Social Screening;** This step was conducted through legal review and desktop studies to assess whether there will be a need for an environmental and social impact assessment, and what level of assessment is necessary. This was done using a screening checklist in reference to requirements of the EMCA, 1999, and specifically the second schedule. The proposed projects are listed as medium risk projects in Legal Notice 31&32 of EMCA and under the World Banks framework, as Category B – Projects with potential limited adverse environmental and social risks and/or impacts that are few in number, generally site-specific, largely reversible and readily addressed through mitigation measures.
   The project screening report indicating the Environmental and Social Management Framework checklist as well as the Resettlement Policy Framework checklist have been annexed in the report below.

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

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

area among others.

4. **Site Assessment;** Field visits were made for physical inspections of the areas around the project site and the environmental status of the surrounding areas to determine the anticipated impacts.
5. **Public Participation;** Public participation meetings were conducted specifically the project area. Random surveys were conducted 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.

    a. **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.

    b. **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.

    c. **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

6. **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.

Summary of Findings from the Public Consultation

Do you support the Improvement Project?		
Yes	Not Sure	No
85%	10%	5%

Table A- 1:Summary of findings from the public consultation

Project Description

KISIP 2, the second phase of the Kenya Informal Settlements Improvement Project, is a strategic initiative with the objective of enhancing living standards across various regions of Kenya. The project focuses on improving infrastructure and amenities, including road upgrades, storm water drainage enhancements, water supply extensions, and the installation of high-mast lights in key informal settlements nationwide.

Beyond the physical enhancements, KISIP 2 is anticipated to bring substantial socio-economic benefits. The improved road infrastructure facilitates, easier access to educational institutions, healthcare facilities, and

economic hubs, thereby fostering local development. Upgraded storm water drainage systems play a crucial role in mitigating flood-related risks, safeguarding homes and businesses. Additionally, the installation of high-mast lights contributes to enhanced security, creating a sense of safety and well-being within the community.

Project Location and Size

Chaani, approximately (S 4° 2' 6.054", E 39° 35' 46.4028"), is a vibrant locality situated in Changamwe Sub-County, Mombasa County, Kenya. Nestled approximately 6 kilometers west of Mombasa Island. The settlement covers an expansive area of 10.82 hectares, providing a home for approximately 4749 residents (KNBS 2019).

Geographically, Chaani is bordered by Port Reitz Road to the north and west, with Kipevu Road delineating its eastern border. To the west lies Moi International Airport, emphasizing its strategic position within the region. The southern boundary is defined by the Changamwe harbor front, adding a maritime dimension to its surroundings.

Existing Infrastructure

1. Road and Drainage

The settlement is devoid of any proper road network and movement is through narrow dirt roads that interconnect various land use activities. The settlement is not connected to any drainage network.

Challenges and Implications

The encroachments not only impede physical passage but also result in a maze of obstacles that compromise the overall safety and well-being of the community.

2. Water Infrastructure

All the residents in Chaani informal settlement have no access to utility networks and the community obtain their water from community water points.

3. Solid Waste Disposal

There is no waste management system equipped with an efficient sewer system in the settlement. There is an open sewer passing through the settlement which poses a health risk especially to children playing in the area.

Scope of Works

<table>
<tr><td rowspan="2">Proposed Projects</td><td colspan="3">Description</td></tr>
<tr><td>No of roads</td><td>Width(Meters)</td><td>Total lengths (Meters)</td></tr>
<tr><td>1. Roads</td><td>5</td><td>4</td><td>617.49</td></tr>
<tr><td rowspan="3">2. Drainage system</td><td colspan="3">Description</td></tr>
<tr><td colspan="2">Type:</td><td>Length (Meters)</td></tr>
<tr><td colspan="2">Cross pipe culverts and access culverts, along with closed U-drains</td><td>Varied</td></tr>
</table>

3. Street Lighting- Installation off High Mast lighting	**Description: 2Nr. High Mast lights**		
	No of High Mast lighting	**Height(Meters)**	**Luminous Radius (Coverage)(Meters)**
	2	30	150
4. Extension of water supply system.	**Description**		
	Complete consumer connection with over 860 consumers connected.		
5. Solid waste disposal	**Description**		
	Introduction of Waste collection exercise at Household level, Transport to Transfer station for sorting into recyclables and non-Recyclables by non-motorist means for instance cart. Treatment of non- recyclables and disposal to authorised approved site done by County Government of Mombasa.		

Table A- 2: Scope of Works

Project Cost

The basis for the cost estimates has been derived from the Cost Estimation Manual 2022-2023 (CEM) from the Kenya Roads Board.

S/N.	Description	Amount
1	Roads and drainage works	81,547,784.04
2	High mast street lighting	8,830,400.00
3	Water supply	12,335,087.40
Grand Total		**102,713,271.44**

Table A- 3: Project cost

Source: Draft Settlement Upgrading Plans, Engineering Designs and Procurement Documents: Volume 1: Design Report.

Policy, Legal and Institutional Framework

Several policies, laws, and regulations govern the protection, conservation, and exploitation of natural resources, along with provisions for environmental management. These encompass national policies, laws, and regulations that span various sectors such as infrastructure, water, agriculture, forestry, and health, among others.

National Laws and Regulations

- *The Environmental Management and Co-ordination Act, (EMCA) 1999 and amended in 2015 and subsequent Regulations.*
- *The Kenya Roads Act, 2007*
- *Public Roads and Roads of Access Act 1972 revised 2010 Cap 399*
- *The Traffic Act Cap 403 of 2013*
- *Occupational Health and Safety Act 2007 CAP 514*
- *The Public Health Act 1986 revised 2012 (Cap 242)*
- *The Physical and Land Use Planning Act, (PLUPA) 2019*
- *Urban Areas and Cities Act 2011*
- *National Construction Authority ACT No. 41 of 2011*
- *Sustainable Waste Management Act 2021*
- *Children Act (2001) and revised 2016*
- *Sexual Offences Act (2006)*

County Laws and Regulation

- *County Government Act No.17 of 2012*

National Policy Framework

- *Kenya Vision 2030*
- *The National Environmental Action Plan (NEAP) 1994*
- *Policy Paper on Environment and Development 2014*
- *The National Water Resources Management Policy (1999)*
- *HIV and AIDS Policy 2009*
- *Gender Policy 2011*
- *National Housing policy 2016*
- *Sessional Paper No. 7 of 2005 on National Employment Policy and Strategies for Kenya*

The following policy frameworks shall be considered amongst others:

- *Mombasa City County integrated development goals 2023-2027*
- *Sustainable Development Goals*
- *World Bank Operational Safeguards*
- *The KISIP 2 key instrument covering the following:*
    - *Environmental and Social Management Framework*
    - *Resettlement Policy Framework, 2023*
    - *Social Management Plan (2023)*
    - *Stakeholder engagement framework 2023*

Institutional Framework

1. KISIP implementation Institutional Framework
2. Ministry of Lands, Public Works, Housing and Urban Development (MoLPWHUD)
3. KISIP National Project Coordination Team (PCT)
4. The County Government
5. National Environmental Management Authority (NEMA)
6. National Environmental Tribunal (NET)
7. The Public Complaints Committee
8. National and International Policy Framework

World Bank Safeguard Policies

1. Operational Policy (OP)/Bank Procedure (BP) 4.01: Environmental Assessment, 1999, Revised 2013
2. Operational Policy 4.04: Natural Habitats, 1999, Revised 2013

3. Bank Operational Policy 4.09 Pest Management 2004
4. Operational Policy (OP) 4.10 Indigenous Peoples, 2005
5. Bank Safeguard Policy 4.11 Physical Cultural Resources 2006
6. The Bank's Operational Policy 4.12: Involuntary Resettlement, 2001, Revised 2013
7. Operational Policy (OP)/Bank Procedure (BP) 7.50: Projects on International waterways, 1999, Revised 2013
8. Bank Safeguard Policy 7.60 Project in Disputed Areas 2012
9. World Bank Safeguard Policy BP 17.50 Public Disclosure 2010
10. Bank Safeguard Policy 4.36 Forests 2013

Stakeholder Engagement

Potential Positive Impacts

- Creation of employment for the skilled and semiskilled locals such as socioeconomics, trainers, casual labourers for road construction and cooks and cleaners at the construction camps and casual workers.
- Flourishing of businesses mainly business centres located along the road due to increased demand of basic commodities and services such as food, accommodation and construction materials.
- 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.
- Creation of faster means of transport for passengers and bulk cargo within the municipality
- Reduced cost of public transportation and risk of accidents.
- Protection of infrastructure, increased security and quality of life
- Increased property value
- Contribution of revenue to the municipality, county, national and regional governments.
- Prevention of Soil Erosion and reduction in flooding cases.
- Aesthetic Improvement of Urban Areas
- Mitigation of Health Risks

Potential Negative Impacts

- Traffic Disruptions
- Environmental Disturbance
- Noise and Air Pollution
- Displacement of Businesses
- Community Access Challenges
- Visual Impact
- Increased Traffic Risks
- Waste Generation
- Cost Overruns and Delays
- Social Disruption
- Potential Damage to Utilities
- Loss of Green Spaces
- Temporary disruption of the Local Businesses
- Water Runoff Issues
- Aesthetic Impact on Surrounding Properties
- Temporary Loss of Parking Spaces
- Dust and Air Quality Concerns
- Potential for Soil Contamination
- Disruption to Public Services

Displacement Impacts

While the initiative promises positive outcomes such as improved infrastructure and economic growth, the negative repercussions include the potential loss of households and assets, loss of income and employment for

informal business traders, challenges associated with an influx of people during construction, and environmental inconveniences. The ARAP addresses these impacts by establishing eligibility criteria, an entitlement matrix, and assessment methods to ensure fair compensation, assistance, and support, emphasizing the significance of a comprehensive approach to mitigate the social consequences of relocation.

It is crucial to acknowledge and address these impacts proactively to minimize negative consequences and ensure the well-being of the affected communities. Below are key considerations:

- Structural Encroachments
- Impact on Livelihoods
- Temporary Displacement During Construction

As per the situational analysis report (attached as appendix) only 1 PAP has been recorded so far due to lack of compensation. However, a formal follow-up has been recommended by the consultant.

Justification of the ESIA

The implementation of the proposed project shall have both socio-economic and environmental impacts on the projectarea. In order to alleviate any detrimental effects of the project, there is need to assess possible impacts of the development on the environment and the socio-economic attributes of the project area.

The Environmental and Social Impact Assessment (ESIA) is crafted to establish a triangular relationship encompassing the proposed Project, natural ecosystems, and the social setting, fostering coexistence. The study will intricately connect the project with key environmental, social, and economic aspects, establishing linkages for seamless integration throughout the project's life cycle, from the planning stage through construction, commissioning, operation, and ultimately decommissioning.

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. Aligned with the Environmental Management and Coordination Act (EMCA) and World Bank Operation Policy, the project adheres to the assessment of social and environmental impacts, proposing effective mitigation measures.

ESMMP

ESMMP for Preconstruction Stage

ESMMP for Roads, footpaths

Environmental impact	Impact level	Proposed Mitigation Measures	Monitoring Indicators	Responsibility	Performance	Frequency	Estimated Cost
	Environmental						
Approval from NEMA and other Agencies for ESIA report	Medium	The Proponent shall ensure that all pertinent permits, certificates, and licenses have been obtained prior to any activities commencing on- site and are strictly adhered to.	Environment licenses Degree of completion of set of required approvals/ permits issued	County Government of 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.	Displacements Number of facilitated PAPs	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	Public opinion, Satisfaction to the relevant authority	Consultant GRC SEC KISIP	-Total project support by all	Throughout all stages from onset	200,000.00
Risk of excluding some beneficiaries due to unfriendly infrastructure	Low	The implementation of the infrastructure assumed universal design. Disseminate this information to the	Number of public participation forums held.	KISIP Contactor	SEC/GRC meetings	During designing Stage	250,000.00

designs		beneficiaries through public participation forums.		Consultant GRC EC			

ESMMP for Drainages

Environmental impact	Impact level	Proposed Mitigation Measures	Monitoring Indicators	Responsibility	Performance	Frequency	Estimated Cost
Environmental							
Approval from NEMA and other Agencies for ESIA report	Medium	The Proponent shall ensure that all pertinent permits, certificates, and licenses have been obtained prior to any activities commencing on- site and are strictly adhered to.	Environment licenses Degree of completion of set of required approvals/ permits issued	County Government of 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.	Displacements Number of facilitated PAPs	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	Public opinion, Satisfaction to the relevant authority	Consultant GRC SEC KISIP	-Total project support by all	Throughout all stages from onset	200,000.00

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

ESMMP for Streetlights

Environmental impact	Impact level	Proposed Mitigation Measures	Monitoring Indicators	Responsibility	Performance	Frequency	Estimated Cost
Environmental							
Approval from NEMA and other Agencies for ESIA report	Medium	The Proponent shall ensure that all pertinent permits, certificates, and licenses have been obtained prior to any activities commencing on- site and are strictly adhered to.	Environment licenses Degree of completion of set of required approvals/ permits issued	County Government of 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.	Displacements Number of facilitated PAPs	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	Public opinion, Satisfaction to the relevant authority	Consultant GRC SEC	-Total project support by all	Throughout all stages from onset	200,000.00

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

ESMMP for Construction Phase

ESMMP for Roads and footpaths

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

Possible Impact	Impact Rating level	Management Actions	Monitoring Indicators	Target Areas and Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
Air pollution	Moderate	Maintain a speed limit of 20km/h within the site during construction phase to reduce dust particles emission. Use of environmentally friendly fuels such as Low Sulphur diesel. Regular maintenance and service of construction machinery and equipment in accordance to manufacturer specifications to minimize the generation of hazardous gases. Providing PPEs such as nose masks to the workers in dusty areas on the site. Maintain regular training of all personnel on methods for minimizing air quality impacts during construction. Ensure a strict schedule plan for all equipment to avoid unnecessary trips and minimize idling of engines. Enforce of EMCA 2015 (AirQuality Regulations 2014) Avoid carrying out dust generating activities especially during strong winds Use of covered trucks for material delivery to avoid spills and windblown dust Communicate air quality monitoring results to the public and address concerns proactively.	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)
		Monitor air quality in the construction area and surrounding neighborhood. Spraying of all earthwork's areas within 200 meters of human settlement to reduce dust.				
Water Pollution	Low	Implement best management practices for construction activities to prevent runoff contamination. Ensure al machineries are serviced at a dedicated service bay to avoid spillages of oil and other fluids Implement erosion control measures to prevent soil runoff into water bodies. Regularly monitor water quality in nearby water bodies during construction and implementing corrective measures. Collaborate with local water authorities to ensure compliance with water quality standards	Water Quality Reports Records of machine and vehicle	Environmental Management Team Water Quality Experts	Throughout Project	500,000.00
Soil pollution / Erosion	Low	Implement soil erosion control measures to prevent the release of contaminants during construction. Regularly monitor soil quality in construction areas and implement corrective measures. Collaborate with environmental agencies to ensure compliance with soil quality standards.	Ground cover in Constructed areas	Environmental Management Team/consultant Contractor	Monthly	400,000.00
Waste Generation	Moderate	Implement a waste management plan, including proper disposal and recycling of construction	Clean, Organized, Neat Site Presence of waste collection	Environmental Management	Throughout Project	500,000.00

Possible Impact	Impact Rating level	Management Actions	Monitoring Indicators	Target Areas and Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
		waste. Educate construction workers on responsible waste disposal practices. Monitor waste generation and disposal practices to ensure compliance with the waste management plan. Practice waste recycling, re use and reduction of waste generation	receptacle Contract with NEMA Registered Waste Disposal Firm	Contractor		
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	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)
		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	Availability of security officers	Environmental and Safety Management Manager Mombasa County Traffic Department	Daily	900,000.00

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

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

ESMMP for 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	Reported complaints from neighbour community and institutions	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)
		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.	Records of machine and vehicle maintenance Availability and use of Ear Muffs			
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	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)
		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	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)
		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						
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	HIV/AIDS awareness trainings Availability of VCT facilities	Sociologists Environmental and Safety Management	Throughout Project	300,000.00

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

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

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

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

ESMMP for Streetlights

Possible Impact	Impact Rating level	Management Actions	Monitoring Indicators	Target Areas and Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
Environmental						
Waste Generation	Moderate	Implement a waste management plan, including proper disposal and recycling of construction waste.	Clean, Organized, Neat Site Presence of waste collection receptacle	Environmental Management Contractor	Throughout Project	500,000.00

Possible Impact	Impact Rating level	Management Actions	Monitoring Indicators	Target Areas and Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
		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	Contract with NEMA Registered Waste Disposal Firm			
Social Risks						
Sexual Exploitation and Abuse	Low Medium	Implement an awareness and prevention program for project workers and the local community. Provide access to HIV testing and counselling services, ensuring confidentiality and non-discrimination. Establish a support system for individuals living with HIV/AIDS, promoting inclusivity and reducing stigma. Alias with local security administration for insecurity management	HIV/AIDS awareness trainings Availability of VCT facilities Social awareness and trainings	Sociologists Environmental and Safety Management Manager Contractor	Throughout Project	300,000.00
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.	Accidents occurrence incidences recorded in the Incidence Book Workers have Safety Gear(PPEs) Emergency contacts	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)
		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	for Hospital and Police available			
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.	List of workers that does not contain underage persons	SEC GRC Contractor	Daily	200,000.00

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

ESMMP for Roads and footpaths

Possible Impact,	Impact Rating Level	Management Actions	Monitoring Indicators	Responsibilities	Monitoring Frequency	Estimated Budget(KShs)
Gender-Based Violence and Sexual Exploitation and Abuse (SEA) and Sexual Harassment (SH)	Medium high	Develop and implement a plan to manage the risk of SEA/SH. Map the GBV referral pathways and create awareness among women and men on the risk of SEA/SH. Ensure the GRM is SEA/SH-responsive.	Number of GBV cases reported and solved. GBV Awareness trainings	County Government of 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	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)
		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.				

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
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'	Awareness trainings conducted	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)
		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.	Grievance complaints documentation Availability of a GRM and SEC committee			
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	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)
		prevent industrial pollution, and raising awareness about the importance of water conservation and pollution prevention among community members. Taking proactive measures to protect water resources				
Inadequate stakeholder Engagement and Exclusion of disadvantaged and vulnerable groups	Medium high	Share project information widely and in a timely manner through diverse, feasible and accessible channels of communication e.g., public forums. Introduce measures for affirmative action that would ensure especially persons with disability, the elderly and women have access to job opportunities. Undertake recruitment transparently, while ensuring the inclusion of disadvantaged groups. Develop and implementation of a stakeholder engagement plan. Engage stakeholders throughout the project phase as guided by the 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		SEC, GRC, KISIP	Quarterly	200,000.00

Possible Impact,	Impact Rating Level	Management Actions	Monitoring Indicators	Responsibilities	Monitoring Frequency	Estimated Budget(KShs)
		natural flow to reduce environmental impact				

ESMMP for Streetlights

Possible Impact,	Impact Rating Level	Management Actions	Monitoring Indicators	Responsibilities	Monitoring Frequency	Estimated Budget(KShs)
Gender-Based Violence and Sexual Exploitation and Abuse (SEA) and Sexual Harassment (SH)	Medium high	Develop and implement a plan to manage the risk of SEA/SH. Map the GBV referral pathways and create awareness among women and men on the risk of SEA/SH. Ensure the GRM is SEA/SH-responsive.	Number of GBV cases reported and solved. GBV Awareness trainings	County Government of 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.	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)
		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.				
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	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)
		sites.				
Inadequate stakeholder Engagement and Exclusion of disadvantaged and vulnerable groups	Medium high	Share project information widely and in a timely manner through diverse, feasible and accessible channels of communication e.g., public forums. Introduce measures for affirmative action that would ensure especially persons with disability, the elderly and women have access to job opportunities. Undertake recruitment transparently, while ensuring the inclusion of disadvantaged groups. Develop and implementation of a stakeholder engagement plan. Engage stakeholders throughout the project phase as guided by the approved stakeholder engagement plan.	Number of stakeholders involved and proof of their support.	SEC, GRC, KISIP	Monthly	200,000.00
Light and Visual discomfort	Medium High	Properly design and angle light fixtures to minimize glare. Consider installing light shields or diffusers 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		SEC, GRC, KISIP	Throughout Project	No additional cost

Possible Impact,	Impact Rating Level	Management Actions	Monitoring Indicators	Responsibilities	Monitoring Frequency	Estimated Budget(KShs)
		lighting. Educate the community on responsible lighting practices.				
Disturbance to Nocturnal Wildlife	Very Low	Install motion sensors or timers to reduce lighting intensity during periods of low activity. Choose warm-coloured lights that are less disruptive to wildlife.		SEC, GRC, KISIP	Throughout Project	No additional cost

ESMMP for Decommissioning Phase

ESMMP for Roads and footpaths

Possible Impact	Impact Level	Management Actions	Monitoring Indicators	Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
Disruption of Services	Low Medium	Implement phased decommissioning to minimize disruption to services. Provide alternative routes or transportation options for affected 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.	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.	Inspection frequency and 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	KISIP,SEC,GRC	Throughout Decommissioning	100,000.00

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

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

ESMMP for Drainages

Possible Impact	Impact Level	Management Actions	Monitoring Indicators	Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
Disruption of Services	Low Medium	Implement phased decommissioning to minimize disruption to services. Provide alternative routes or transportation options for affected commuters. Schedule decommissioning activities during off-peak hours to reduce impact on traffic flow.	Number of services affected Duration of service disruptions. Percentage of planned versus unplanned disruptions.	SEC, GRC, KISIP, County Government of 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	Compliance with environmental regulations and permits. Inspection frequency and compliance with erosion control practices Survival rates of replanted	Environmental Management Team/Consultant, KISIP	Throughout Decommissioning	To be established

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

ESMMP for Street lighting

Possible Impact	Impact Level	Management Actions	Monitoring Indicators	Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
Disruption of Services	Low Medium	Implement phased decommissioning to minimize disruption to services. Provide alternative routes or transportation options for affected commuters. Schedule decommissioning activities during off-peak hours to reduce impact on traffic flow.	Number of services affected Duration of service disruptions. Percentage of planned versus unplanned disruptions.	SEC, GRC, KISIP, County Government of 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	Adoption rate of recycled materials in new construction projects Compliance with hazardous waste disposal regulations Implementation of practices to reduce packaging waste, excess	Environmental Management Team/Consultant, KISIP	Throughout Decommissioning	250,000.00

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

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

Conclusions

The ESIA for the KISIP 2 Chaani projects has been executed in alignment with national legislation, global standards, regulatory mandates, and principles of engaging stakeholders. The study's objective was to thoroughly assess the anticipated environmental and social impacts linked to the project, identify measures for mitigation, and formulate a robust ESMMP to steer the implementation of the project. We recommend that the project moves forward under the condition that the proponent strictly follows the mitigation measures outlined here and fully implements the proposed Environmental Management Plan.

A situational analysis report was prepared to inform the displacements impacts and extent accrued to the proposed project. This analysis is attached in the appendices for further reference.

Recommendations

The housing conditions within the informal settlements appear relatively favourable considering the materials used in construction. Many of these dwellings could be categorized as permanent structures. Consequently, it is advisable to steer clear of zones where extensive demolition of these sturdy homes would be necessary. Opting for areas with fewer permanent residences would enable the project to minimize the significant distress and disruption to residents that often accompany compensation processes. In essence, a thorough assessment of settlement areas and the selection of zones with fewer permanent structures can help mitigate disturbances to local populations while also ensuring that project budgets remain reasonable by reducing the need for compensating displaced individuals. By factoring in resident's homes early in the planning stages of projects and infrastructure development, the potential harm inflicted on these communities can be minimized. Prioritizing zones with lesser displacement requirements can effectively avert the suffering and substantial costs associated with relocation and restitution.

1. INTRODUCTION

1.1 Project Overview

The Government of Kenya has secured a credit facility from the World Bank for the KISIP 2. A portion of these funds will be allocated to obtain Consultancy Services, encompassing Infrastructure Upgrading Plans, Detailed Engineering Designs, Preparation of Procurement Documents, Resettlement Action Plan (RAP), Environmental and Social Impact Assessment (ESIA) Reports, and, where applicable, Vulnerable Marginalized Groups Plan (VMGP). Additionally, the consultancy services will involve overseeing the construction of infrastructure works in informal settlements located in the Counties of Lamu, Kilifi, Mombasa, Kwale, and Taita Taveta.

KISIP 2 has the following four components:

Component 1: Integrated Settlement Upgrading. This component supports settlement upgrading through two main interventions classified under two sub-components:

Sub-component 1.1: Tenure regularization - Coordinates regularization of tenure for people living on uncontested public lands whose process includes;

- **i.** Development of a local physical plan for the settlement which lays out land parcels and infrastructure (roads, drainage, walkways, etc.);
- **ii.** Surveying with physical placement of beacons to demarcate the parcels as per the plan;
- **iii.** Preparation and issuance of letters of allotment based on the survey plan; and finally
- **iv.** Issuance of titles.

Sub-component 1.2: Infrastructure Upgrading - Coordinates infrastructure investment portfolio whose menu includes: roads, bicycle paths, pedestrian walkways, street and security lighting, vending platforms, solid waste collection and settlement sorting, storm water drainage, water and sanitation systems, public parks, and green spaces. It further includes investments related to prevention of crime and violence, including but not limited to community centres.

Component 2: Socioeconomic Inclusion Planning. This component supports community development plans to enhance social and economic inclusion, identifies beneficiaries who fit the eligibility criteria of government programs but are excluded and connects them appropriately, supports participatory crime and violence mapping, monitors the employment of local labour, carries out community capacity building and awareness raising for various project interventions including community-based solid waste management.

Component 3: Institutional Capacity Development for Slum Upgrading. This component supports institutional and policy development at national and county levels; develops a capacity building plan for national and county levels to implement the Strategy and to develop understanding of slum upgrading processes; also supports technical assistance, training, workshops and learning events, experience sharing and peer-learning activities with other counties, and other capacity building activities.

Component 4: Program Management and Coordination. This component supports activities of the NPCT and the CPCT related to national and county-level project management and coordination, including planning, surveying, engineering, fiduciary (financial management and procurement), safeguards compliance and monitoring, monitoring and evaluation (M&E), communication and community development.

Mombasa County having achieved the set principles of selection is among those considered for support under the project. The infrastructure to be covered in the selected Informal settlements in the County includes but not limited to the following;

i. Roads and footpaths
ii. Street and security lightning
iii. Storm water drainage infrastructure
iv. Solid waste management and collection
v. Water supply and sanitation infrastructure

KISIP 2, the Kenya Informal Settlements Improvement Project Phase II, is a strategic initiative aimed at improving living standards in various regions of Kenya by focusing on enhancing infrastructure and amenities. The project seeks to elevate residents' quality of life through initiatives such as road upgrades, storm water drainage enhancements, water supply extensions, and the installation of high-mast lights in key informal settlements nationwide.

ESIA reports are typically mandated by national and international environmental and social protection laws, forming a key component of the legal and regulatory framework governing project approvals. These laws aim to ensure sustainable development, the protection of biodiversity, and the well-being of affected communities.

Furthermore, the ESIA process often includes an assessment of alternative project options. This allows decision-makers to compare the environmental and social impacts of different scenarios, aiding in the selection of the most sustainable and least harmful option.

The project incorporates stringent environmental protection measures within its framework to ensure minimal impact on the surrounding ecosystem during construction activities. These measures include practices like back-filling and landscaping of quarries, spillage control for bitumen and pollutants, and the implementation of dust suppression techniques for traffic diversions. Stakeholder engagement is a fundamental aspect of KISIP 2, aligning with constitutional provisions and the World Bank Operation Safeguards Policy. Emphasizing principles of efficiency, inclusivity, and participation outlined in the County Government Act and highlighting the importance of public participation as stipulated in the Environmental Management Coordination Act, the project aims to foster collaboration and transparency throughout its implementation.

Beyond physical improvements, the project is expected to yield significant socio-economic benefits. Improved road infrastructure facilitates easier access to educational institutions, healthcare facilities, and economic hubs, fostering local development. Upgraded storm water drainage systems mitigate flood-related risks, safeguarding homes and businesses. Additionally, the installation of high-mast lights contributes to enhanced security, instilling a sense of safety and well-being in the community.

In accordance with Environmental Management and Coordination Act 2015 (EMCA) and World Bank Operation Policy, all proposed projects must undergo assessment of social and environmental impacts and proposed mitigation of the same. This report will also encompass a comprehensive Environmental Management Plan (EMP) to guide the relevant project actors and implementers, solutions to the resulting impacts.

1.2 Objectives of the ESIA

The main objective of the ESIA study is to predict, assess, and analyse 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: -

1. 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.
2. Preparation of a detailed Environmental Monitoring Plan for the proposed project.
3. Preparation of a detailed ESMMP for the proposed project.

1.3 Scope of the Study

In order to identify the potential environmental and social impacts, and to come up with the proper mitigation measures of the proposed project activities; Bitumen service road and a storm water drainage, installation of High Mast lights; the consultant used both conventional and participatory approaches. In conducting this exercise, the consultant undertook:

1. Visiting the project site, and consulting with the local communities, and other relevant key stakeholders.
2. Carrying out a comprehensive assessment ensuring all environmental and social concerns and views of all parties/persons likely to be affected by the project are taken into consideration.
3. The reviewing of preliminary designs for the proposed project to get acquainted with environmental issues in the project site vicinity.
4. The planning and preparing of a time schedule for the activities to be undertaken for the ESIA.
5. Developing an environmental management plan with mechanisms for monitoring and evaluating the compliance and environmental performance, which include the cost of mitigation measures and the timeframe of implementing the measures.
6. Publicizing the project and its anticipated effects by posters in strategic places, publishing a notice in both official and local languages in the Kenyan Gazette and one of the local dailies.
7. Liaising with NEMA for compliance with all mandatory and regulatory requirements relating to the ESIA.

1.4 Terms of References (ToR)

The consultant had the responsibility of aligning the outputs with professional and legal standards, in accordance with the mandate of NEMA (National Environmental Management Authority). All deliverables were presented using modern techniques and technology, contributing to the development of digital land information systems for informal settlements by KISIP. Furthermore, the process of generating data involved a consultative approach to ensure authenticity and ownership, encompassing the following specific tasks.

The authenticity requires the consultant to conduct the below tasks:

1. Assessment and description of location/site, objectives, scope, nature of the proposed project,
2. Analysis of the proposed project activities during the proposed project cycle; construction, operation, decommissioning phases,
3. Establish the suitability of the proposed project in the proposed location,
4. Review and establish all relevant baseline information as will be required by NEMA (Physical, Biological and Social Cultural and economic) and identify any information gaps,
5. Description and analysis of policy legal and institutional framework including but not limited to Kenyan policies, laws, regulation and guidelines which have a bearing on the proposed project and will also serve as benchmarks for monitoring and evaluation, and future environmental audits,
6. In-depth description of the proposed project and associated works together with the requirements for carrying out the works,
7. Analysis of the designs, technology, procedures and processes to be used, in the implementation of the works,
8. Consultation and Public Participation (CPP): Identify key stakeholders and affected persons; hold a public meeting and provide /collect written evidence i.e. minutes,

9. Identify and analyze proposed project alternatives including but not limited to: Scale and extent; project site alternatives, no project alternatives, design alternatives, material alternatives and technologies alternatives,
10. Identify, predict and carry out in-depth analysis all actual potential and significant impacts on flora, fauna, soils, air, water, the social, cultural and community settings; the direct, indirect, cumulative, irreversible, short-term and long-term effects anticipated to be generated by the proposed project, both positive and negative throughout the project cycle,
11. Recommend sufficient mitigation measures for all the potential negative impacts identified,
12. Analyze occupational health and safety issue associated with the proposed project,
13. Develop an Environmental and Social Management Plan (ESMMP) proposing the measures for eliminating, minimizing or mitigating adverse impacts on the environment, including the cost, timeframe and responsibility to implement the measures.

1.5 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, amended 2015 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 and socio-economic surveys
- Data analysis and
- Report preparation.

1.5.1 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.

1.5.2 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.

ESMF checklist has been annexed in this report as *Appendix 3: Environmental and Social Management Framework Screening Checklist for Chaani Settlement.*

1.5.3 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.

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.

   An RPF checklist has been annexed in this report as *Appendix 4: Resettlement Policy Framework (RPF) Screening Checklist for Chaani Settlement***.**

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) offer technical guidance on managing environmental, health, and safety risks across industries. They aid project developers and financiers in identifying and addressing potential impacts, spanning areas like pollution, biodiversity, and occupational safety. These guidelines, grounded in global standards, cater to diverse regional and industrial contexts. Ultimately, they support sustainable development and ethical business practices worldwide.

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. It underscores the importance of safeguarding biodiversity and ecosystem services while advancing sustainable development. OP 4.07 delineates principles and standards for evaluating and mitigating potential impacts on natural habitats throughout project lifecycles. Key elements include identifying critical habitats, assessing potential impacts, implementing avoidance and minimization measures, and providing compensation for residual impacts. Additionally, the policy underscores stakeholder engagement, transparency, and accountability in habitat conservation efforts. Adhering to OP 4.07 enables project proponents to conduct activities that preserve biodiversity and ecosystem integrity, fostering long-term environmental sustainability.

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

1.5.4 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.

1.5.5 Desktop Study

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

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

1.5.6 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. Site assessment was undertaken through the following;

- Physical Inspection: A site visit was conducted to assess the actual conditions on the ground. This included evaluating terrain features, vegetation, existing structures, drainage patterns, and any visible signs of environmental impact or contamination.

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

1.5.7 Public Participation

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

1.5.7.1 General Questionnaires

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

The main body of the questionnaire comprises clear and specific questions, including both closed-ended (multiple-choice, yes/no) and open-ended formats, organized logically to address the primary objectives. Additional sections allow for detailed feedback or exploration of specific topics. Before deployment, questionnaires undergo review and pilot testing to ensure clarity, relevance, and accuracy. A filled sample is annexed in this report as *Appendix 2: Sample Filled in Questionnaires.*

1.5.7.2 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 summarized key points discussed, inviting the informant to reflect on additional insights. The interview concluded 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 tool 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. A filled sample of the key informant questionnaire is also annexed as *Appendix 5: Filled Sample of Key Informant Interview Questionnaire.*

1.5.7.3 Socio-economic surveys

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

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

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

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

Analysis of the socio-economic data has been showcased in chapter 3.

1.5.7.4 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 to the client during the exercise.

1.6 Justification of the ESIA

The implementation of the proposed project shall have both socio-economic and environmental impacts on the projectarea. In order to alleviate any detrimental effects of the project, there is need to assess possible impacts of the development on the environment and the socio-economic attributes of the project area.

The Environmental and Social Impact Assessment (ESIA) is crafted to establish a triangular relationship encompassing the proposed Project, natural ecosystems, and the social setting, fostering coexistence. The study will intricately connect the project with key environmental, social, and economic aspects, establishing linkages for seamless integration throughout the project's life cycle, from the planning stage through construction, commissioning, operation, and ultimately decommissioning.

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. Aligned with the Environmental Management and Coordination Act (EMCA) and World Bank Operation Policy, the project adheres to the assessment of social and environmental impacts, proposing effective mitigation measures.

1.7 Environmental and Social Impact and Assessment Team

Table 1: Team of experts

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

2. PROJECT DESCRIPTION, DESIGN AND IMPLEMENTATION

2.1 Proposed Project location

Chaani Settlement, situated in Chaani ward, Changamwe Sub-County of Mombasa County, is approximately 6km west of Mombasa Island. The settlement comprises three distinct villages - Kalahari, Mathare, and Kwarasi - covering an overall acreage of 10.82 hectares. According to the 2019 Kenya National Census, approximately 4749 people call Chaani home. Geographically, the settlement is bordered by Port Reitz Road to the north and west, with Kipevu Road marking the eastern border. To the west lies Moi International Airport, and to the south, the Changamwe harbour front.

Figure 1: Location of Chaani settlement

Source: Projects survey/design

Chaani's strategic location is emphasized by its position with a frontage on Magongo Road, connecting to the Nairobi – Mombasa Road. Notably, Chaani informal settlement is situated on public land owned by Mombasa City County, with the proposed coordinates for the settlement being (S 4° 2' 6.054", E 39° 35' 46.4028"). This geographic information is crucial for precise planning and execution of the infrastructure upgrade project, ensuring alignment with the settlement's spatial layout and demographics.

Regarding administrative units, the lowest level is Chaani Sub-Location, situated within Chaani ward, Changamwe Sub-County, Mombasa County. Chaani ward serves as the immediate project administrative unit where the infrastructure upgrades are planned and executed. The design map below shows the location of Chaani settlement and plans of the proposed facilities.

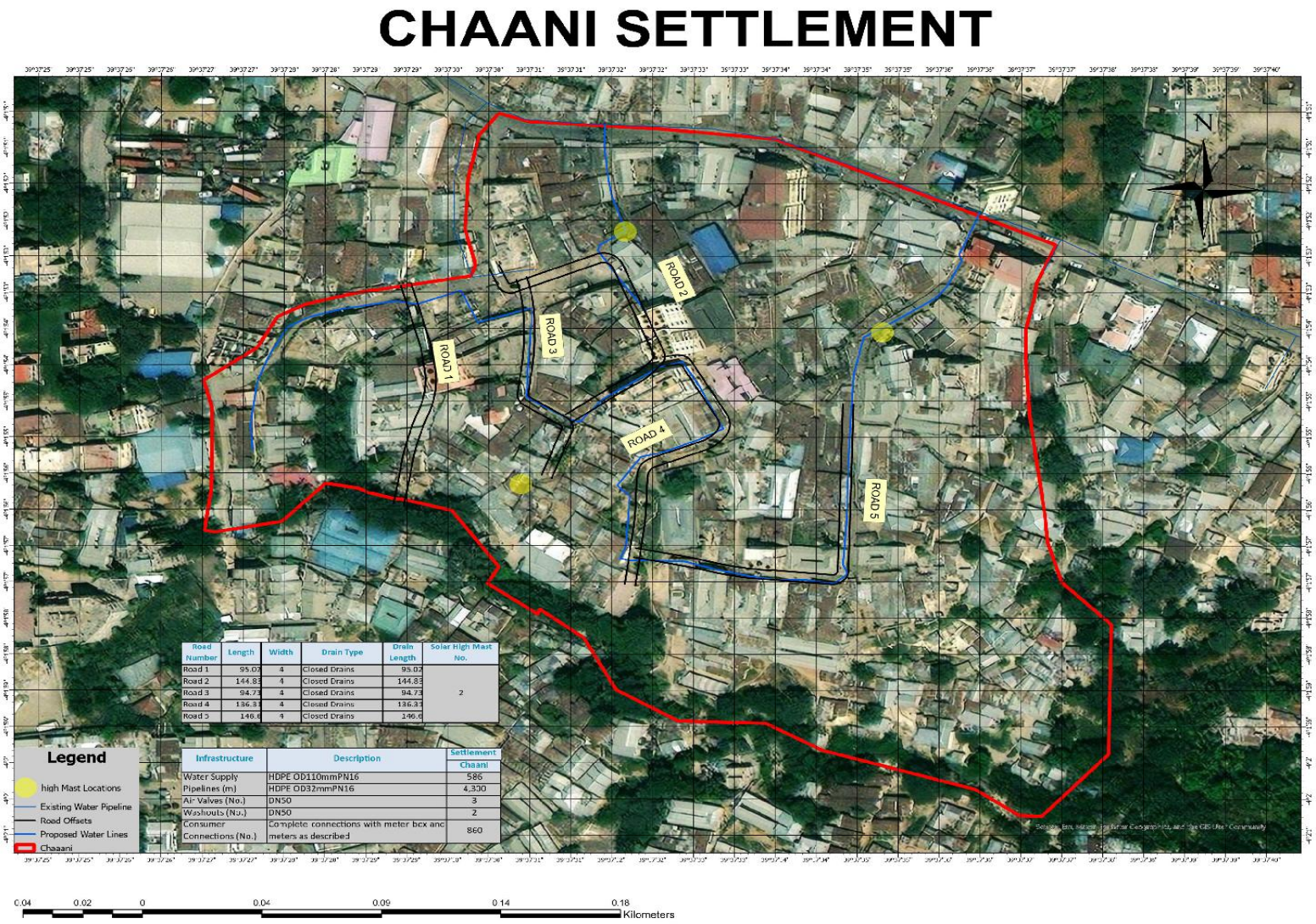


Figure 2: Project description of proposed road and drainage lines

2.2 Proposed Project Description

The Chaani Settlement project represents a crucial initiative committed to the comprehensive improvement of infrastructure within the settlement. This inclusive effort involves upgrading roads, implementing storm water drainage systems, and installing high-mast lights, all with the primary goal of significantly enhancing living conditions, mobility, and safety for the residents of Chaani. Located in Changamwe Sub-County, Mombasa County, this proposed project not only addresses current challenges but also supports the sustainable growth of the settlement.

The proposed upgrades include transforming the existing marram roads and footpaths into bitumen standards, implementing robust storm water drainage systems, water supply systems and strategically installing high-mast lights. These enhancements are carefully designed to promote community development by ensuring better connectivity and enhancing overall safety and security. Importantly, the proposed project aligns with broader regional development goals, aiming to bring positive socio-economic impacts to the residents of the Chaani settlement.

Land tenure in the settlement is freehold, hence, most residents possess title deeds issued during the implementation of KISIP 1.

2.2.1 Scope of Works

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

Table 2: Summary Description for Scope of Work in Chaani

Proposed Projects	**Description**			
	No of roads	**Width(Meters)**	**Total lengths (Meters)**	
1. Roads	5	4	617.49	
2. Drainage system	**Description**			
	Type:		**Length (Meters)**	
	Cross pipe culverts and access culverts, along with closed U-drains		Varied	
3. Street Lighting- Installation off High Mast lighting	**Description: 2Nr. High Mast lights**			
	No of High Mast lighting		**Height(Meters)**	**Luminous Radius (Coverage)(Meters)**

	2	30	150
4. Extension of water supply system.	**Description**		
	Complete consumer connection with over 860 consumers connected.		
5. Solid waste disposal	**Description**		
	Introduction of Waste collection exercise at Household level, Transport to Transfer station for sorting into recyclables and non-Recyclables by non-motorist means for instance cart. Treatment of non- recyclables and disposal to authorised approved site done by County Government of Mombasa.		

The settlement has the following proposed roads and drainages, street lights, and water supply

2.2.2 Roads and Drainage System

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.

The table below illustrates the roads designed to be implemented.

Table 3: The roads and drainages in Chaani

Road	Drawing Reference Name	Road Length (Metres)	Width (m)

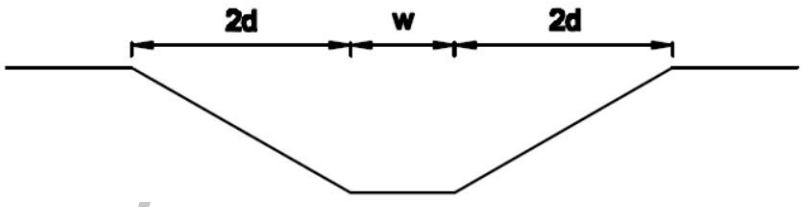
Number			
Road 1	KISIP 2/ MSA /pp/Chaani road 01	95.02	4
Road 2	KISIP 2/ MSA /pp/Chaani road 02	144.83	4
Road 3	KISIP 2/ MSA/pp/Chaani road 03	94.73	4
Road 4	KISIP 2/ MSA /pp/Chaani road 04	136.31	4
Road 5	KISIP 2/MSA/pp/Chaani road 05	146.6	4
Total		**617.49**	

The Road works entail;

1. Carriage way of widths of 4m
2. 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
3. The Drainage system construction works shall include;
    - Cross pipe culverts and access culverts
    - Closed U-drains

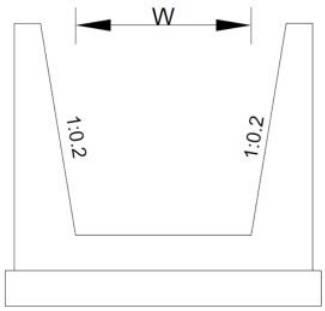
Drainage Facilities Design

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.

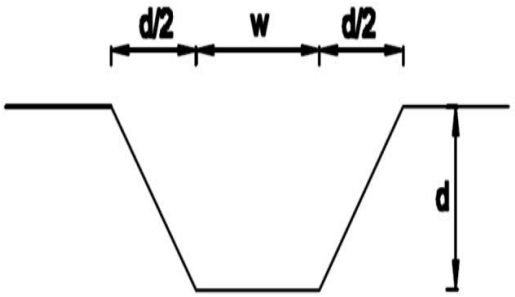


V-Shape Drain (H:V=2:1)

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.



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



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

Catchment	Storm	Area	Length	Slope	Areal	Run-off	Rainfall	Average	Peak	Structure	Open channel
	Return Period	A	L	S	Reduction Factor	Coeff. C	Intensity I	Rainfall Intensity	Run-off = 0.278cia	Pipe culvert D=	Rectangular H=(q/1.94)^1/1.52
	Yrs.	km^2	km	m/m	f (a)		(mm/hr)	i (mm/hr)	m^3/s	$Q/1.42)^{1/2.5}$	Rectangular Height, H
Chaani	5	0.0600	0.030	0.006	0.98	0.50	107.10	104.93	0.88	0.25	0.59
	25	0.0600	0.030	0.006	0.98	0.50	148.60	145.58	1.21	0.34	0.73
	50	0.0600	0.030	0.006	0.98	0.50	167.60	164.20	1.37	0.39	0.80

Table 4: Drainage Hydraulic Computation

Pavement Design

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

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

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

Table 5: Characteristics of the proposed pavement standard road

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

Horizontal and vertical design will be guided by standards as contained in the Ministry of Roads and Infrastructure Road Design Manuals (Part 1 & 3) and Manual for Traffic Signs in Kenya (Part 1 & 2): construction specifications are in accordance with the Ministry of Roads and Infrastructure Standard Specification for Road and Bridge Construction (1986). Methodologies to be used in pavement design, earthworks, drainage and structures will be in conformity with the latest international techniques to ensure economical use of available materials and a balance between capital and maintenance costs.

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 6: Functional Road Characteristics (Urban Road Design Manual)

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

Design Speed

The alignment design elements, e.g. curvature, sight distances and vertical grades are directly related to design speed. The selection of the appropriate design speed is therefore an important aspect of alignment design.
The design speed for the road was chosen as 40km/hour due to the fact that the roads are basically residential access roads.
Design speed is one factor that determines the degree of curvature in the horizontal alignment design. In this case the roads are within the residential areas where land development and encroachments to the road reserve are the main factors affecting the horizontal curvature of the design. Therefore, some curves impose low level of comfort to the drivers.
Taking into account the limitations imposed by existing developments on horizontal curves, crest curves and sag curves, the curve radii adopted ranged from minimum of 5m at junctions for turning, to 200m on the curves along the alignment.

Design Vehicles

The design vehicle governing the geometric design is indicated below:

Table 7: Design Vehicle as a Design Control Parameter

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

Design Cross-sections

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

- Public roads to the settlement 6m

- Internal roads 3 - 4m
- Footpaths 2 - 3m

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

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 8: 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 9: 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 10: Recommended Design Slopes

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

Accesses

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

Footpaths

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

Cycle tracks

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

Road furniture

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

Roads Operation Phase Activities

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

Roads Decommissioning Phase

Decommissioning refers to the final disposal of the project and associated materials at the expiry of the project life span. In respect to the road, decommissioning is not anticipated. However, it will be sustained in accordance to transportation demands of the project area.
Nevertheless, after the construction period, construction equipment and dismantled camp materials will be salvaged and removed from the site by the contractor.

Environmental Protection

The Contractor is supposed to ensure so far as is reasonably practicable and to the satisfaction of the responsible proponent agent; that the impact of the construction on the environment shall be kept to a minimum

and that appropriate measures as brought out in the ESMMP are taken to mitigate any adverse effects during the construction. These measures shall include:

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

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

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

Stone Sources

Hard stone quarries were noted in the centers within the Municipality.

2.2.3 Water Supply

The works shall also entail the connection of 860 new consumers with Complete consumer connection including 90o HDPE bend, HDPE ferrule adopter, consumer connection pipe HDPE BPT Adopter, meter box include short threaded, pipe piece, isolating ball valve, volumetric domestic water meter c/w strainer plus non return, meter cap nut, short threaded pipe piece, lock nut plastic washers, concrete base class 15/20, all socketed Ts and 90o socketed bend.

The water supply works shall comprise the following pipelines

Table 11: Water supply Components

Description	Unit	Quantity
OD32PN16 in trenches with depth range not exceeding 1.5	m	4300
OD110PN16 in trenches with depth range not exceeding 1.5	m	586.00

Water supply Description

Table 12: Water supply description

Water Supply Pipelines (m)	HDPE OD125mmPN16	
	HDPE OD110mmPN16	586
	HDPE OD75mmPN16	
	HDPE OD50mmPN16	
	HDPE OD32mmPN16	4,300
Air Valves (No.)	DN50	3
Washouts (No.)	DN50	2
Flanged Gate valves (No.)	DN75	
	DN110	2
	DN125	
Consumer Connections (No.)	Complete connections with meter box and meters as described	860

Source: Draft Settlement Upgrading Plans, Engineering Designs and Procurement Documents: Volume 1: Design Report.

Complete consumer connection including 90o HDPE bend, HDPE ferrule adopter, consumer connection pipe HDPE BPT Adopter, meter box includes short threaded, pipe piece, isolating ball valve, volumetric domestic water meter c/w strainer plus non return, meter cap nut, short threaded pipe piece, lock nut plastic washers, concrete base class 15/20, all socketed Ts and 90o socketed bend.

Installation of High-Mast lights

The Street Lighting works shall comprise of installation of 2Nr. High Mast lights with a 30 m high steel tower complete with a lockable electrical control switchgear and power meter chamber and 3000mm by 3000mm concrete foundation. Radius of illumination is 150m.

2.2.4 Street Lighting Works

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.***

2.2.5 Solid Waste Disposal System

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

The Solid Waste Management Systems entails:

Recycling and Re-use: In the initial stages of the project recycling of wastes is proposed to be carried out by the CBOs who will be collecting the waste from the residential places and transferring it to the temporary holding yards, from where they will sort out the wastes into recyclable and non-recyclable wastes. However, it is expected that the community members will be sensitised with time in order to carry out waste's segregation at their household levels. The CBOs will provide them with two types of plastic bags, properly labelled, one for recyclables and the other for non-recyclables. Several CBOs involved in recycling could unite to form a cooperative society that helps in seeking for good markets for their recyclables. Such recyclables will include plastics, papers, glasses and metallic wastes.

Payment for refuse collection services: The amount of fee charged per household for refuse collection should be agreed upon after consultations with all stakeholders, including the residents, the County government, local administration and the CBOs. It is important that all households are involved in solid waste management plans, since every household contributes to solid waste generation. In most cases those who don't get involved in community waste management plans are the ones who establish illegal dumpsites in the settlements since their refuse is not collected through the established channels. The CBOs should carry out massive sensitization, and where necessary should involve the local administration to try and get all households involved in solid waste management plans.

Specific representatives from the CBOs should be charged with the responsibility of collection of the monthly fees from the residents. These persons should be introduced to the community members in a public *baraza*, and if possible, should have a special badge for identification. All payments made must be issued with an official receipt for accountability purposes. Payments should be done preferably at the beginning of every month, or as agreed upon by individual households.

Collection and transportation plan: The consultant proposes the use of plastic waste paper bags which shall be provided to each household in the three settlements for placing in the solid wastes. CBO teams will collect the wastes from each household on agreed days of the week, and transport them to the transfer stations. CBOs will use non-motorised transportation means such a hand carts and wheelbarrows in view of the narrow roads in some sections of the settlements. These could be provided by the county government who will be in charge of the overall supervision of the solid waste management plan. Transportation from the transfer station to the final dump site will be a responsibility of the County government since they already have the transportation facilities. The CBOs will need to align their solid waste collection with the existing County's waste collection programme, so that wastes do not stay for long at the transfer stations leading to decomposition and foul smell. There is need for the CBOs to forge a good working a relationship with the County government so that each party clearly understands their mandate and their boundaries of operation, to ensure that solid waste service provision is efficient and adequate.

2.3 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.

2.4 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.

2.5 Environmental Protection

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

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

2.6 Project Cost

Cost estimation is a vital aspect of the project, and this section provides detailed cost estimates for the infrastructure works based on the preliminary designs. It includes the costs of materials, labor, equipment, and other relevant factors. The chapter also discusses the contract packaging approach, which involves determining the appropriate contract types and procurement methods for the implementation of the infrastructure works.

The basis for the cost estimates has been derived from the Cost Estimation Manual 2022-2023 (CEM) from the Kenya Roads Board.

The purpose of the CEM is to provide guidance and instruction to Road Agencies (RAs) for efficient and consistent development of project cost estimates for road maintenance works in a transparent and harmonized manner that can be interrogated by the Public and other relevant Government Agencies.

It is however prudent to note that the consultant has added a 15% markup to the costs to cushion on the current inflation witnessed in the current economic situation of the country.

Table 13: Summary of road and drainage estimate construction cost:

S/n	Description	Amount
1	Site clearance and topsoil stripping	496,142.98
2	Earthworks	4,956,659.18
3	Culvert & drainage works	41,297,463.95
4	Passage of traffic	1,382,779.20
5	Natural material for subbase and base	1,575,420.00
6	Cement and lime treatment	438,217.85
7	Bituminous surface treatment and surface dressing	1,146,901.21
8	Bituminous mixes/ wearing course	3,935,528.10
9	Road furniture	4,558,671.57

10	Environmental & social safeguards	21,760,000.00
Sub-total 3		**81,547,784.04**

Table 14: Summary of Mast lights installation estimated cost

S/N.	Description	Amount
2.0	Floodlighting and other services	6,984,200.00
3.0	Civil and structural works	1,846,200.00
Sub-total 4		**8,830,400.00**

Table 15: Summary of Water supply construction estimated cost

S/N	Description	Amount
1	Chaani water supply	12,335,087.40
Sub-total 5		**12,335,087.40**

Table 16: Summary of estimated construction cost

S/N.	Description	Amount
1	Roads and drainage works	81,547,784.04
2	High mast street lighting	8,830,400.00
3	Water supply	12,335,087.40
Grand Total		**102,713,271.44**

3. PROJECT ALTERNATIVES

3.1. Project Alternative

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

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

3.2. The "No-action" Alternative

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

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

3.3. Upgrade of Roads

3.3.1 Alternative 1: Patch and Repair

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

Pros:

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

Cons:

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

3.3.2 Alternative 2: Incremental Upgrade

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

Pros:

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

Cons:

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

3.3.3Alternative 3: New Road Alignment

Consider creating new road alignments or bypasses to alleviate traffic congestion and address issues in a 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.

3.4. Construction of Storm water Drainage

3.4.1 Alternative 1: Green Infrastructure

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

Pros:

- Environmentally sustainable.
- Potential for community engagement.

Cons:

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

3.4.2 Alternative 2: Traditional Drainage Systems

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

Pros:

- Proven effectiveness.
- Standardized construction methods.

Cons:

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

3.4.3 Alternative 3: Regional Detention Ponds

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

Pros:

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

Cons:

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

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

3.5. Installation of High-Mast Lights

3.5.1 Alternative 1: Solar-Powered Lights

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

Pros:

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

Cons:

- Higher initial investment.
- Weather-dependent efficiency.

3.5.2 Alternative 2: Smart Lighting Systems

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

Pros:

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

Cons:

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

3.5.3 Alternative 3: Decorative Lighting

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

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

Pros:

- Aesthetic enhancement.
- Community-focused design.

Cons:

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

3.6. The Alternative Analysis

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

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

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

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

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

4. PHYSICAL, ENVIRONMENTAL AND SOCIO-ECONOMIC BASELINE INFORMATION

4.1 Biophysical Environmental Baseline

1.1.8 4.1.1 Physical Environment

4.1.1.2 Climate

The coastal area of the Indian Ocean, including the Mombasa area, has a typical coastal tropical climate being wet – humid from the coastline and progressively changing to arid and less humid as one moves to the interior throughout the year with monsoons generated by the Indian Ocean.

4.1.1.3 Temperature

The coastal zone experiences mean annual temperatures ranging from 240C to 300C and maximum temperatures ranging from 300 to 360 C. The temperatures between January and March, which is a dry season are the highest and the coolest season is between July and August.

4.1.1.4 Precipitation

The rainfall pattern in Mombasa is characterized by two distinct long and short seasons corresponding to changes in the monsoon winds. The long rains occur in April to June with an average rainfall of 1,040 mm and which correspond to the south eastern monsoon winds. The short rains start towards the end of October and last until December and correspond to the comparatively dry north eastern monsoons, with an average rainfall of 240 mm.

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. This data will enhance the understanding and decision-making process regarding the project alternatives.

On the other hand, the precipitation records during the dry season, which includes January and February, is 20 mm per month.

4.1.1.5 Area, Population and Industry

Total land area of the settle is 10.82ha. 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. Currently Chaani is occupied by 4749 persons.

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.

4.1.1.6 Ecosystem

Mombasa County has natural forests of approximately 300 ha, agro-forestry of approximately 138 ha, three remarkable mangrove forests and the marine ecology of the Indian Ocean. Along the coastal area of Kenya adjacent to the Indian Ocean, mangrove forests are well established.

4.1.1.7 Vegetation

Mombasa County has natural forests of approximately 300 ha, agro-forestry of approximately 138 ha, three remarkable mangrove forests and the marine ecology of the Indian Ocean. Along the coastal area of Kenya adjacent to the Indian Ocean, mangrove forests are well established.

4.1.2 Biological Environment

4.1.2.1 Flora

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.

4.1.2.2 Fauna

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.

4.2 Socio-economic Baseline

The Chaani Settlement zone is a locality situated along the coastal city of Mombasa. The economic activities prevalent in this area revolve around the tourism industry, fishing, and commercial enterprises, which constitute major sources of employment for the residents. However, poverty and unemployment levels remain alarmingly high in numerous neighborhoods, particularly within the informal settlements. These settlements grapple with issues such as criminal activities, inadequate sanitation facilities, and drug abuse, which can be attributed to the lack of essential amenities and opportunities available to the residents. Notably, the settlements exhibit a unique amalgamation of African, Arab, and Indian cultural influences, reflected in their architecture and linguistic diversity. In summation, while these settlements exemplify a harmonious coexistence of diverse ethnic groups, the socioeconomic disparities remain substantial, necessitating concerted efforts in urban planning and inclusive development strategies.

4.2.1 Administration and political Units

Mombasa County has six sub-counties namely; Likoni, Jomvu, Kisauni, Mvita, Changamwe and Nyali. Changamwe sub-county has five county assembly wards (Chaani, Changamwe, Kipevu, Port Reiz and Airport). (County Government of Mombasa, 2023). The Chaani settlement where the project is heavily undertaken is within Chaani ward.

Table 17: Changamwe sub-county by land area (sq. KM) Source: KNBS 2019

	Ward	Land Area (sq. KM)
Changamwe sub-locations:	Chaani	3.9
	Khamisi	3.5
	Kwa Hola	0.6
	Port Reiz	9.4

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

4.2.2 Population Dynamics

Table 18: Chaani Sub-locations Population distribution Source: KNBS 2019

Sub Location	Total Population	Male	Female	Households	Population Density
Chaani	38,785	20,474	18,311	14,543	10,033
Khamisi	6,255	3,170	3,085	1,714	1,788
Kwa Hola	18,568	9,530	9,038	6,671	28,801
Port Reiz	65,496	34,164	31,332	22,699	6,950

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

4.2.3 Sources of Income and earning equivalent

It was observed there was variation between income sources and the amount earned per month. 70% of the employed earned over KSHS. 20,000 per month; the business community had 37.5% earning between KSHS. 10,001 to 15,000 per month *(Figure 6)*. 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.

Source: Chaani Settlements Survey Data, 2024

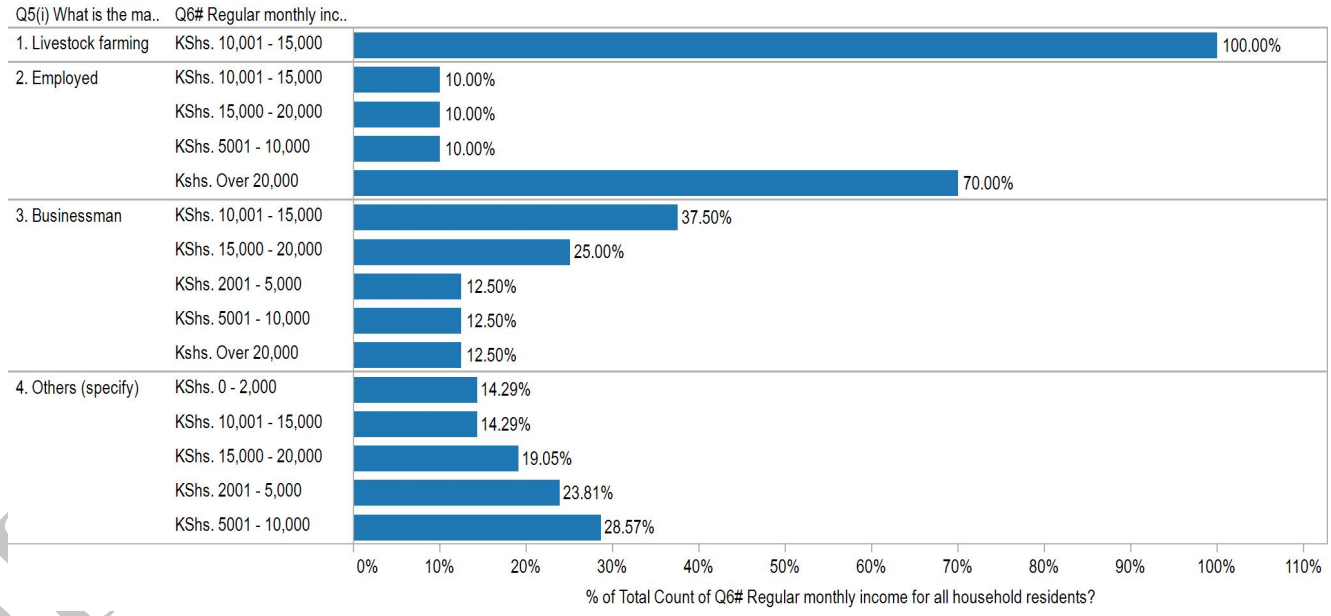


Figure 3: Distribution of income amount earned through various sources

4.2.3 Type of House Structure

Over 80% of the respondents live in permanent house structures (i.e. cemented floor; stone wall; and iron sheet roof); while 5.6% lived in temporary makeshift structures *(figure 7)*. The housing situation is satisfactory as even the semi-permanent 13.9% are mostly Swahili houses that suitable for the coastal region.

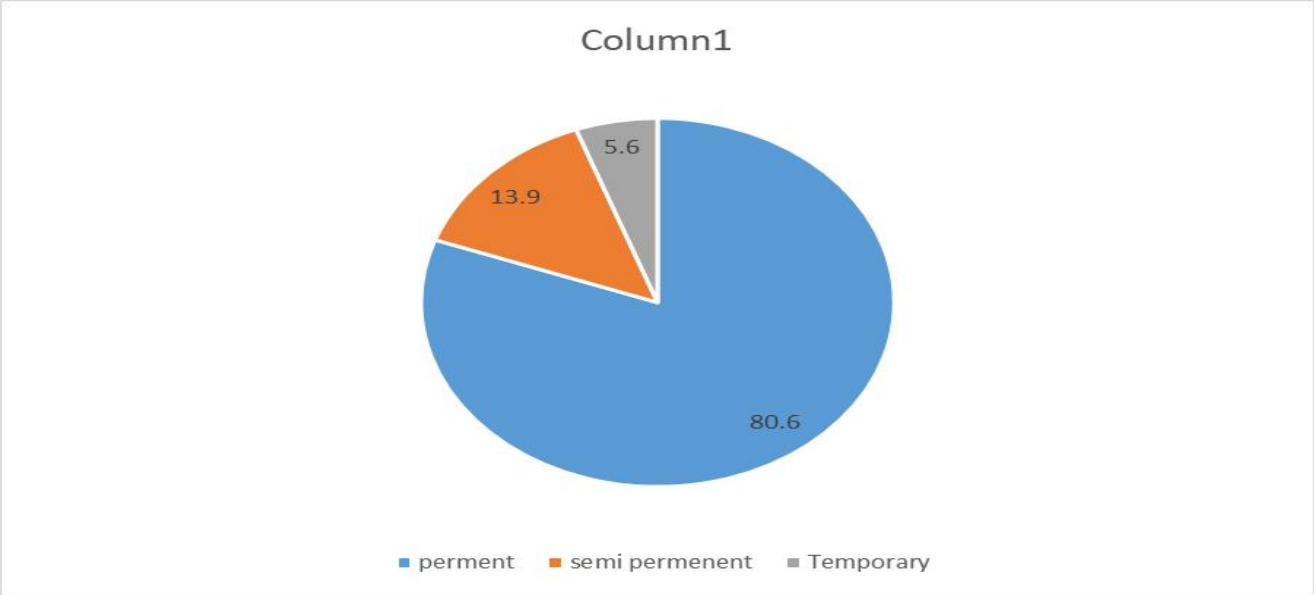


Figure 4:Types of house structure

Source: Chaani Settlements Survey Data, 2024

4.2.4 Transport

The settlement is devoid of any proper road network and movement is through narrow dirt roads that interconnect various land use activities. The settlement is connected to the Mombasa Nairobi highway by a tarmac road.

The settlement is bounded by Port Reitz Road to the north and west, with Kipevu Road marking its eastern limit. To the west is Moi International Airport. Which is the second busiest international airport in Kenya.

4.2.5 Water and Sanitation

The residents obtain their water from community water points where they buy a jerry can of salty water at 5 shillings or a jerry can of fresh water at 20 shillings.

The average amount of water consumed in a given day among the households, is 5 (20 liters) jerry cans of water per day. This translates to 3,000 liters of water per household per month (typical month is assumed to have 30 days) this is similar to the standard minimum consumption of 100 liters per day,

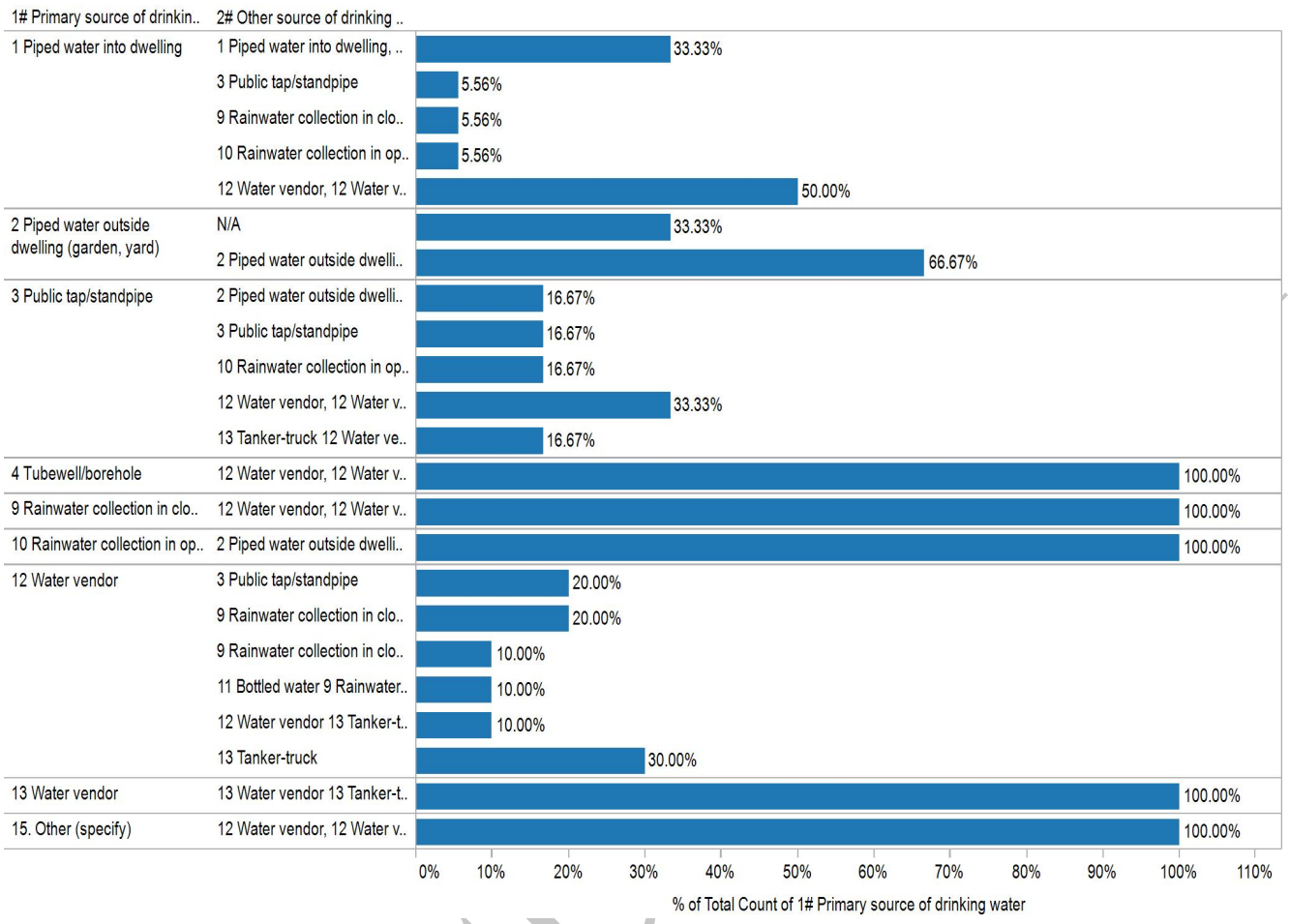


Figure 5: Alternative sources of water occasioned by climate/weather patterns changes

Source: Chaani Settlements Survey Data, 2024

Among the stable households in terms of economic endowment, the average amount of water consumed in a given day is 7 (20 liters) jerry cans of water per day. Using median value of 7.55 (20 liters) jerry cans, this translates to 4530 liters of water per household per month (typical month is assumed to have 30 days). These households consume enough and beyond the minimum consumption levels due to their many demands/uses.

Figure 6: Water access point within the settlement

4.2.6 Drainage

The drainage system here is non-existent and people dispose waste carelessly all over their surroundings. 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. In permanent households, a majority of toilet facilities are private, with each household having its own toilet. In contrast, semi-permanent households tend to have a higher proportion of shared toilet facilities. Consequently, the ratio of individuals sharing a particular type of toilet facility varies. Both flush and septic toilets, as well as composite ones, are equally shared. systems relying on piped water depend on pipelines established prior to the initiation of the access improvement project.

Figure 7: Photos of status of drainage and sanitation

4.2.7 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 the *figure 10* 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.

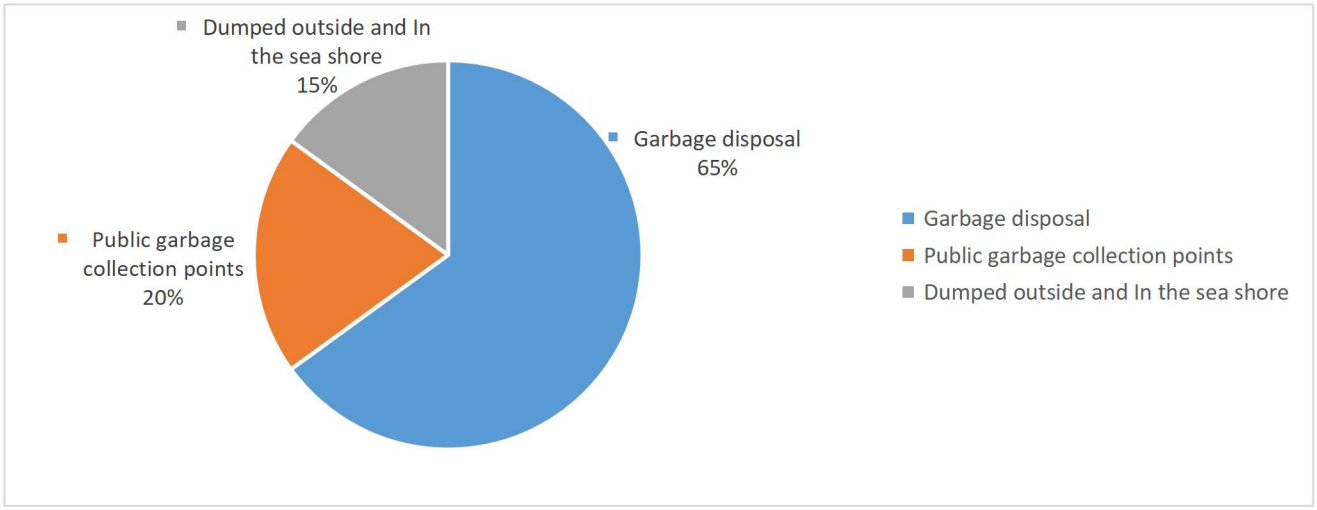


Figure 8: Methods of garbage collection

Source: Chaani Settlements Survey Data, 2024

4.2.6 Crime and Security

In Chaani Settlement, drug and substance abuse among other unethical behavior contribute to insecurity in the settlement partially contributed by the high unemployment rate. Gender based violence is common issue in the area.

Nonetheless, county and national government administrators address crimes as they happen by employing a collective and interventionist approach through the national police service. This established system is familiar to community members, and when necessary, the police arrest individuals and proceed with prosecution and remedial actions.

5. POLICY LEGAL AND INSTITUTIONAL FRAMEWORKS

5.1 National Laws and Regulations

Table 19: National legislation

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 Kenya Roads Act, 2007	Provided powers and functions of the relevant authorities that manage, develop, rehabilitate and maintain all road projects	Any road upgrade project falls under the purview of this legislation.
Public Roads and Roads of Access Act 1972 revised 2010 Cap 399	Safeguards the right of the public use public roads constructed.	The project entails public road upgrades of the informal sentences
The Traffic Act Cap 403 of 2013	Spells out conditions for use of 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.
Urban Areas and Cities Act 2011	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) and 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
Sexual Offences Act (2006)	Protection of all persons from harm from unlawful sexual acts, and for connected	Sexual vices are expected to impact the society and as such a law will regulate such Incidences

Law/Regulation	Objective	Application
	purposes.	from occurring

5.2 County Laws and Regulations

Table 20: County legislations

Law	Objective	Application
1.1.9 County Government Act **1.1.10** 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 City County Government

5.3 National Policy Framework

Table 21: Applicable 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	Guarantee safe and peaceful working environment	During construction and demolition phase of the project there will be

Policy	Objective	Application
Employment Policy and Strategies for Kenya		employment.

5.4 County Policy Framework

Table 22: Mombasa City County legislative instruments

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

5.5 Sustainable Development Goals

Table 23: Applicable 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. **Applicable**
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. **Applicable**
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. **Applicable**
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 **Applicable**
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. **Applicable**
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. **Applicable**
SDG Goal 8	Decent work and economic growth	Employment creation that will contribute to

Instrument	Objective	Application
		reducing the proportion of youth not in employment. **Applicable**
SDG Goal 9	Industry, Innovation and infrastructure	Through infrastructure development of the settlement it promotes resilience, inclusivity, sustainable development, and innovation within the community. **Applicable**
SDG Goal 10	Reduced inequalities	Services provided by each project infrastructure is intended to be accessible to all for example the roads constructed. **Applicable**
SDG Goal 11	Sustainable cities and communities	The proposed project plans to improve/develop informal settlements of Chaani settlement. **Applicable**
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. **Applicable**
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, **Applicable**
SDG Goal 14	Life below water	The drainage of the storm water puts into consideration the aquatic life. **Applicable**
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. **Applicable**
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. **Applicable**
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. **Applicable**

5.6 Multilateral Environmental Agreement

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

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

United Nations Framework for Convention on Climate Change (UNFCCC)

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

Vienna Convention for the Protection of Ozone Layer

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

Convention on Biological Diversity (1992)

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

African Union- Agenda 2063

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

African Charter on the Rights and Welfare of the Child.

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

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

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

5.7 World Bank Operational Safeguards

Table 24: World Bank instruments

Instrument	Objective	Application
Operational Policy (OP)/Bank	Environmental Assessment	The project was identified as a

Instrument	Objective	Application
Procedure (BP) 4.01, 2001		Category B
World Bank Safeguard Policy BP 17.50, 2001	Public Disclosure	The proposed project incorporated public participation and stakeholder consultation

5.8 KISIP Instruments

Table 25: KISIP legislation instruments

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

6. PUBLIC PARTICIPATION AND CONSULTATION

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 ESIAs, affirming that the project complies with these stipulated requirements.

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.

6.1 Objectives of The Consultation and Public Participation (CPP)

The objective of the consultation and public participation was to:

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

6.2 Schedule of Stakeholder Consultations

The assessment involved consultations with relevant stakeholders in target Project area. The aim of stakeholder consultations was to give a platform for information sharing and opinion gathering in relation to the proposed Project. Consultations were done in form of key informant interviews, with questionnaires, which were filled and signed. Minutes, attendance sheets and photographs are attached in the appendix section.

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

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

Table 26:Stakeholder Schedule

Meeting	Date	Participants	Gender	
			Male	Female

Holy Mountain Church	9th November 2023	GRC members, SEC members, general public of the settlement were interviewed through questionnaires	11	9

Outcome of Consultative Public Participation

Project acceptance and support

There was unanimous support for the proposed project due to the clear explanation of the proposal and its implementation process. The community recognized the project's feasibility in all aspects and its potential to spur growth in the area. Local community leaders expressed their support, emphasizing that the project would receive backing from the entire community as long as it promoted local development. Stakeholders have no objections, noting that similar projects in other settlements within Mombasa County have benefited the residents.

The locals emphasized the importance of prioritizing the local population for recruitment during the construction phase, especially for non-technical jobs. They also stressed that contractors should ensure fair wages for local casual workers. To prevent unnecessary conflicts, there should be prompt communication to all stakeholders, utilizing local administration and other forums. Any information or clarification about stakeholders' positions on the project should be readily available to any interested party.

Key recommendations and mitigation measures suggested by the locals are included in the Environmental Management Plan (EMP) to allocate responsibilities and budgets for mitigation effectively.

Table 27: Summary of stakeholder discussions

S No.	Concern/Comment/Question	Response/Recommendation
1	The community from Chaani settlement expressed concerns regarding the compensation for houses marked for demolition.	The situational assessment conducted for the initial RAP in KISIP 1 will establish transparent and equitable compensation methods for households impacted by the project, guaranteeing sufficient compensation for those facing displacement from their homes. The compensation plan will factor in property market values, relocation expenses, and other relevant costs to ensure fairness and adequacy.
2	There was no proper communication to the PAPS concerning compensation. Thus most of them received money though where not aware it was for what purpose.	They were informed that the reason for the meeting is to acquire their grievances and look for ways to improve the project thus lack of communication will be captured and ways of improvement sort after.
3	A member of the SEC committee needed clarification on who will be employed on the project.	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.

Figure 9: Public participation meetings at Holy Mountain Church - Chaani

6.3 General Questionnaire Findings

A total of 25 Chaani settlement residents were actively engaged in an informative questionnaire to obtain crucial data on issues ranging from solid waste disposal, water supply, transport access and security.
The following is a tabular presentation of showcasing key findings from the 25 respondents.

Table 28: Questionnaire findings

Do you support the Improvement Project?		
Yes	Not Sure	No
85%	10%	5%

Table 29: Questionnaire findings 2

Will the project accrue more positive impacts or negative impacts?		
More of Positive	Not Sure	More of Negative impacts
90%	0%	10%

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 30: 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 Findings from Key Stakeholder Interviews

A total of 5 key stakeholders from public institutions within and/or around the settlement were consulted and invited to give their views about the project in a form of a questionnaire.
Some of the stakeholders came from;

i. Religious institutions: Imams and priests/pastors
ii. Persons with disabilities
iii. Public schools; Head teacher
iv. Minority Groups; Elderly persons
v. Youth representatives

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

6.4.1 Positive Comments made by the Stakeholders

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

i. Creation of Employment Opportunities

The respondents who were interviewed, were optimistic that the project will create numerous employment opportunities for both for skilled and unskilled labour alike during the construction and operational phases. The respondents were also optimistic that they will take up relevant training to take up jobs during operation stage. Job opportunities will be sources of income for several individuals and households and hence improve the living standards of Kenyans.

ii. Increased Business Opportunities

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

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

iii. Cheap and Faster Means of Transport

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

iv. Easy and Fast Movement of People

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

v. Transfer of Skills

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

Outcome of Consultative Public Participation
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.

Recommendations

The locals were emphatic especially on the need to consider local population first while recruiting employees 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.

6.4.2 Negative Concerns of the Stakeholders

i. Noise pollution

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

ii. Dust Generation

The stakeholders expressed concerns over possibility of generation of large amounts of dust within the project site and surrounding areas as a result of demolition, excavation works and transportation of building materials.

iii. Loss of Vegetation Cover

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

iv. Road Accidents

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

v. Cases 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.

6.5 Analysis of The Public Consultation and Participation Findings

A filled sample of the administered questionnaire can be accessed in *Sample Filled in Questionnaires.*

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

- **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.

6.6 Public Disclosure of ESIA, ARAP, 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, including Chaani Constituency.

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 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).

6.7 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 31: 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

6.8 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).

6.9 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

6.10 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.

6.11 Decommissioning

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

7. IDENTIFICATION OF ENVIRONMENTAL AND SOCIAL IMPACTS AND MITIGATION MEASURES

Environmental and Social Impact Identification and Analysis/Rating

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

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

Table 32: 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 33: 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 34: 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 35: Negative Impacts ratings and associated colour codes

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

7.1 Anticipated project positive impacts During Pre-construction Phase

7.1.1 Roads & Drainage

Inclusivity in decision making

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

Enhancement

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

Employment for surveys especially enumerators

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

Enhancement

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

7.1.2 Street lighting

Inclusivity in decision making

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

Enhancement

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

Employment for surveys especially enumerators

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

Enhancement

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

7.2 Anticipated Positive Impacts During Construction Phase

7.2.1 Roads & Drainage

Creation of employment

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

Enhancement

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

Increased business opportunities

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

Enhancement

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

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

Increased Property Values

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

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

Community Engagement

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

Environmental Protection

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

Skills Development

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

Enhancement

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

7.2.2 Street lighting

Creation of employment

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

Enhancement

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

Increased Property Values

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

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

Skills Development

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

Enhancement

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

7.3 Anticipated 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 and footpaths

Approval delays from NEMA and other Agencies *(Medium High)*
There is a possibility of having delays that may lead to the project taking a longer period of time than the expected. This may lead to delay of the project's kickoff period, thus delay in implementation.
Table 20: 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 21: 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 22: ***Risk of excluding some beneficiaries*** **impacts rating**

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

Mitigation measures;

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

Divided opinion on project implementations*(High)*

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

Table 23: ***Divided opinion*** **impacts rating**

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

Mitigation measures

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

7.5.2 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 24: 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 25: ***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 26: ***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 27: 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 28: ***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 29: ***Divided opinion*** **impacts rating**

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

Mitigation measures

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

7.5.4 Solid Waste Management

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

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

Table 30: ***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 31: ***Divided opinion*** **impacts rating**

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

Mitigation measures

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

7.6 Anticvipated Negative Impacts during Construction

7.6.1 Roads 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 32: 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 33: 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 34: 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 35: Occupational Health and Safety Risks Impacts Rating

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

Mitigation measures

- Contractor to provide a Health and Safety Plan prior to the commencement of worksto be approved by the Supervising Engineer.
- Construction Workers and the Supervising Team to be provided with Personal Protective Equipment including gloves, gum boots, overalls and helmets. Use of PPE to be enforced by the Supervising Engineer.

- Fully stocked First Aid Kits to be provided within the Sites, Camps and in all Project Vehicles
- Isolate the site from access by the local communities during the construction for their safety and health
- Contractor to provide clean water for drinking and healthy food to all the workers
- Contractor to adhere to maximum eight hour working rule
- Contractor to ensure only qualified personnel operate machineries.

Sexual Exploitation and Abuse *(Low Medium)*

Defined as acts penetrated by aid workers or people associated with aid organization for this case contractors for example against the people the settlement residents during construction period. The proposed development will lead to potential for employment opportunities and access to new services, which will draw people to the area more, specifically the project site.

This factor will further lead to a temporary increase in economic activities and employment of skills for the development. This will lead to population influx which might lead to changes in or unwanted behaviors in the area. This unwanted or change in behavior may be in the form of loose morality, an increase in school drop-out due to cheap Labor, child Labor, drug use and abuse, theft/robbery and increased incidences of HIV/AIDS and related infections/diseases and other communicable diseases.

Table 36: 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 37: 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 38: 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 39: 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 40: 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 41: 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 42: 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 43: 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 44: 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 45: 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

- Store construction chemicals in designated areas with proper containment measures;
- Develop a spill prevention and response plan to address accidental releases of hazardous materials;
- Conduct soil and water sampling and testing before, during, and after construction to monitor soil quality especially at the operating sites;

6. Conduct educational programs for construction crews on proper soil management practices and the importance of preventing soil pollution;

7. 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 46: 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 47: 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 48: Occupational Health and Safety Risks Impacts Rating

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

Mitigation measures

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

Sexual Exploitation and Abuse *(Low Medium)*

Defined as acts penetrated by aid workers or people associated with aid organization for this case contractors for example against the people the settlement residents during construction period. The proposed development will lead to potential for employment opportunities and access to new services, which will draw people to the area more, specifically the project site.

This factor will further lead to a temporary increase in economic activities and employment of skills for the development. This will lead to population influx which might lead to changes in or unwanted behaviors in the area. This unwanted or change in behavior may be in the form of loose morality, an increase in school drop-out due to cheap Labor, child Labor, drug use and abuse, theft/robbery and increased incidences of HIV/AIDS and related infections/diseases and other communicable diseases.

Table 49: 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 50: 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 51: 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 52: 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 53: 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 54: 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 55: 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 56: 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 57: Occupational Health and Safety Risks Impacts Rating

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

	Duration of Impact	1
Likelihood	Frequency/duration of activity	1
	Frequency of impact	2
Impact Significance Rating (Consequence × likelihood)	Low Medium	15

Mitigation measures

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

Sexual Exploitation and Abuse *(Low Medium)*

Defined as acts penetrated by aid workers or people associated with aid organization for this case contractors for example against the people the settlement residents during construction period. The proposed development will lead to potential for employment opportunities and access to new services, which will draw people to the area more, specifically the project site.

This factor will further lead to a temporary increase in economic activities and employment of skills for the development. This will lead to population influx which might lead to changes in or unwanted behaviors in the area. This unwanted or change in behavior may be in the form of loose morality, an increase in school drop-out due to cheap Labor, child Labor, drug use and abuse, theft/robbery and increased incidences of HIV/AIDS and related infections/diseases and other communicable diseases.

Table 58: 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 59: 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 60: 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 61: 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 62: 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 63: 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 64: Risk of excluding some beneficiaries Impacts Rating

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

Mitigation measures;

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

7.6.4 Solid waste Management

Soil and Water Pollution *(Low)*

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

Table 65: Surface and ground water pollution Impacts Rating

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

Proposed Mitigation measures

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

The following measures can be implemented to mitigate soil pollution

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

Air Pollution *(Very High)*

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

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

Table 66: Air Pollution Impacts Rating

Criteria		Rating
Consequences	Severity/Magnitude of Impact	2
	Spatial Scope/Geographic Extent of Impact	1
	Duration of Impact	1
Likelihood	Frequency/duration of activity	4
	Frequency of impact	5
Impact Significance Rating (Consequence × likelihood)	**Very High**	36

Proposed Mitigation measures

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

Occupational Health and Safety Risks *(Low Medium)*

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

Table 67: Occupational Health and Safety Risks Impacts Rating

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

Mitigation measures

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

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

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

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

Table 68: 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 69: 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 70: 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 71: 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 72: 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 73: 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 74: 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 75: 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 76: 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 77: Energy Consumption Impacts Rating

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

Mitigation measures:

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

Light and Visual discomfort *(Medium high)*

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

Table 78: Light and Visual Discomfort Impacts Rating

Criteria		Rating
Consequences	Severity/Magnitude of Impact	1

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

Mitigation measures

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

Water Pollution/Contamination *(Very Low)*

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

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

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

Table 79: 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 Kombani 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 80: Alteration of natural drainage patterns impacts rating

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

	Frequency of impact	1
Impact Significance Rating (Consequence × likelihood)	**Very Low**	6

Mitigation measures

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

Disturbance to Nocturnal Wildlife *(Very Low)*

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

Table 81: Disturbance to nocturnal wildlife impacts rating

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

Mitigation measures

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

7.7.2 Drainages

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

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

Table 82: Gender based violence Impacts Rating

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

Mitigation measures

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

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

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

Table 83: 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 84: 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 Kombani 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 85: 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 86: Gender based violence Impacts Rating

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

Mitigation measures

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

Ineffective Grievance Management *(Very High)*
When grievances are not addressed promptly or adequately, they can escalate into conflicts between stakeholders such as local communities, project developers, contractors, and regulatory agencies.

Table 87: 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 88: 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 89: Energy Consumption Impacts Rating

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

Mitigation measures:

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

Light and Visual discomfort *(Medium high)*

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

Table 90: 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 91: Disturbance to nocturnal wildlife impacts rating

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

Mitigation measures

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

7.7.4 Solid Waste Management

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

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

Table 92: 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

9. Develop and implement a plan to manage the risk of SEA/SH.
10. Map the GBV referral pathways and create awareness among women and men on the risk of SEA/SH.
11. 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 93: 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 94: Inadequate stakeholder Engagement Impacts Rating b

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

Mitigation measures;

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

4. Develop and implementation of a stakeholder engagement plan.
5. Engage stakeholders throughout the project phase as guided by the approved stakeholder engagement plan.

Water Pollution/Contamination *(Very Low)*

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

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

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

Table 95: 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 Kombani informal settlement and its residents.

7.8 Anticipated Negative Impacts During Decommisioning Phase

7.8.1 Roads and Foot paths

Disruption of Services *(Low Medium)*

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

Table 96: 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

12. Implement phased decommissioning to minimize disruption to services.
13. Provide alternative routes or transportation options for affected commuters.
14. 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 97: 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

15. Conduct thorough environmental impact assessments prior to decommissioning.
16. Implement erosion and sediment control measures to prevent soil erosion and water pollution.
17. 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 98: 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

18. Implement recycling and reuse programs for materials like concrete and asphalt.
19. Properly dispose of hazardous materials in accordance with regulations.
20. 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 99: 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 100: 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 101: 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

21. Implement phased decommissioning to minimize disruption to services.
22. Provide alternative routes or transportation options for affected commuters.
23. 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 102: 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

24. Conduct thorough environmental impact assessments prior to decommissioning.
25. Implement erosion and sediment control measures to prevent soil erosion and water pollution.
26. 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 103: 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

27. Implement recycling and reuse programs for materials like concrete and asphalt.
28. Properly dispose of hazardous materials in accordance with regulations.
29. 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 104: 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

30. Provide support and incentives for local businesses affected by decommissioning.
31. Offer compensation or assistance programs to mitigate financial losses.
32. 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 105: 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

33. Enforce strict safety regulations and provide adequate training for workers.
34. Implement dust and noise control measures to minimize pollution and disturbance to nearby residents.
35. 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 106: 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

36. Implement phased decommissioning to minimize disruption to services.
37. Provide alternative routes or transportation options for affected commuters.
38. 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 107: 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 108: 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 109: 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 110: Health and safety concerns impacts rating

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

Criteria		Rating
(Consequence × likelihood)		

Mitigation measures

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

7.8.4 Solid waste Management

Disruption of Services *(Low Medium)*

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

Table 111: 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 112: 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 113: 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 114: 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 115: Health and safety concerns impacts rating

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

Mitigation measures

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

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

8.1 Introduction

Environmental monitoring is an essential component of project implementation. An Environmental Monitoring Plan (EMP) 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.

8.2 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.

8.3 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.

8.4 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

8.4.1 Kenya Informal Settlement Improvement Project (KISIP)

KISIP will be responsible for:

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

8.4.2 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.

8.4.3 The Contractor(s)

The Contractor will be responsible for:

- Preparing a Contractor's Environmental and Social Management Plan (CESMMP) that will comply with the requirements of the ESIA/ESMMP and the Standard Specifications for road works in Kenya, which include specifications for environmental and social protection and waste disposal, borrow pit and quarry acquisition and exploitation, landscaping and grassing among others;
- Carry out environmental and social assessment for the project auxiliary sites;
- Operationalize, monitor and report on the implementation of the CESMMP on monthly and quarterly basis (or as required by the Supervision consultant);
- Employ competent and qualified separate environmental and social experts on fulltime basis to manage and monitor implementation of CESMMP;
- Employ fulltime personnel to manage Occupational Health and Safety issues for the entire duration of the project; and
- Report any environmental, social, health and safety incidents to the Supervision Consultant.

- Prepare the following document: Code of Conduct, Emergency Preparedness and Response Plan, Healthy and Safety Plan, Grievance Redress Mechanism, Gender based violence Sexual Exploitation and Response Plan, Waste Management Plan, Biodiversity Monitoring Plan, stakeholder engagement Plan and Traffic Management Plan.

8.4.4 Supervising Consultant

The Supervising Consultant will be responsible for:

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

8.4.5 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.

8.4.6 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.

8.5 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.

8.6 ESMMP

8.6.1 ESMMP for Preconstruction Stage

8.6.1.1 ESMMP for Roads, footpaths

Environmental impact	Impact level	Proposed Mitigation Measures	Monitoring Indicators	Responsibility	Performance	Frequency	Estimated Cost
	Environmental						
Approval from NEMA and other Agencies for ESIA report	Medium	The Proponent shall ensure that all pertinent permits, certificates, and licenses have been obtained prior to any activities commencing on- site and are strictly adhered to.	Environment licenses Degree of completion of set of required approvals/ permits issued	County Government of 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.	Displacements Number of facilitated PAPs	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	Public opinion, Satisfaction to the relevant authority	Consultant GRC SEC KISIP	-Total project support by all	Throughout all stages from onset	200,000.00
Risk of excluding some beneficiaries due to unfriendly infrastructure designs	Low	The implementation of the infrastructure assumed universal design. Disseminate this information to the beneficiaries through public participation	Number of public participation forums held.	KISIP Contactor Consultant GRC EC	SEC/GRC meetings	During designing Stage	250,000.00

		forums.					

8.6.1.2 ESMMP for Drainages

Environmental impact	Impact level	Proposed Mitigation Measures	Monitoring Indicators	Responsibility	Performance	Frequency	Estimated Cost
Environmental							
Approval from NEMA and other Agencies for ESIA report	Medium	The Proponent shall ensure that all pertinent permits, certificates, and licenses have been obtained prior to any activities commencing on- site and are strictly adhered to.	Environment licenses Degree of completion of set of required approvals/ permits issued	County Government of 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.	Displacements Number of facilitated PAPs	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	Public opinion, Satisfaction to the relevant authority	Consultant GRC SEC KISIP	-Total project support by all	Throughout all stages from onset	200,000.00
Risk of excluding some beneficiaries due to unfriendly infrastructure designs	Low	The implementation of the infrastructure assumed universal design. Disseminate this information to the beneficiaries through public participation forums.	Number of public participation forums held.	KISIP Contactor Consultant GRC EC	SEC/GRC meetings	During designing Stage	250,000.00

8.6.1.3 ESMMP for Streetlights

Environmental impact	Impact level	Proposed Mitigation Measures	Monitoring Indicators	Responsibility	Performance	Frequency	Estimated Cost
Environmental							
Approval from NEMA and other Agencies for ESIA report	Medium	The Proponent shall ensure that all pertinent permits, certificates, and licenses have been obtained prior to any activities commencing on- site and are strictly adhered to.	Environment licenses Degree of completion of set of required approvals/ permits issued	County Government of 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.	Displacements Number of facilitated PAPs	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	Public opinion, Satisfaction to the relevant authority	Consultant GRC SEC KISIP	-Total project support by all	Throughout all stages from onset	200,000.00
Risk of excluding some beneficiaries due to unfriendly infrastructure designs	Low	The implementation of the infrastructure assumed universal design. Disseminate this information to the beneficiaries through public participation forums.	Number of public participation forums held.	KISIP Contactor Consultant GRC EC	SEC/GRC meetings	During designing Stage	250,000.00

8.6.2 ESMMP for Construction Phase

8.6.2.1 ESMMP for Roads and footpaths

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

Possible Impact	Impact Rating level	Management Actions	Monitoring Indicators	Target Areas and Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
Air pollution	Moderate	Maintain a speed limit of 20km/h within the site during construction phase to reduce dust particles emission. Use of environmentally friendly fuels such as Low Sulphur diesel. Regular maintenance and service of construction machinery and equipment in accordance to manufacturer specifications to minimize the generation of hazardous gases. Providing PPEs such as nose masks to the workers in dusty areas on the site. Maintain regular training of all personnel on methods for minimizing air quality impacts during construction. Ensure a strict schedule plan for all equipment to avoid unnecessary trips and minimize idling of engines. Enforce of EMCA 2015 (AirQuality Regulations 2014) Avoid carrying out dust generating activities especially during strong winds Use of covered trucks for material delivery to avoid spills and windblown dust Communicate air quality monitoring results to the public and address concerns proactively. Monitor air quality in the construction area and	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)
		surrounding neighborhood. Spraying of all earthwork's areas within 200 meters of human settlement to reduce dust.				
Water Pollution	Low	Implement best management practices for construction activities to prevent runoff contamination. Ensure al machineries are serviced at a dedicated service bay to avoid spillages of oil and other fluids Implement erosion control measures to prevent soil runoff into water bodies. Regularly monitor water quality in nearby water bodies during construction and implementing corrective measures. Collaborate with local water authorities to ensure compliance with water quality standards	Water Quality Reports Records of machine and vehicle	Environmental Management Team Water Quality Experts	Throughout Project	500,000.00
Soil pollution / Erosion	Low	Implement soil erosion control measures to prevent the release of contaminants during construction. Regularly monitor soil quality in construction areas and implement corrective measures. Collaborate with environmental agencies to ensure compliance with soil quality standards.	Ground cover in Constructed areas	Environmental Management Team/consultant Contractor	Monthly	400,000.00
Waste Generation	Moderate	Implement a waste management plan, including proper disposal and recycling of construction waste. Educate construction workers on responsible waste	Clean, Organized, Neat Site Presence of waste collection receptacle Contract with NEMA Registered Waste	Environmental Management Contractor	Throughout Project	500,000.00

Possible Impact	Impact Rating level	Management Actions	Monitoring Indicators	Target Areas and Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
		disposal practices. Monitor waste generation and disposal practices to ensure compliance with the waste management plan. Practice waste recycling, re use and reduction of waste generation	Disposal Firm			
Social Risks						
Sexual Exploitation and Abuse	Low Medium	Implement an awareness and prevention program for project workers and the local community. Provide access to HIV testing and counselling services, ensuring confidentiality and non-discrimination. Establish a support system for individuals living with HIV/AIDS, promoting inclusivity and reducing stigma. Alias with local security administration for insecurity management	HIV/AIDS awareness trainings Availability of VCT facilities Social awareness and trainings	Sociologists Environmental and Safety Management Manager Contractor	Throughout Project	300,000.00
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.	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)
		Provide all workers with appropriate full protective gear. These include working boots, overalls, helmets, earmuffs, masks, and gloves. Make available a fully equipped First aid kit that is manageable by a trained qualified first aider. Use of signage's at work construction site for communication to non-workers and other road users Conduct regular training Document all near misses, incidents and accidents. Conduct risk assessments for all general, standard and high risk jobs Engage only qualified personnel on operating or conducting high risk jobs Issue work permits after risk assessment is successfully and all workers verified to be fit for work Conduct physical fitness test regularly for all worker Report all work related injuries and health concerns for action to be taken				
Child Exploitation and Abuse	Medium	Ensure each employee signs a code of conduct that covers child protection ensuring no children are employed on site in accordance with national labour laws. Ensure that any child sexual relations offenses	List of workers that does not contain underage persons	SEC GRC Contractor	Daily	200,000.00

Possible Impact	Impact Rating level	Management Actions	Monitoring Indicators	Target Areas and Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
		among contractors' workers are promptly reported to the police. Employ workers who are 18 years and above, and with a valid national ID at the time of hire. Implement and monitor the employment register regularly. Comply with the national labor laws and labour management practices. Put visible signage on site "No Jobs for children."				
Increased Crime and Insecurity	Very High	Contractor and Supervision Team to liaise regularly with the Local Administration and Police Service to address any security and crime arising during project implementation. Contractor to provide 24 hours' security to Workforce Camps, Yards, Stores and to the Supervising Team's Offices	Availability of security officers Number of security concerns reported.	Environmental and Safety Management Manager 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	Number of complaints from community due to lack of certain services	Environmental and Safety Management Manager Contractor Relevant County Government	Throughout Project	100,000.00

Possible Impact	Impact Rating level	Management Actions	Monitoring Indicators	Target Areas and Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
		report service disruptions and address concerns.		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

8.6.2.2 ESMMP for Drainages

Possible Impact	Impact Rating level	Management Actions	Monitoring Indicators	Target Areas and Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
Environmental						
Noise pollution and Excessive Vibrations	Moderate	Enforce EMCA 1999, Revised 2015 (Noise and Excessive Vibrations Regulations of 2009) Maintain noise level within acceptable limits (55 Decibels during the day and 35 Decibels during the night) and construction activities shall, where possible,be confined to normal working hours in the residential areas Hospitals and other noise sensitive areas such as schools shall be notified by the Contractor at least 5 days before construction is due to commence in	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)
		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.	Cases of respiratory complication at nearby health centre. Records of machine and vehicle maintenance Low dust generation during construction Availability and use of Nose Masks	Environmental Consultants Contractor	Continuous	300,000.00

Possible Impact	Impact Rating level	Management Actions	Monitoring Indicators	Target Areas and Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
		Enforce of EMCA 2015 (AirQuality Regulations 2014) Avoid carrying out dust generating activities especially during strong winds Use of covered trucks for material delivery to avoid spills and windblown dust Communicate air quality monitoring results to the public and address concerns proactively. Monitor air quality in the construction area and surrounding neighborhood. Spraying of all earthwork's areas within 200 meters of human settlement to reduce dust.				
Water Pollution	Low	Implement best management practices for construction activities to prevent runoff contamination. Ensure al machineries are serviced at a dedicated service bay to avoid spillages of oil and other fluids Implement erosion control measures to prevent soil runoff into water bodies. Regularly monitor water quality in nearby water bodies during construction and implementing corrective measures. Collaborate with local water authorities to ensure 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	Number of complaints from community due to lack of certain services	Environmental and Safety Management Manager Contractor Relevant County Government department with help	Throughout Project	100,000.00

Possible Impact	Impact Rating level	Management Actions	Monitoring Indicators	Target Areas and Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
		service disruptions and address concerns.		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

8.6.2.3 ESMMP for Streetlights

Possible Impact	Impact Rating level	Management Actions	Monitoring Indicators	Target Areas and Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
Environmental						
Waste Generation	Moderate	Implement a waste management plan, including proper disposal and recycling of construction waste. Educate construction workers on responsible waste disposal practices. Monitor waste generation and disposal practices to ensure compliance with the waste management plan. Practice waste recycling, re use and reduction of	Clean, Organized, Neat Site Presence of waste collection receptacle Contract with NEMA Registered Waste Disposal Firm	Environmental Management Contractor	Throughout Project	500,000.00

Possible Impact	Impact Rating level	Management Actions	Monitoring Indicators	Target Areas and Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
		waste generation				
Social Risks						
Sexual Exploitation and Abuse	Low Medium	Implement an awareness and prevention program for project workers and the local community. Provide access to HIV testing and counselling services, ensuring confidentiality and non-discrimination. Establish a support system for individuals living with HIV/AIDS, promoting inclusivity and reducing stigma. Alias with local security administration for insecurity management	HIV/AIDS awareness trainings Availability of VCT facilities Social awareness and trainings	Sociologists Environmental and Safety Management Manager Contractor	Throughout Project	300,000.00
Occupational Safety and Health issues	Moderate	Enforce strict safety protocols and provide regular training for all construction personnel. Conduct routine safety inspections and audits to identify and address potential hazards. Establish an emergency response plan to handle accidents promptly and efficiently. Provide all workers with appropriate full protective gear. These include working boots, overalls, helmets, earmuffs, masks, and gloves. 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	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)
		communication to non-workers and other road users Conduct regular training Document all near misses, incidents and accidents. Conduct risk assessments for all general, standard and high risk jobs Engage only qualified personnel on operating or conducting high risk jobs Issue work permits after risk assessment is successfully and all workers verified to be fit for work Conduct physical fitness test regularly for all worker Report all work related injuries and health concerns for action to be taken				
Child Exploitation and Abuse	Medium	Ensure each employee signs a code of conduct that covers child protection ensuring no children are employed on site in accordance with national labour laws. Ensure that any child sexual relations offenses among contractors' workers are promptly reported to the police. Employ workers who are 18 years and above, and with a valid national ID at the time of hire. Implement and monitor the employment register	List of workers that does not contain underage persons	SEC GRC Contractor	Daily	200,000.00

Possible Impact	Impact Rating level	Management Actions	Monitoring Indicators	Target Areas and Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
		regularly. Comply with the national labor laws and labour management practices. Put visible signage on site "No Jobs for children."				
Inadequate stakeholder Engagement and Exclusion of disadvantaged and vulnerable groups	Medium high	Share project information widely and in a timely manner through diverse, feasible and accessible channels of communication e.g., public forums. Introduce measures for affirmative action that would ensure especially persons with disability, the elderly and women have access to job opportunities. Undertake recruitment transparently, while ensuring the inclusion of disadvantaged groups. Develop and implementation of a stakeholder engagement plan. Engage stakeholders throughout the project phase as guided by the approved stakeholder engagement plan.	Number of stakeholders involved and proof of their support.	Contractor SEC and GRC County Government officials, Department of Traffic management Environmental And Safety Management Manager	Throughout Project	250,000.00
Gender-Based Violence and Sexual Exploitation and Abuse (SEA) and Sexual Harassment (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

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

8.6.3 ESMMP for Operational Phase

8.6.3.1 ESMMP for Roads and footpaths

Possible Impact,	Impact Rating Level	Management Actions	Monitoring Indicators	Responsibilities	Monitoring Frequency	Estimated Budget(KShs)
Gender-Based Violence and Sexual Exploitation and Abuse (SEA) and Sexual Harassment (SH)	Medium high	Develop and implement a plan to manage the risk of SEA/SH. Map the GBV referral pathways and create awareness among women and men on the risk of SEA/SH. Ensure the GRM is SEA/SH-responsive.	Number of GBV cases reported and solved. GBV Awareness trainings	County Government of 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.				

8.6.3.2 ESMMP for Drainages

Possible Impact,	Impact Rating Level	Management Actions	Monitoring Indicators	Responsibilities	Monitoring Frequency	Estimated Budget(KShs)
Gender-Based Violence and Sexual Exploitation and Abuse (SEA) and Sexual Harassment (SH)	Medium high	Develop and implement a plan to manage the risk of SEA/SH. Map the GBV referral pathways and create awareness among women and men on the risk of SEA/SH. Ensure the GRM is SEA/SH-responsive.	Number of GBV cases reported and solved. GBV Awareness trainings	County Government of 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	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)
		practices to reduce runoff and pollution Strengthening regulatory frameworks and enforcement mechanisms to prevent industrial pollution, and raising awareness about the importance of water conservation and pollution prevention among community members. Taking proactive measures to protect water resources				
Inadequate stakeholder Engagement and Exclusion of disadvantaged and vulnerable groups	Medium high	Share project information widely and in a timely manner through diverse, feasible and accessible channels of communication e.g., public forums. Introduce measures for affirmative action that would ensure especially persons with disability, the elderly and women have access to job opportunities. Undertake recruitment transparently, while ensuring the inclusion of disadvantaged groups. Develop and implementation of a stakeholder engagement plan. Engage stakeholders throughout the project phase as guided by the approved stakeholder engagement plan.	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)
Alteration of Natural Drainage Patterns	Very Low	Conduct detailed hydrological studies to understand natural drainage patterns. Design drainage systems that mimic natural flow to reduce environmental impact		SEC, GRC, KISIP	Quarterly	200,000.00

8.6.3.3 ESMMP for Streetlights

Possible Impact,	Impact Rating Level	Management Actions	Monitoring Indicators	Responsibilities	Monitoring Frequency	Estimated Budget(KShs)
Gender-Based Violence and Sexual Exploitation and Abuse (SEA) and Sexual Harassment (SH)	Medium high	Develop and implement a plan to manage the risk of SEA/SH. Map the GBV referral pathways and create awareness among women and men on the risk of SEA/SH. Ensure the GRM is SEA/SH-responsive.	Number of GBV cases reported and solved. GBV Awareness trainings	County Government of 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	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)
		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.				
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	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)
		not in use. Use of solar energy as an alternative source of energy at contractor's camp sites.				
Inadequate stakeholder Engagement and Exclusion of disadvantaged and vulnerable groups	Medium high	Share project information widely and in a timely manner through diverse, feasible and accessible channels of communication e.g., public forums. Introduce measures for affirmative action that would ensure especially persons with disability, the elderly and women have access to job opportunities. Undertake recruitment transparently, while ensuring the inclusion of disadvantaged groups. Develop and implementation of a stakeholder engagement plan. Engage stakeholders throughout the project phase as guided by the approved stakeholder engagement plan.	Number of stakeholders involved and proof of their support.	SEC, GRC, KISIP	Monthly	200,000.00
Light and Visual discomfort	Medium High	Properly design and angle light fixtures to minimize glare. Consider installing light shields or diffusers to control light direction. Seek aviation lighting design principles Use shielded fixtures and directional		SEC, GRC, KISIP	Throughout Project	No additional cost

Possible Impact,	Impact Rating Level	Management Actions	Monitoring Indicators	Responsibilities	Monitoring Frequency	Estimated Budget(KShs)
		lighting to minimize light spillage. Implement curfew times for non-essential lighting. Educate the community on responsible lighting practices.				
Disturbance to Nocturnal Wildlife	Very Low	Install motion sensors or timers to reduce lighting intensity during periods of low activity. Choose warm-coloured lights that are less disruptive to wildlife.		SEC, GRC, KISIP	Throughout Project	No additional cost

8.6.4 ESMMP for Decommissioning Phase

8.6.4.1 ESMMP for Roads and footpaths

Possible Impact	Impact Level	Management Actions	Monitoring Indicators	Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
Disruption of Services	Low Medium	Implement phased decommissioning to minimize disruption to services. Provide alternative routes or 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	Low	Conduct thorough environmental impact	Compliance with	Environmental	Throughout	To be

Possible Impact	Impact Level	Management Actions	Monitoring Indicators	Responsibilities	Monitoring Frequency	Estimated Budget (KShs)
Disturbance	Medium	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.	environmental regulations and permits. Inspection frequency and compliance with erosion control practices Survival rates of replanted native vegetation	Management Team/Consultant, KISIP	Decommissioning	established
Waste Generation	*Low Medium*	Implement recycling and reuse programs for materials like concrete and asphalt. Properly dispose of hazardous materials in accordance with regulations. Encourage contractors to minimize waste generation through efficient construction and decommissioning practices.	Adoption rate of recycled materials in new construction projects Compliance with hazardous waste disposal regulations Implementation of practices to reduce packaging waste, excess materials, and unnecessary disposal.	Environmental Management Team/Consultant, KISIP	Throughout Decommissioning	250,000.00
Economic Loss	Low Medium	Provide support and incentives for local businesses affected by decommissioning. Offer compensation or assistance programs to mitigate financial losses. 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	KISIP,SEC,GRC	Throughout Decommissioning	100,000.00

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

8.6.4.2 ESMMP for Drainages

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

8.6.4.3 ESMMP for Street lighting

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

9.1 Introduction

This section describes the project's Grievance Redress Mechanism. The overall objective of the GRM is to establish an effective communication channel among project stakeholders for providing a timely and efficient two-way feedback mechanism to address any grievances and complaints against the project from multiple stakeholders and Project Affected. This GRM complies with the Law of Kenya and international best practices. During the proposed implementation of Chaani 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.

9.2 Objectives of the GRM

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

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

9.3 World Bank Group Grievance Redress Service

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

Types of Complaints

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

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

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

9.4 Proposed Grievance Redress Procedure

The Chief Grievance Handling Officer will be the Resident Engineer (RE). Everybody else, members of GRC, will act 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 72: 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 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 73: Grievance Redress Mechanism

Step	Process	Description	Timeframe	Responsibility
1	Grievance receipt and registration/ logging	Face to face; phone; letter, recorded during public/community meetings; WhatsApp etc. Significance assessed and grievance recorded or logged using the model complaint form and filed.	1-2 Days	An aggrieved party or PAPs Lodging complaint to the GRC. GRCs- Receive, registering and logging grievances
2	Development and implementation of response	GRC meets or takes a decision on the grievance. Grievance assigned to appropriate party for resolution if necessary. Response development with input from relevant stakeholders. Redress	5- 10 Days	GRC

Step	Process	Description	Timeframe	Responsibility
		response/action approved by GRC and logged. Redress response/update of progress on resolution communicated to the complainant. Start implementing redress action		
3	Verifying the implementation of redress action	Redress action implemented and verified by GRC. GRC satisfied with implementation of redress action. Complainant duly signed the grievance resolution form	10-15 Days	Environmental (Social) Officer/Safeguard Specialist at the County level (CPCT)
4	Close grievance or refer grievance to 2nd tier resolution	Completion of redress action recorded or logged. Confirm with complainant that grievance can be closed or determine what follow up is necessary. Record final sign off of grievance. If grievance cannot be closed, return to step 2 or recommend to the next tier- County, National.	15-25 Days	Environmental (Social) Officer/Safeguard Specialist at the County level (CPCT)/ Grievance Officer
5	Court of law	If 2nd and third level settlement does not address dispute, complainant can resort to court of law	Unknown	Safeguard Specialist under KISIP 2 at the National level (NPCT)
6	Monitoring and evaluation, and reporting	Grievance Redress Mechanism Process is documented and monitored		Safeguard Specialist under KISIP 2 at the National level (NPCT)

9.5 Grievance Redress Mechanism Tiers

The tiers 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;

9.5.1 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.

9.5.2 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.

9.5.3 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.

9.6 GRM Cost

Table 74: GRM cost per month

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 Chaani settlement, and is dependent on the total project duration, which is estimated to be 12 months, making the total cost to **Kshs. 324,000.**

10.CONCLUSION AND RECOMMENDATIONS

10.1 Conclusion

The Environmental and Social Impact Assessment (ESIA) for the KISIP Chaani projects have been conducted in accordance with international best practices, regulatory requirements, and stakeholder engagement principles. The study aimed to comprehensively evaluate the potential environmental and social impacts associated with the project, identify mitigation measures, and develop an effective Environmental and Social Management Plan (ESMMP) to guide the project's implementation.

10.2 Key Findings

Positive Impacts: The project is expected to bring significant positive impacts to the local community, including job creation, economic opportunities, and improvements in infrastructure.

Negative impacts: However, the project also introduces potential negative impacts that require careful management to minimize adverse effects.

Project Affected Persons: A situational analysis report was prepared to inform the displacements impacts and extent accrued to the proposed project. This analysis is attached in the appendices for further reference. The exercise concluded swiftly with identification of one PAP having not been compensated for his structure. The settlement comprises of people from diverse cultures and traditions interacting on a daily basis. Implementation of the project infrastructure will enhance the economic and social status of the settlement.

The PAP identification exercise concluded swiftly with identification of one PAP having not been compensated for his structure. The settlement comprises of people from diverse cultures and traditions interacting on a daily basis. Implementation of the project infrastructure will enhance the economic and social status of the settlement. Chaani settlement has 1 PAP, who still has his asset on the right of way.

Mitigation Measures: Comprehensive mitigation measures have been identified and incorporated into the ESMMP to address potential negative impacts. These measures encompass a range of areas, including water quality, traffic management, aesthetic concerns, and others.

Stakeholder Engagement: The ESIA process prioritized stakeholder engagement, ensuring that the concerns and expectations of local communities, authorities, and other relevant parties were taken into account. Feedback mechanisms have been established to facilitate ongoing communication.

Compliance: The project design aligns with relevant regulations and standards, ensuring compliance with environmental and social requirements. The ESMMP incorporates measures to prevent, minimize, or offset adverse impacts.

Risk Management: Potential risks, such as soil contamination, water quality issues, and disruptions to public services, have been thoroughly assessed. The ESMMP includes strategies to manage and monitor these risks throughout the project lifecycle.

10.3 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 Chaani settlement in Changamwe 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.

The approval of the KISIP Chaani 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.

10.4 Recommendation

The housing conditions within the informal settlements appear relatively favourable considering the materials used in construction. Many of these dwellings could be categorized as permanent structures. Consequently, it is advisable to steer clear of zones where extensive demolition of these sturdy homes would be necessary. Opting for areas with fewer permanent residences would enable the project to minimize the significant distress and disruption to residents that often accompany compensation processes. In essence, a thorough assessment of settlement areas and the selection of zones with fewer permanent structures can help mitigate disturbances to local populations while also ensuring that project budgets remain reasonable by reducing the need for compensating displaced individuals. By factoring in resident's homes early in the planning stages of projects and infrastructure development, the potential harm inflicted on these communities can be minimized. Prioritizing zones with lesser displacement requirements can effectively avert the suffering and substantial costs associated with relocation and restitution.

1. **Project Affected Persons (PAPs)**

   Any assets belonging to residents or members of Chaani 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 Chaani settlement informs that all PAPs have been compensated excluding 1 single individual. The consultant recommends a follow up with the county of Mombasa for this particular individual. Nevertheless, the implementation of the proposed project could commence considering no adverse impact is registered.

2. **Traffic Management Plan**

   Develop a comprehensive traffic management plan to minimize disruptions and congestion during the construction phase. Clearly communicate alternative routes to the public.

3. **Community Engagement**

   Engage with the local community to gather feedback on the proposed road upgrades. Address concerns and keep residents informed about the project's timeline and potential impacts.

4. **Environmental Impact Mitigation**

   Implement erosion control measures to prevent soil runoff into nearby water bodies. Regularly monitor water quality and collaborate with local water authorities to ensure compliance with standards.

5. **Aesthetic Considerations**

   Adhere to design guidelines to minimize visual disruption. Utilize temporary screens or barriers to shield construction sites from view. Gather regular feedback from residents to address aesthetic concerns.

6. **Parking Management**

   Designate alternative parking areas during construction to minimize inconvenience. Clearly communicate parking options to residents and businesses. Monitor and assess the impact on parking availability regularly.

7. **Environmental Monitoring**:

   Implement dust control measures during construction to mitigate air quality concerns. Regularly monitor air quality in the construction area and communicate results to the public.

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

8. **Water Quality Management**:

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

9. **Lighting Design Guidelines**

   Implement design guidelines to ensure high-mast street lights are installed in a way that minimizes aesthetic impact on surrounding properties. Engage with residents for feedback.

10. **Stakeholder Engagement**

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

11. **Impact on Local Employment**

    Prioritize hiring locals for unskilled labour during the installation phase. Ensure fair and transparent recruitment processes.

12. **Safety Measures**

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

11. REFERENCES

1. KNBS, K. (2019). 2019 Kenya Population and Housing Census Volume II: Distribution of Population by Administrative Units.
2. County Government of Mombasa. (2023). Mombasa-A New Beginning; Voice of the People.
3. Kenya gazette supplement Acts public health act (cap. 242) government printer, Nairobi.
4. Kenya gazette supplement number 68, Environmental Management and Coordination (Water Quality) Regulations, 2006, Government Printer, Nairobi.
5. Kenya gazette supplement number 68, Environmental Management and Coordination (Waste Management) Regulations, 2006, Government Printer, Nairobi.
6. Kenya gazette supplement number 68, Environmental Management and Coordination (noise and excessive vibration pollution) (control), Regulations, 2009, Government Printer, Nairobi.
7. KNBS, G. (2019). Economic survey 2019. Kenya national bureau of statistics.
8. Law,K.(ed.)(2010)CONST2010.Availableat:http://kenyalaw.org/lex/actview.xql?actid=Const2010 (Accessed: 29 February 2024).
9. Noise prevention and control rules 2005, legal noise no. 24, government printers, Nairobi.
10. PCC, "Climate Change 2014 Synthesis Report Summary Chapter for Policymakers", (2014).
11. The Occupational Safety and Health Act, 2007, Government Printer, Nairobi.

2 APPENDICES

Appendix 1: Situational Analysis Report

CHAANI
SITUATIONAL ANALY

Appendix 2: Sample Filled in 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. MWABATE (KISIP 2) / CHAANI

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

a. Name of the Respondent. STEPHEN ONYANGO
b. Phone Number. 0729771430 c. ID Number.
d. Gender Male ☑ Female ☐ e. Occupation. TEACHER.
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

Since the road will be passing near our school my concern is about air and noise pollution that may arise

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?

Will open the area to more economic activities and boost its security

4. What are the negative impacts?

Noise and air pollution during Construction

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

Put measure to Controling the air/dust pollution by sprinkling enough water within intervals.

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?

The roads are too narrow. Infact they are not official roads this are just created paths.

b. How can it be addressed?

Widen the roads and level them.

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

The dumping has blocked the drainage systems.

d. How can it be addressed?

Create awareness on proper dumping sites.

e. What are the concerns with the security lighting?

There is only one which is not enough.

f. How can it be addressed?

Add more security lightings atleast three in Mwatate.

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

Papers.

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 ☐ Dams/Ocean Others (specify).....

14. What are the challenges faced concerning water supply?

Transportation of water sometimes is a challenge.

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

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

Erect more street light

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

Yes ☑ No ☐

a. If yes, state the impacts

It will change their economic way of life

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

I expect aid of local youths to get employment during proj and improvement of security in the are after completing the Project

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

Thank You!

Date 14/2/24 Signature

TOTAL SUCCESS PRIMARY ACADEMY Date 14/2/24 P.O. BOX MOMBASA

Appendix 3: Environmental and Social Management Framework Screening Checklist for Chaani 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 Chaani Settlement infrastructure upgrade project, situated in Changamwe Sub-County, Mombasa County, represents a transformative initiative aimed at enhancing the overall well-being and living conditions of the local community. Focused on comprehensive improvements, including the construction of roads, storm water drainage systems, extension of water supply, and installation of street lighting infrastructure, the project seeks to address existing challenges and promote sustainable growth within the settlement. This screening report endeavors to assess the potential environmental and social impacts associated with the project, outlining a preliminary understanding of the project's scope and its implications on the natural and human environment.		
A: Triggers to EMCA		
A. 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		
B. Does the project trigger one or more of the World Bank Safeguard policies	Yes, Follows in Category B of World Bank OP	Yes, affect the community livelihood
C. GoK Policies and Laws applicable		
C. Does the project fall under/trigger any other GoK Policies and Laws?	Yes, it triggers some Government Acts and Policies like the physical planning act 1996 (286) and land act 2012	Yes, these policies need to form the literature review for the EIA
D. Project Location		
D. 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)	 No No No No No Yes, 150m for the shoreline Yes, 800m from the nearby mangroves No	None

Questions to be considered	Yes/No. Briefly Describe	Is this likely to result in a significant effect? Yes/No/? -why
• Natural lakes • Habitat of migratory birds (outside protected areas) • Migratory Route of Wild Animals Birds • Area with threatened/ rare/endangered fauna (outside protected areas) • Area with threatened/rare/ endangered flora (outside protected areas) • Reserved/Protected Forest • Zoological Park /Botanical Garden	No No No No No No	
E. 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
F. 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?	No	No
G. 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
H. 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
I. 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, there are no areas or features of historic or cultural importance around the project site

Questions to be considered	Yes/No. Briefly Describe	Is this likely to result in a significant effect? Yes/No/? -why
J. Is the project located in a previously undeveloped area where there will be loss of greenfield land?	No, the area is fully developed although poorly planned	No, the area is already inhabited
K. 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 during the previous project (KISIP I)
L. Are there any plans for future land uses on or around the location which could be affected by the project?	Currently, none, there area as already be marked as residential area and well demarcated	No, there are no ongoing plans
M. 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
N. 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
O. 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
P. Is the site already degraded (low groundwater, poor soil quality)?	No, there are no information concerning the site degradation, however, the site has had a challenge of solid waste management	Yes, if the solid waste is not addressed, it may accrue to a larger solid waste pollution issue.
Q. Are there steep slopes in the proximity of the investment site?	Yes, there is an open sewer passing though the settlement	Yes, its effect will be felt during the proposed drainage system construction

Questions to be considered	Yes/No. Briefly Describe	Is this likely to result in a significant effect? Yes/No/? -why
R. Do people live on the proposed site?	Yes, It's a human settlement region	Yes, residents will be 100% affected by the project
S. Do indigenous peoples live on or near the site?	No	No
T. 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
U. Are there land title conflicts?	No, titles have been issued	No, titles were issued hence no conflict is raised.
V. Are there known archaeological, historical or other cultural property? Are any of these world heritage/ UNESCO designated etc.	No known archaeological, historical or other cultural property on or around the site.	No archaeological, historical or other cultural property on or around the site.
E. Construction Impacts		
1. Will construction, operation or decommissioning of the project involveactions 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
2. 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
3. Will the project involve use, storage, transport, handling or production of substances or materials which could be harmful to human health or the environment or raise concerns about actual or perceived risks to human health?	Yes, storage, use, and transportation of construction materials like marram and asphalt may affect the human health	Yes, contractor should prepare ESMP to guide the operations

Questions to be considered	Yes/No. Briefly Describe	Is this likely to result in a significant effect? Yes/No/? -why
4. Will the project produce solid wastes during construction or operation or decommissioning?	Yes, there will be high production of solid waste	Yes, waste management plan should be prepared before the operations
5. 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
6. Will the project cause noise and vibration o release of light, heat energyor electromagnetic energy?	Yes, the machine operations and movements will cause noise and excessive vibration to residents neighboring construction sites	Yes, baseline survey for noise and excessive vibration should be recommended and regular monitoring.
7. 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, there is an open sewer line in between the settlement which leads to ocean.	Yes, the open sewer is not only unhealthy for residents but also unsafe to the ocean waters
8. 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
9. 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		
10. Could the investment result in a modification of groundwater levels by altering flows, paving surfaces or increasing water extraction?	No, the investment will lead to proper utilization of the available water sources.	No
11. Could it affect groundwater quality?	No, the project will protect ground water through proper drainage system	No

Questions to be considered	Yes/No. Briefly Describe	Is this likely to result in a significant effect? Yes/No/? -why
12. Could it affect quality (through sediment, wastewater, storm discharge or solid waste) of nearby surface waters (lake, rivers, streams)?	No, the project will protect water quality through proper drainage system	No
13. Will it affect water quantity in nearby water bodies (lake, river, stream)?	No, however, the ocean may be affected	No
14. Are there nearby potable water sources that need to be protected?	Yes, the area uses both boreholes and piped water sources	No, the project will enhance drainage therefore, saving water sources
G. Drainage Impacts		
15. 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 open sewer which will need to be reconstructed	Yes, solid waste pollution through the open sewer to the nearby ocean should be addressed
16. Will it cause standing water, which could cause public health risks?	No, however it need to be monitored	No
17. Will erosion result in sediment discharge to nearby water bodies?	No	No
18. 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
19. Will infiltration patterns be affected?	No, the settlement drain all waste to the nearby open sewer which is steep to the south	No
H. Ecosystem Impacts		
20. Could the investment affect natural habitats or areas of high ecological value?	No	No

Questions to be considered	Yes/No. Briefly Describe	Is this likely to result in a significant effect? Yes/No/? -why
21. Could it affect natural characteristics of adjacent or nearby sites?	No	No
22. Could it affect wildlife or natural vegetation?	No	No
I. Socio-Economic Impact		
23. Will the project entail resettlement of population?	No	No
24. Will the project affect People's property or livelihoods/income?	Yes, some properties will be affected. The ARAP is ongoing	Yes, RAP should be monitored
25. Will the project affect indigenous peoples?	Yes, although not indigenous but the general population will benefit.	Yes, it will further the urbanization
26. Will it limit access to natural resources to local populations?	No	No
27. Will it have an impact on land use?	No	No
28. Will it induce further encroachment of nearby areas?	No	No
29. Will it cause any health impacts?	No	No
30. Will it disturb nearby communities during construction?	Yes, materials will be transported through the nearby settlements	Yes, transportation and interactions should be monitored
31. Could cultural resources be affected?	No	No
32. 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		

Questions to be considered	Yes/No. Briefly Describe	Is this likely to result in a significant effect? Yes/No/? -why
33. 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
34. Are there any other factors which should be considered such as consequential development which could lead to environmental effects or the potential for cumulative impacts with other existing or planned activitiesin the locality?	Yes, the project needs to be monitored and done up to completion. If left, the community will have no infrastructure to use	Yes, the area is prone to flooding
K. Displacement Impacts		
35. Acquisition of private/community land?	Yes, ARAP in progress	Yes, ARAP should be monitored to completion
36. Alienation of any type of government land including that owned by urban local body?	No	No
37. Clearance of encroachment from government/ urban local body land?	No	No
38. Clearance of squatting from Government/Urban local body?	No	No
39. Number of structures, both authorized and/or unauthorized to beacquired/cleared?	None	None
40. Number of household to be displaced?	None	None
41. Details of village common properties to be alienated, Pasture land(acres)cremation /burial groundand others specify?	None	None

Questions to be considered	Yes/No. Briefly Describe	Is this likely to result in a significant effect? Yes/No/? -why
42. 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
43. 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
44. Are financial/in kind compensation measures expected to be needed?	Yes, ARAP is ongoing	Yes, ARAP need to be monitored to completion
L. Loss of Assets, Crops, fruit, household infrastructure and livelihood		
45. Will the project result in the permanent or temporary loss of Crops?	No	No
46. Fruit trees/coconut palms? Specify with numbers	No	No
47. Household assets/infrastructure? Specify with numbers	No	No
48. Loss of agriculture land? specify with numbers	No	No
M. Public and Occupational health and safety, welfare , employment and gender		
49. Is the project likely to provide local employment opportunities, including employment opportunities for women?	Yes, employees will be sourced locally	Yes, Labor management and influx plan should be prepared
50. Is the project being planned with sufficient attention to local poverty alleviation objectives?	Yes, the project is aimed at improving livelihood to locals	Yes, more public participation and interactions should be planned

Questions to be considered	Yes/No. Briefly Describe	Is this likely to result in a significant effect? Yes/No/? -why
51. 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
52. 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
53. Will the project interfere with the normal health and safety of the worker/employee/public?	Yes, health and safety will be a key consideration for employees and locals	Yes, OHS management plan should be prepared
54. Will the project introduce new practices and habits?	No	No
55. Will the project lead to child delinquency (school drop-outs, child abuse, child labour, etc.?	If not monitored, the project may affect the kids schooling	No, but child labor management plan should be prepared
56. Will the project lead to gender disparity?	No, but need to be a key factor of consideration	No
57. 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		
58. Based on available sources, consultation with local Authorities, local knowledge and/ or observation could the project alter?	None	None
59. Historical heritage site(s) or require excavation near the same?	No	No
60. Archaeological heritage site(s) 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
61. Cultural heritage site(s) or require excavation near the same	No	No
62. Graves or sacred locations or require excavation near the same?	No	No
O. Result/Outcome of Environmental/ Social and Resettlement Screening Exercise		
No Environment Impact Assessment Required		
Environment Impact Assessment Required	Yes. The project meets the EMCA schedule two projects and World Bank OP threshold for ESIA. However, a Comprehensive Project Report will have formulated.	
RAP category required (RAP/ARAP)	Yes. Households will be partly demolished to make room for construction of roads.	ARAP. Less than 200 persons will be affected. According to the World Bank OP, it qualifies to have an ARAP report. However, an ARAP was already formulated during KISIP 1 hence a Situational Report will be formulated to update the current ARAP Report.
P: Authorization		
Screening undertaken by: **CHARITY GATHUTHI** Designation **SOCIOLOGIST**	Signature:  Date: 05/03/2024	

Questions to be considered	Yes/No. Briefly Describe	Is this likely to result in a significant effect? Yes/No/? -why
Approved by: **CHARLES MUYEMBE LWANGA** Designation: EHS Lead & NEMA EIA Expert NO. 1283	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 open and unhealthy existing open sewer which cuts across the settlement. Therefore an ESIA will be needed for this project and a Comprehensive Project Report formulated, in order to propose mitigation measures to the foreseen project impacts and develop ESMMP for the project.

Appendix 4: Resettlement Policy Framework (RPF) Screening Checklist for Chaani 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 Chaani Settlement infrastructure upgrade project, situated in Changamwe Sub-County, Mombasa County, represents a transformative initiative aimed at enhancing the overall well-being and living conditions of the local community. Focused on comprehensive improvements, including the construction of roads, storm water drainage systems, extension of water supply, and installation of street lighting infrastructure, the project seeks to address existing challenges and promote sustainable growth within the settlement. This screening report endeavors to assess the potential environmental and social impacts associated with the project, outlining a preliminary understanding of the project's scope and its implications on the natural and human environment.		
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, Labour 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 daily 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
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

Questions to be considered	Yes/No. Briefly Describe	Is this likely to result in a significant effect? Yes/No/? -why
7. Are there any areas on or around the location which are densely populated or built up, which could be affected by the project?	Yes, the whole project area is densely populated with all areas built up	Yes, the population 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?	Yes, 1 PAP will be relocated	Implementation of the ARAP need to fully implemented and completed.
13. Will the project affect People's property or livelihoods/income?	Yes, 1 house will be affected	Yes, there is a need to fast track the completion of the implementation of ARAP done.
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, if the project is implemented, road accessibility will be enhanced	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	Yes, traffic management plan for transportation of materials and

Questions to be considered	Yes/No. Briefly Describe prevent destruction of nearby roads and houses	Is this likely to result in a significant effect? Yes/No/? -why 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?	1	Yes, once the compensation is done, the structure can be cleared.
25. Number of household to be displaced?	1	Yes
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?	Yes	Yes
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	Yes	Yes

Questions to be considered	Yes/No. Briefly Describe	Is this likely to result in a significant effect? Yes/No/? -why
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, boost in local income and wellbeing.
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 local participation of women in the planning design and implementation process?	Yes, Women have been part of the project from technical team to the local committees	Yes, more 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
I. Result/Outcome of Environmental/ Social and Resettlement Screening Exercise		
RAP category required (RAP/ARAP)	Yes	An updated ARAP from the previous KISIP I will be generated.
Any special conditions	There are two households compensated during KISIP 1, however, they have not removed their structures.	
P: Authorization		

Questions to be considered	Yes/No. Briefly Describe	Is this likely to result in a significant effect? Yes/No/? -why
Screening undertaken by: **CHARITY GATHUTHI** Designation: **Sociologist**	Signature: Date: 05/03/2024	
Approved by: **CHARLES MUYEMBE LWANGA** Designation: **EHS Lead & NEMA EIA Expert No. 1283**	Signature: Date: 05/03/2024	
PMU Confirmation by: Designation:	Signature: Date:	

Summary of features of project and its location indicating the need for RAP/ARAP:

The proposed projects at Chaani settlement include access roads, associated drainage structures and streetlights, security lighting. From, the assessment, the project will require a Situational Report of the existing ARAP, for 1 household who was identified during KISIP I but has yet been compensated.

Appendix 5: Filled Sample of Key Informant Interview Questionnaire

DISABLE (PWD)

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
NYERERE	M	56	BUSINESS-MAN	38 YRS
NYUMBA				

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

	Things I like
1	Discrimination towards as disables is not rampant compared to years back
2	Their is more awareness about disable people which has help minimize stereotyping
3	More parents have stopped locking their disable children in their homes and taking them to school
4	The nyumba kumi initiative which has helped reduce crime rate in the area
5	

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

	Things I don't like about my settlement and why	why
1	Lack of special school to cater for our needs	We need schools for the blinds, deaf.
2	Poor road systems	Our roads are inaccessible to people using wh
3	Limited jobs opportunities for us disables	because disability is not inability
4	Negative perception towards as disables	because most believe we are cursed
5	Limited finacial aids & grants	have no access to the disability allowance

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

I think the project will foster security as street light will help prevent petty thieving at night and the building of culvert will help minimize water stagnation thus reducing mosquito breeding sites.

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

a	It will foster security (street lights will help prevent petty thieving)
b	Improvement of the local drainage system (culvert system)
c	Easy accessibility (the road system will help make the inaccessible areas accesible)
d	Easy accessibility to fresh clean drinking water.

5) How will you support the proposed projects?

Through;
Encouraging my fellow disable people to participate towards its implementation
Creating awareness among my support group about the positive impact the project will bring
Availing myself when local manpower is needed or when called on
a public forum concerning the project.

6) Any suggestions on how the projects should be implemented

Involving the dicables whether in advising, views input or when local manpower is needed.

1

HEADTEACHER.

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
Stephen Onyango	M	32	Teacher	5 Years.

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

	Things I like
1	Geographical area
2	Friendliness of the community.
3	Population discribution.
4	Unity and support.
5	

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

	Things I don't like about my settlement and why	why
1	Insecurity.	Victims.
2	Environmental pollution.	Poor disposal of garbage.
3	Lack of child support.	Academic support.
4	Lack of street lights (Poor lightning)	Visibility at night.
5	Poor road infrustructure.	No official roads.

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

The projects will improve the insecurities, the improvement of economic activities and job creation.

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

a	Improvement of security.
b	Solving garbage disposal.
c	Creating employment.
d	It will open up economic activities of the area.

5) How will you support the proposed projects?

Through;
Providing information.
Creating awareness of the project.

6) Any suggestions on how the projects should be implemented

The casual labour should be given to the youths and local workers.

1

Appendix 6: Public participation minutes

MINUTES OF THE PUBLIC PARTICIPATION MEETING FOR THE KISIP 2 PROJECT IN CHAANI HELD ON 7TH JUNE 2024 AT KEVIAN ACADEMY.

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) Matters arising and Way forward
e) Adjournment

MINUTES

MIN	DESCRIPTION
1.0	**Introduction to the meeting**
	The SEC chairperson; Kioko, called the meeting to order at 3 Pm; followed by a word of prayer from a volunteer. The SEC chair proceeded with welcoming all participants to the meeting before formally introducing the consultant to the other participants. The participants were given an opportunity to introduce themselves together with the interests they were representing in the meeting. In his introductory remarks, the SEC chairperson acknowledged that the area is in need of the proposed project. He expressed gratitude to The County Government for helping this locality. Further, he thanked all the attendees for making time to be part of the meeting to discuss infrastructure issues in the area.
2.0	**Overview of the project**

	The consultant through the ESIA expert gave an overview of the project; detailing all the stages involved. She informed the meeting that KISIP 2 project is aimed at upgrading informal settlements, though road constructions, solid waste management, drainage systems and street lighting. The project will involve construction of roads, drainage systems, solid waste management and high mast street lights. She introduced the benefits and negative impacts of the project and left the other attendees to explore more on both positive and negative impacts of the project to them.
3.0	**Discussions on the possible impacts of the project**
	All the participants were already aware of the project. This was expected since the project is an important necessity, and has been anticipated by the locals. The bad road network system has impacted negatively to the residents as they are forced to use the poor roads in the settlement. The EIA team allowed the community to identify some of the possible Positive and negative impacts of the project to both the host community and the environment. **Positive impacts discussed** The project has 100% support from the residents as they anticipate numerous benefits from its implementation. Some of the benefits or positive impacts mentioned in the view of the project implementation includes but not limited to; ▪ Improved Road Infrastructure and Drainage ▪ Public Health and Safety ▪ There will be creation of employment across the project cycle, ▪ The value of land within the surrounding areas will improve, ▪ Increase in security of the settlement ▪ Improved aesthetic value of the environment. ▪ Prevention of floods and its impacts in the settlement **Negative impacts discussed** The community identified some of the negative impacts of the project that they perceive will face them. They include the following; ✓ Increase in social vices in the settlement ✓ The construction of works will require machines that generate noise ✓ Occupation health concerns will be high in the project area particularly during construction of the project.

	✓ As a result of influx of workers from outside to work on the project, there will be tendency of increased sexually transmitted diseases. ✓ Air Pollution ✓ Inadequate stakeholder Engagement and Exclusion of disadvantaged and vulnerable groups ✓ Spread of sexually transmitted infections such as HIV/AIDS and syphilis. ✓ Possibility of school dropout by children who want to work in the project. **Proposed Mitigation measures** The consultant took time to go through the concerns of the locals and addressing them by providing solutions for the anticipated impacts. Some of the mitigation measures were to; ✓ Guiding and counselling within the project area; ✓ Using locals in project implementation; ✓ Ensure safety of the construction workers by putting first aid area and injury reporting mechanism; ✓ Establish the appropriate safety measures in the O & M manual for the operation phases; ✓ Proper use of the GRC team to solve minor grievances.
4.0	**Matters arising and Way forward**
	The GRC chair, Andrea expressed his satisfaction in the ongoing streetlight project that is being implemented by Mombasa County. He stated that the lights function very well and have created a secure environment in the settlement. He further stated that the contactor who was put in charge of the streetlights did a very good job as the lights are automatic, they turn on in the evenings and off in the mornings. The SEC chair and other meeting attendants seconded this matters and stated that they would always be available to improve their settlement in the future. Andrea stated, "Our availability commitment as a committee is what has enabled Chaani settlement develop and will keep developing for the better." The meeting unanimously resolved that the project should proceed to implementation since it is very important not only to them but to the entire sub county. This was however premised on the agreement that a few negative impacts identified will be mitigated upon. The ESIA consultant representative thanked the participants for their attendance and support of the project. She informed them of the good thoughts KISIP and the

	County Government has for the project area that will improve the area in terms of economic improvement programs that are on the way. The residents demonstrated their approval to the project by lifting their hands.
05	**Adjournment**
	The meeting ended with a word of prayer from Andrea, GRC Chair, and the meeting was adjourned at 4:00Pm.

Minutes prepared by;

Name: Saraphina Nasimiyu

Lead Expert;

Name: Charles Muyembe Lwanga, (NEMA 6417)

Minutes verified by

Kioko, SEC Chairperson

Appendix 7: Public participation attendance list Sample

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

GPK (L)

Tel: +254 20 6005522/3/7, 6001945
Wireless: +254 20 210370
Mobile: 0724 253 398, 0733 600 035
Email: dgnema@nema.go.ke

Popo Road, Off Mombasa Road
P.O Box 67839-00200
Nairobi, Kenya
Website: www.nema.go.ke

NEMA/EIA/EL/27533 2024-05-23

Charles Muyembe

P.O. BOX 1784 - 00606 NAIROBI.

RE: ACKNOWLEDGEMENT OF EXPERTS LICENSE APPLICATION.

The National Environment Management Authority (NEMA) acknowledge receipt of your application for license as **Lead Expert** Environmental (Impact Assessment/ Audit) expert.

The application reference is **NEMA/EIA/EL/27533**. The Authority will review and communicate the record of decision in due course through the email address provided in the online system.

Annastacia Vyalu

HEAD OF EXPERT SECTION