IDA International Development Association WORLD BANK GROUP

REPUBLIC OF KENYA

AFD AGENCE FRANÇAISE DE DÉVELOPPEMENT

THE COUNTY GOVERNMENT OF MERU

STATE DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT, MINISTRY OF LANDS, PUBLIC WORKS, HOUSING AND URBAN DEVELOPMENT

SECOND KENYA INFORMAL SETTLEMENTS IMPROVEMENT PROJECT (KISIP 2)

CONSULTING SERVICES FOR INFRASTRUCTURE UPGRADING PLANS, DETAILED ENGINEERING DESIGNS AND PREPARATION OF PROCUREMENT DOCUMENTS AND CONSTRUCTION SUPERVISION OF INFRASTRUCTURE IMPROVEMENT WORKS IN SELECTED INFORMAL SETTLEMENTS IN THE COUNTIES OF NYERI, MERU, THARAKA-NITHI, AND WAJIR. (ONE CONTRACT).

ENVIRONMENTAL AND SOCIAL COMPREHNSIVE PROJECT REPORT FOR THE PROPOSED IMPROVEMENT WORKS IN SALAMA INFORMAL SETTLEMENTS IN MERU COUNTY

Consultant

gath CONSULTING ENGINEERS

In jv with

Losai Management Limited

APRIL, 2024

"DOCUMENT CONTROL"

PROPOSED IMPROVEMENT WORKS IN SALAMA INFORMAL SETTLEMENTS IN MERU COUNTY

CLIENT

Chief Officer, Department for Lands, Housing, Physical Planning, Public Works and Urban Development (CO-LHPP&UP)

CONSULTANT

gath CONSULTING ENGINEERS	**In jv with**	Losai Management Limited

DOCUMENT TITLE:

ENVIRONMENTAL & SOCIAL IMPACT ASSESSMENT COMPREHENSIVE PROJECT REPORT

RECORDS FOR REVISION

Version No.	Dated:	Description / Purpose of issue:	Prepared by:	Reviewed by:	Approved by:
01	April, 2024	ESIA CPR (April, 2024)	GATH in Jv with LOSAI		

SUBMISSION DETAILS

Certificate of Declaration and Document Authentication

This document has been prepared in accordance with the Environmental Management and Coordination Act (1999) and Environmental Management and Coordination (Amendment) Act 2015, Environmental (Impact Assessment and Audit) (Amendment) Regulations, 2019, KISIP 2 Environment and Social Management Framework (ESMF) and World Bank Operation Policies.

This project report is prepared for and on behalf of:

LEAD EXPERT/FIRM OF EXPERT-11481	PROPONENT
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DISCLAIMER:

This Environmental impact assessment comprehensive project report is based on literature review, consultations and findings from field assessment. It is however, subject to conditions in the Environmental Management and Coordination Act 2015, Environmental (Impact Assessment and Audit) (Amendment) Regulations, 2019, KISIP II Environment and Social Management Framework (ESMF) and World Bank Operation Policies.

FACT SHEET

Program Name	Kenya Informal Settlement Improvement Project (KISIP 2)
Assignment Name	Consulting services for infrastructure upgrading plans, detailed engineering designs and preparation of procurement documents and construction supervision of infrastructure improvement works in selected informal settlements in the counties of Nyeri, Meru, Tharaka-Nithi, and Wajir. (One contract).
Report Name	Environmental & social impact assessment comprehensive project report for the proposed improvement works in Salama informal settlements in Meru County
Lead Implementing Agency	County Government of Meru
Financier	World Bank
Project Components	i. 0.715 Km Water pipelines • 0.715km OD50-OD75 HDPE Pipeline • 50m OD50 HDPE Pipeline • 1No. Water Kiosk • 60 household connections ii. 1No. High mast flood lights iii. 0.479km of Asphalt paved roads with sidewalk
Project Cost	KES 68,329,641.1million
Project Location	Salama
Project Beneficiaries	Residents of Salama informal settlement and surrounding environment
Lead Expert	Dr. Stephen Reg. Nr. 1580
Associate Expert	Lydiah Mbogo-Reg. Nr. 6007 Sarah Karanja

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ABBREVIATIONS

AFD	Agence Française de Développement
AIDS	Acquired Immunodeficiency Syndrome
ARVs	Antiretroviral drugs
BoQ	Bill of Quantity
CBO	Community Based Organization
CIDP	County Integrated Development Plan
CPP	Consultation and Public participation
CPR	Comprehensive Project Report
CPCT	County Project Coordination Team
COC	Code of Conduct
CSO	Civil Society Organization
Dba	Decibel Amplitude
DN	Diameter nominal
EA	Environmental Assessment
EHS	Environmental Health and Safety
EIA	Environmental Impacts Assessment
EMCA	Environmental Management and Coordination Act
EMMP	Environmental Management & Monitoring Plan
E&S	Environmental and Social
ESAs	Environmental Sensitive Areas
ESIA	Environmental and Social Impact Assessment
ESMMP	Environmental and Social Management and Monitoring Plan
ESMF	Environment and Social Management Framework
GATH/LOSAI jv	Project Consultant
GBV	Gender Based Violence
GoK	Government of Kenya
GO	Grievance Officer

GRC	Grievance Redress Committee
GRM	Grievance Redress Mechanism
HDPE	High Density Poly Ethylene
HIV	Human Immunodeficiency Virus
IDA	International Development Association
IDP	Integrated Development Plan
IFC	International Finance Corporation
ILO	International Labour Organization
IP	Indigenous People
JV	Joint Venture
KENHA	Kenya National Highways Authority
KeRRA	Kenya Rural Roads Authority
KII	Key Informant Interview
KISIP	Kenya Informal Settlement Improvement Program
KNBS	Kenya National Bureau of Statistics
KPLC	Kenya Power and Lighting Company
KURA	Kenya Urban Roads Authority
ME	Monitoring, and Evaluation
MEA	Multilateral Environmental Agreement
MEWASS	Meru Water and Sanitation Service
MLPWHUD	Ministry of Lands, Public Works, Housing and Urban Development
MSDS	Material Safety Data Sheets
NEAP	National Environment Action Plan
NEMA	National Environment Management Authority
NEP	National Environment Policy
NCPD	National Council for Population and Development
NPCT	National Project Coordination Team
NDC	Nationally Determined Contribution

NGAO	National Government Administration Officers
NGEC	National Gender and Equality Commission
NGO	Non-Governmental Organization
OP	Operating Procedures
OSHA	Occupational Safety and Health Act
PAPs	Project Affected Persons
PPEs	Personal Protective Equipment
PN	Pression Nominal
PVC	Polyvinyl Chloride
PSEA	Prevention Against Sexual Exploitation and Abuse
RAP	Resettlement Action Plan
SDG	Sustainable Development Goals
SEC	Settlement Executive Committee
SEA	Sexual exploitation and Abuse
SH	Sexual Harassment
SOP	Standard Operating Procedure
STDs	Sexually Transmitted Diseases
UNFCCC	United Nations Framework Convention on Climate Change
VAC	Violence Against Children
VAT	Value Added Tax
VCT	Voluntary Centre for Testing
WASREB	Water Services Regulatory Board
WB	World Bank
WIBA	Work Injuries and Benefit Act
WHO	World Health Organization
WRA	Water Resources Authority
WSP	Water Services Providers

EXECUTIVE SUMMARY

E.1 Project Background

The Government of Kenya received credit facility from the World Bank through International Development Association (IDA) and Agence Française de Développement (AFD) towards the cost of the Second Kenya Informal Settlements Improvement Project (KISIP 2) whose primary goal is to improve living conditions in informal settlements in selected towns in Kenya. The objective of the assignment is to prepare infrastructure upgrading plans, detailed engineering designs, procurement documents, resettlement action plan (RAP) and environmental and social impact assessment (ESIA) reports; and supervision of infrastructure construction works in selected informal settlements in Nyeri, Tharaka Nithi, Meru and Wajir Counties.

The Principal Secretary, State Department of Housing and Urban Development, Ministry of Lands, Public Works, Housing and Urban Development Second Kenya Informal Settlements Improvement Project (KISIP 2) has appointed Gath Consulting Engineers Ltd in JV with Losai Management Limited to provide Consultancy services for Infrastructure Upgrading Plans, Detailed Engineering Designs and Preparation of Procurement Documents and Construction Supervision of Infrastructure Improvement Works in Selected Informal Settlements in Nyeri, Meru, Tharaka-Nithi and Wajir Counties.

The Environmental Management and Coordination (Impact Assessment and Audit) Regulations, 2019 stipulates that either Comprehensive or Summary Environmental and social Impact Assessment (ESIA) Project Reports should be prepared for low and medium risk projects listed in the Second Schedule. The proposed project interventions in Salama Informal settlement falls in the Category 2 of Medium Risk Projects under the Environmental Management and Coordination Act (Amendment), 2019. In addition, as a World Bank funded project, OP 4.01 was considered where the project falls under Category B (Impacts are less adverse than Category A). In view of this, a Comprehensive Project Report for the proposed improvement of Salama Informal Settlement has been prepared.

World Bank's OP 4.11 (Physical and Cultural Resources) and OP 4.12 (Involuntary Resettlement were also considered. These fed into the screening of the project. Although the project will not threaten cultural or historic heritage, a Chance Finds Procedure has been prepared just in case a unique artefact is discovered during excavations. The project will be implemented on public land and way leaves, thus, no resettlement.

E.2 Scope of the Prioritized Projects

The scope of construction works proposed for Salama informal settlement involves construction of:

SN	INTERVENTION	COMPONENTS
1.	Road	
	Salama Main Street- 90m	i. 60 meter. ii. 4.5m wide road iii. 1.2m footpath over a concrete lined drainage channel. iv. The road is on slightly sloping terrain with an elevation gain of 2m.
	Salama Street 2- 96m	i. 96 meter ii. The proposed road is a 4.5m wide road with a iii. 1.2m footpath over a concrete lined drainage channel. iv. The road is on steeply sloping terrain with an elevation gain of 12m.
	Salama Street 3- 134m	i. 134 meter ii. The proposed road is a 4.5m wide road with a iii. 1.2m footpath over a concrete lined drainage channel. iv. The road is generally flat
2.	Water	i. 20 household connections
		ii. Water main line 1 - 55m HDPE water line of OD 75.
		iii. Distribution line 1 - 227m HDPE water line of OD 63
3.	Security Lighting	❖ 1No. Security high mast

E.3 The Project Cost

The total cost for the proposed upgrading works is KES 68,329,641.10 as shown below.

Table E3.1: Project Cost

No	Component	Description	Cost (Ksh)
1.	Preliminary and general items		
2.	Water supply	• 0.285km OD50-OD75 HDPE Pipeline	2,688,985.00

		• 1No. Water Kiosk • 20 household connections	
3.	Roads	0.288km of Roads	27,896,293.81
4.	High mast flood light	1No. High mast flood Light	3,448,550.00
5.	Day works	Day works Water and Roads	2,893,831.33
6.	Environmental	Environmental and social safeguards	6,490,000.00
BILL TOTAL EXCLUSIVE OF VAT			51,221,620.02
ADD 15% CONTINGENCY			7,683,243.00
BILL TOTAL INCLUSIVE OF CONTINGENCY			58,904,863.02
ADD 16% VAT TAX			9,424,778.08
BILL TOTAL INCLUSIVE OF VAT AND CONTINGENCY			68,329,641.10

E.4 Project Components

The proposed project will comprise the following four components.

Component 1 (Integrated Settlement Upgrading): Two main interventions have been identified under this component: (i) tenure regularization; and (ii) infrastructure upgrading.

Component 2 (Socio-Economic Inclusion Planning): This component will support the development of community-level socio-economic plans. The plans intend to identify together with the communities their socio-economic needs and then address how best the needs can be met.

Component 3 (Institutional Capacity Development for Slum Upgrading): The Project will support institutional and policy development at national and county levels.

Component 4 (Program Management and Coordination): This component will finance activities of the NPCT and the CPCTs 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), and communication and community development.

E.5 Rationale for Environmental and Social Impact Assessment

The Environmental and Social Impact Assessment (ESIA) study was carried out to identify both negative and positive impacts of the proposed improvement project for Salama informal

settlement and formulate an Environmental and Social Management Plan (ESMP). This would guide the decision and policy makers on appropriate ways to handle the pertinent environmental and social issues that emerge during the project lifecycle.

The main objective of the ESIA study was to predict, assess, and analyse the possible positive and significant negative environmental and social impacts that are expected during the design, construction, operation, and decommissioning phases of the project. This was done with the aim of proposing mitigation measures for the significant negative impacts. This is in line with ensuring that the development does not impact negatively on the environment in terms of the social, health, economic and physical state of the project area.

The specific objectives were to:

- Identify all potential significant adverse environmental and social impacts of the proposed development and recommend mitigation measures.
- Ensure compliance with the environmental regulations and industry standards.
- Collect baseline data for monitoring and evaluation of the success of the mitigation measuresimplemented during the project life cycle.
- Recommend cost-effective measures to be implemented to mitigate against the expected adverse impacts.
- Provide guidelines to stakeholders participating in the mitigation of adverse social impacts of theproject.
- Prepare an Environmental Impact Assessment Study report compliant with the regulations and detailing findings and recommendations.

E.6 Terms of Reference

In accordance with the Terms of Reference, the following scope has been defined for this ESIA.

i. Clear description of the physical location and linkages of the project including the baseline conditions of the project area.
ii. A description of the project characteristics including project objectives, project design, activities, technology, procedures and processes, materials to be used, Products, by-products and waste generated, during the project construction, operation and de-commissioning phases.
iii. A description of the national environmental legislative and regulatory framework, baseline information and any other relevant information related to the project.
iv. The potential environmental effect of the project, including the social and cultural effects and the direct, indirect, cumulative, irreversible, short-term, and long-term effects anticipated.

v. Project alternative analysis including locations, technologies, or process available, analysis of alternatives, and reasons for preferring the proposed option.
vi. An environmental management and monitoring plan outlaying the activities, associated impacts, mitigation measures, monitoring indicators, implementation timeframes, responsibilities, and cost; Environmental Impact Assessment (ESIA)
vii. An Action Plan for the prevention and management of foreseeable accidents and hazardous activities in the cause of carrying out activities.
viii. Measures to prevent health hazards and to ensure security in the working environment for the employees and for the management of emergencies.
ix. Conclusions, recommendations and identification of gaps and uncertainties which were encountered in compiling the report.

E.7 Policy, Legal and Administrative Framework

The main legislation that governs environmental management in Kenya is the Environmental Management & Coordination, 1999, (EMCA) and Environmental Management & Coordination (Amendment) Act of 2015. EMCA calls for environmental impact assessment (EIA) (under Section 58) to guide the implementation of environmentally sound decisions and empower stakeholders to participate in sustainable management of the natural resources. Part V from Sections 42 – 57 deals with Protection and Conservation of the Environment while Part VI deals with Integrated Environmental Impact Assessment. Projects likely to cause environmental impacts require that an environmental and social impact assessment study be carried out. It is under this provision that the current study has been undertaken because Legal Notice No, 32 and 34 of April 19, 2019, places the proposed interventions under the Medium-Risk Category requiring the preparation of a comprehensive project report.

Various policies applicable to this project include Kenya Vision 2030, the National Environment Action Policy (NEAP) 2013, National Land Policy, National Climate Change Response Strategy, 2010, and the National Poverty Eradication Plan. Relevant laws include: Water Act, 2016, Water Rules 2012, Penal Code CAP 63, County Government Act No. 17 of 2012, Occupational Health and Safety Act (OSHA 2007), The Kenya Roads Act 2007, Traffic Act, Chapter 403, Public Road and Road of Access Act Cap 399, Forest Act ,2016, The Kenya Road Act 2007, the Physical and Land Use Planning act 2019, The Public Health Act (CAP.242), Climate Change Act 2016, Employment Act, 2007, HIV and AIDS Prevention and Control Act 2011, Sexual and Gender Based Violence (SGBV) of 2017, The National Museum and Heritage Act 2006, National Gender and Equality Act, Environmental and Land Court Act 2011, Child Rights Act (Amendment Bill) 2014, Work Injury Benefits Act (WIBA), Labor Relations Act 2012, National Gender and Equality

Commission Act 2011, amongst others including Meru County Government Legislations and Policies.

In addition to the legislation, the World Bank Operational Safeguards policies that applicable to the project include OP/BP 4.01 Environmental Assessment, OP/BP 4.04 Natural Habitats, OP/BP 4.10 Indigenous People, OP/BP 4.11 Physical Cultural Resources, OP/BP 4.12 Involuntary Resettlement, World Bank Policy on Access to Information 2015, World Bank Group Environmental, Health and Safety (EHS) General Guideline.

Multilateral Environmental Agreements relevant to this project include: the United Nations Framework Convention on Climate Change, Convention on Biological Diversity, Paris Agreement, Convention on Elimination of All Forms of Discrimination Against Women and the United Nations Declaration on Rights of Indigenous Peoples.

E.8 Highlights of Stakeholder Consultations

Environmental Impact Assessment / Audit Regulations 2019 requires a project proponent to seek the views of persons/communities that may be affected by the project to be consulted, at least explain project potential impacts, and obtain oral/written comments, which shall be included in the ESIA for implementation by the proponent.

Key stakeholder meeting and a public barazas was held at Muslim Primary Playground in September 27, 2023 to sensitize the members of the public about the proposed project, explain anticipated impacts and mitigation measures as well as get their views regarding the proposed interventions. Key Informants were also interviewed to elicit technical information due to the vast expertise they possess. The outcomes and responses are captured in the following section.

A consultation meeting was held September 27, 2023, at Muslim Primary Playground where the following stakeholders were present.

- Area chief Area
- Villager elders
- Ward administrator
- Landowner's representatives
- KISIP 2 National team
- KISIP 2 County team
- Businessmen/women
- Window/widower
- Landlords/land ladies
- People living with disabilities
- Tenants' representatives

Table E8.1- Number of Participants

Meeting Date- September 27,2023

Venue- Muslim Primary Ground	
List of participants	**Number**
Male	13
Female	12
Total participants	25

Gathering the residents to the meeting venue was undertaken through the close coordination of the KISIP county coordinator together with the local administrator (chief and ward administrator). Communication on the date, venue and purpose of the meeting was done a week prior to the actual date of the meeting.

The discussion including project information was discussed in Kiswahili and Meru languages to ensure the community understood the project scope, objectives, and anticipated impacts in all project phases. The key outcomes of the consultations were:

- The project team was introduced to the community.
- Project scope, objectives of the project
- Project information was disclosed to the communities by the KISIP project coordination and County teams.
- The Settlement Executive Committee (SEC) and Grievance Redress Committee (GRC) were selected.
- Priority projects for the informal settlement were selected.

In addition, a structured questionnaire was also administered to the members of public on November 20, 2023, to solicit views regarding the project as well as its design. The questionnaire initially gave introduction and created awareness to the respondents regarding the project. Afterwards, questionnaire enquired on acceptance of the project, rating of the current infrastructures, anticipated project impacts, suggested mitigation measures as well as any suggestions and recommendations.

The key informants targeted in the consultations were from Government and private institutions operating within the project area. Listening to stakeholder concerns and feedback is a valuable source of information that can improve project design and outcomes and help in identifying any impacts.

A structured questionnaire was administered to the key stakeholders on November 20, 2023-November 22, 2023, to solicit views regarding the project as well as its design. The interview was conducted face to face with the key stakeholders and in their respective offices. The questionnaire initially gave introduction and created awareness to the respondents regarding the project. Afterwards, questionnaire enquired on acceptance of the project, rating of the

current infrastructures and anticipated project impacts, suggested mitigation measures as well as any suggestions and recommendations:

E.9 Project Impacts

Assessment of project impacts was based on analysis of the proposed project components and existing environmental conditions. The impacts arising during each of the phases of the proposed development namely construction, operation, and decommissioning, can be categorized into:

- Impacts on biophysical environment.
- Health and safety impacts; and
- Social-economic impacts

Sections E-9.1 to E-9.5 below provide a summary of the project impacts both positive and negative discussed in this report.

E-.9.1 Positive Impacts

The project is envisaged to have positive impacts after completion of the civil works and commissioning. A summary of anticipated positive impacts of the Project include:

- **Employment opportunities**: With the construction of the proposed Project, there shall be employment opportunities for both professionals and unskilled workers, earnings from the wages shall improve their living standards. The workers shall include casual labourers, plumbers and engineers who are expected to work on the site for a period. Semi- skilled, unskilled labourers and formal employees are expected to obtain gainful employment during the period of construction. With labour intensive construction technologies, the project shall provide employment for youths and provide support to the GoK initiatives on creation of jobs.
- **Creation of a market for construction materials** - The project will require materials, some of which will be sourced locally and some internationally.
- **Economic growth** - Using locally available materials it will result in economic growth for the area.
- **Injection of money into the local economy**: A large sum of the project money shall be released into the local economy due to the construction activities.
- **Creation of wealth**- The proposed project will ultimately provide revenues to the beneficiaries and expand the wealth base for the nation. Further, the value of land within the project area will rise thus improving on the existing wealth for the residents.

- **Improved well-being of women and children**: Water accessibility at homesteads would translate to time saving by the women. Time saved thus would be invested in other engagements that could bring financial benefits to the family. Children also bear the brunt of water borne diseases while women are tied down to provide nursing care to the sick family members.
- **Reduced cases of water related diseases:** Cases of water borne disease in the project area areas are likely to reduce. This will effectively reduce related medical expenses among the poor people in the project area with extended long-term increased social productivity.
- **Improved well-being of women and children**: Water accessibility at homesteads would translate to time saving by the women. Time saved thus would be invested in other engagements that could bring financial benefits to the family. Children also bear the brunt of water borne diseases while women are tied down to provide nursing care to the sick family members.
- **Technology Transfer:** The project will be associated with technological and knowledge transfer to the local sector, this will be through the artisan who will be employed and trained by the Project.
- **Improved Health and Sanitation:** Good hygiene and sanitation standards are directly linked to provision of reliable and adequate water supply as well as provision of adequate sanitation facilities. The Project target areas will directly benefit from improved hygiene and sanitation as a result of improved water supply networks including consumer connections.
- **Security**: There will be enhanced security in the Salama arising from well-lit social, commercial, and individual premises. With the implementation of the project, the level of security will increase across Salama. This is because of more security lights which helps keep off opportunistic crimes and gender-based violence.
- **Improved road connectivity in Salama:** will not only open this settlement but it will also elevate and improve the livelihoods of the resident communities living in the settlement.
- **Improvement in gender parity:** It is envisaged that the upgrading of the road will improve availability and accessibility to social amenities, such as schools. Thus, women will have access to improved education facilities thereby enabling women to compete on an equal footing with men. The improved road will enhance service delivery including improved health services where the women will benefit greatly.
- **Economic and social value addition to the project's local area of influence**- There exists a close relationship between transport infrastructure and primary production (agriculture,

animal husbandry, fishing, forestry, and mining). Without transport access, much of primary production is not feasible. Availability of transport infrastructure attracts not only traders and transporters, but also agricultural, animal husbandry and other extension services. Equally important, improved access also impacts on education, health, and other social services, which are essential for social and economic development.

- **Improved response to emergencies and humanitarian aid**- The improved road is expected to aid in rapid response to emergencies which will in turn save human lives and livestock. It will be possible to quickly deploy security officers to attend to any emergency.
- **Site Area Infrastructure**: The project is going to enhance development of project area infrastructure that is going to improve livelihood of the project area residents.

E-9.2 Negative Impacts during the Pre-Construction Phase and proposed Mitigation measures

Potential Impacts	Management Actions
Vegetation Cover destruction	• Reinstatement of the project sites to their original after completion of civil and road works • All hedges damaged during construction to be reinstated after completion of the Works. • The contractor to adhere to the delineated construction work area. Planting of grass along the way leave and Pipeline friendly tree to be grown after construction
Generation of Solid waste	• Maximum reuse of excavated material. • Implementation of Soil erosion management in the spoil locations • Construction wastes (residual earth, debris and scrap materials) to be collected at designated points and Contractor to dispose to appropriately. • Contractor's Camps and Construction Sites to have designated waste collection points,
Removal of vegetation	• The contractor to adhere to the proposed soil conservation practices. • Proper and compacted back filling. • The contractor to stick to clear delineation of the

	construction to avoid vegetation loss. • Planting of vegetation cover along the pipeline way leave • Split compacted area to reduce runoff & re-vegetate where necessary. • Vehicles to be kept in designated access roads. • Minimize compaction during stockpiling by placing soil in dry state. • Any polluted soil should be handled with care for proper disposal. • Excavation materials to be stockpiled at the demarcated location. • Rehabilitation of the site after construction
Anxiety among residents	• Sensitization that the project will be implemented on public land and way leaves. • Representation of all stakeholders in Settlement Executive Committee and Grievance Redress Committee. • Maintaining an open-door policy by the proponent such that any query is addressed without undue delay. • Giving complete timelines for the project activities.

E-9.3 Negative Impacts during construction phase and Recommended Mitigation Measures

Potential Impacts	Management Actions
Environmental Impacts	
• Noise and excessive vibrations	• Contractor shall comply with provisions of Environmental Management Coordination Act (EMCA) (Noise and Excessive Vibrations) Regulations of 2009. • The Contractor shall keep noise level within acceptable limits (60dBA for sensitive locations (residential, educational, health institutions etc.) and 75 dBA for other areas during the day 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 and residential shall

Potential Impacts	Management Actions
	be notified by the Contractor at least 5 days before construction is due to commence in their vicinity. • Undertake Noise and Vibration Assessments;
• Air pollution and dust generation	• The contractor to comply the provisions of Environmental Management Coordination Act EMCA (Air Quality Regulations) 2014, to be enforced by the Supervising Engineer. • Workers shall be trained on management of air pollution from vehicles and machinery. • All construction machinery shall be maintained and serviced in accordance with the manufacturers' specifications. • The removal of vegetation shall be avoided until such time as clearance is required and exposed surfaces shall be re-vegetated or stabilized as soon as practically possible. • The contractor shall not carry out dust generating activities (excavation, handling, and transport of soils) during times of strong winds. • Vehicles delivering construction materials and vehicles hauling excavated materials shall be covered to reduce spills and windblown dust;
• Vegetation Cover destruction	• Reinstatement of the project sites to their original after completion of civil and road works • All hedges damaged during construction to be reinstated after completion of the Works. • The contractor to adhere to the delineated construction work area. • Planting of grass along the way leave and Pipeline friendly tree to be grown after construction
• Generation of Solid waste	• Maximum reuse of excavated material. • Implementation of Soil erosion management in the spoil locations • Construction wastes (residual earth, debris, and scrap materials) to be collected at designated points and Contractor to dispose to appropriately. • Contractor's Camps and Construction Sites to have designated waste collection points,
• Removal of vegetation	• The contractor to adhere to the proposed soil conservation practices. • Proper and compacted back filling. • The contractor to stick to clear delineation of the construction to avoid

Potential Impacts	Management Actions
	vegetation loss. • Planting of vegetation cover along the pipeline way leave • Split compacted area to reduce runoff & re-vegetate where necessary. • Vehicles to be kept in designated access roads. • Minimize compaction during stockpiling by placing soil in dry state. • Any polluted soil should be handled with care for proper disposal. • Concrete mixing shall be done on concrete slabs or a large metal sheet or mortar boards. • Maintenance of vehicles to be done strictly at designated place/Drip trays to be used to avoid oil spills. • Excavation materials to be stockpiled at the demarcated location. • Rehabilitation of the site after construction
• Impact on soil	• Storing of fuels, oils, and chemicals beneath impermeable away from surface drains • The machines to be properly serviced offsite and maintained to avoid spillage of effluents into the water bodies. • Water containing pollutants should be kept in a conservancy tank for removal to prevent pollution of the surface water and surface water bodies. • Prompt action to be taken by the contractor in case of any pollution incident.
• Accidental Oil and fuel Spills and Leaks	• Checking and regular servicing of Equipment. • Re-fuelling at safe locations, • Use of spill kits and applications of emergency spill procedures. • Provision of a 20cm layer of sand and ballast at the machinery storage area and diesel tank section, this layer act as sink to potential oil spills and shall be replaced when saturated. • Vehicle maintenance to be done in impervious concrete platforms and grease and oil traps to be used.
• Loss of temporary assets and sources of livelihood	• No anticipated displacement was identified during social screening studies undertaken during the Environmental Social Impact Assessment (ESIA) • Any displacement that may be identified during construction to be dealt with on case-by-case basis
Social Impacts	

Potential Impacts	Management Actions
• Disruption of public utilities	• Contractor to carry out piloting to locate services such as pipes and cables along the Pipeline Route before commencing excavation works. • Length of excavation to be restricted to sections that can be reinstated within the shortest period possible to minimize time of disruption of services. • Consultation and liaison with the various service providers shall be undertaken throughout the project life.
• Increased Transmission of HIV/AIDS	• Sensitize workers and the surrounding communities on awareness, prevention and management of HIV/AIDS and sexual health and rights through staff training, awareness campaigns, multimedia, and workshops or during community Barazas. • Use existing clinics to provide VCT services to construction crew and provision of ARVs for vulnerable community members. • Ensure safety of women and girls in provision of VCT services.
• Human Rights Principles and Gender Inclusivity	• Mainstream Gender Inclusivity in hiring of workers and entire Project Management as required by Gender Policy 2011 and 2/3 gender rule. • Comply to provisions of guidelines on incorporating Human Rights Standards and Principles, including Gender inclusivity
• Increased crime and insecurity	• 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
• Increased GBV	• The Contractor shall require his employees, sub-contractors, sub-consultants, and any personnel thereof engaged in construction works to individually sign and comply with a Code of Conduct with specific provisions on protection from sexual exploitation and abuse. • The contractor shall implement provisions that ensure that gender-based violence at the community level is not triggered by the Project, including: - effective and on-going community engagement and consultation, particularly with women and girls. - Review of specific project components that are known to heighten GBV risk at the community level, e.g., compensation schemes; employment

Potential Impacts	Management Actions
	schemes for women; etc. • Ensure clear human resources policy against sexual harassment that is aligned with national law. • Integrate provisions related to sexual harassment in the employee Code of Conduct (COC) • Ensure appointed human resources personnel to manage reports of sexual harassment according to policy. • The contractor shall develop specific plan for mitigating these known risks, e.g. sensitization around gender-equitable approaches to compensation and employment; etc. • The contractor shall ensure adequate referral mechanisms are in place if a case of Gender Based Violence (GBV) at the community level
• Sexual Exploitation and Abuse by project workers against community members	• Develop and implement a Sexual Exploitation and Abuse (SEA) action plan with an Accountability and Response Framework as part of the C-ESMP. The Sexual Exploitation and Abuse (SEA) action plan shall follow guidance on the World Bank's Good Practice Note for Addressing Gender-based Violence in Investment Project Financing involving Major Civil Works (Sept 2018). • The Sexual Exploitation and Abuse (SEA) action plan shall include how the project shall ensure necessary steps are in place for: - Prevention of Sexual Exploitation and Abuse (SEA): including Code of Conduct (COCs) and ongoing sensitization of staff on responsibilities related to the Code of Conduct (COCs) and consequences of non-compliance; project-level IEC materials. - Response to Sexual Exploitation and Abuse (SEA): including survivor-cantered coordinated multi-sectoral referral and assistance to complainants according to standard operating procedures; staff reporting mechanisms; written procedures related to case oversight, investigation and disciplinary procedures at the project level, including confidential data management. - Engagement with the community: including development of confidential community-based complaints mechanisms discrete from the standard Grievance Redress Mechanism (GRM); mainstreaming of Prevention of Sexual Exploitation and Abuse (PSEA) awareness-raising in all community engagement activities; community-level IEC materials;

Potential Impacts	Management Actions
	regular community outreach to women and girls about social risks and their Prevention of Sexual Exploitation and Abuse (PSEA) -related rights. • Management and Coordination: including integration of Sexual Exploitation and Abuse (SEA) in job descriptions, employment contracts, performance appraisal systems, etc.; development of contract policies related to Sexual Exploitation and Abuse (SEA), including whistle-blower protection and investigation and disciplinary procedures; training for all project management; management of coordination mechanism for case oversight, investigations and disciplinary procedures; supervision of dedicated Prevention of Sexual Exploitation and Abuse (PSEA) focal points in the project and trained community liaison officers.
• Labour influx and sexual offences to minors	• Effective community engagement and strong grievance mechanisms on matters related to labour. • Effective contractual obligations for the contractor to adhere to the mitigation of risks against labour influx. • Proper records of labour force on site while avoiding child and forced labour. • Fair treatment, non-discrimination, and equal opportunity of workers.
• Child labour and protection	• The contractor shall develop and implement a Children Protection Strategy that shall ensures minors are protected against negative impacts associated by the Project including Sexual Exploitation and Abuse (SEA). • All staff of the contractor must sign, committing themselves towards protecting children, which clearly defines what is and is not acceptable behaviour. • Children under the age of 18 years should be hired on site as provided by Child Rights Act (Amendment Bill) 2014 • Wherever possible, ensure that another adult is present when working in the proximity of children. • Not invite unaccompanied children to worker's home unless they are at immediate risk of injury or in physical danger. • Refrain from physical punishment or discipline of children
Health and Safety Impacts	

Potential Impacts	Management Actions
• Risk of accidents at work site	• Construction Workers and the Supervising Team to be provided with Personal Protective Equipment including gloves, gumboots, overalls and helmets. Use of Personal Protective Equipment (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 for access by the local communities during the construction for their safety and health. • Camps and Work Sites to be fenced off and Security Guards provided to restrict access to members of the public. • Strict use of warning signage and tapes where the trenches are open and at other active construction sites
• Traffic congestion • Traffic related accidents	• The contractor shall develop a traffic management plan. • The Contractor should provide temporary road signs or notices to indicate ongoing works. • The Contractor together with the Resident Engineer should Plan itineraries for site traffic on a daily basis and avoid peak traffic periods;

E-9.4 Negative Impacts during operation phase and Recommended Mitigation Measures

Potential Impacts	Management Actions
Social Impacts	
Risk of illegal connection and vandalism of the water Pipeline	• This shall require constant inspection by Meru Water and Sanitation Services (MEWASS) Officials and installation of leak and burst detectors at designated areas along the pipeline. • Conduct public sensitization programs on importance not interfering with the water pipeline and the need to seek official water connection from Meru Water and Sanitation Services (MEWASS)
Risk of encroachment and construction of structures on the pipeline way leave	• Arrest and prosecution of encroachers as required by Meru. • County Bylaws on Way Leaves and Road Reserves • Meru Water and Sanitation Services (MEWASS) to undertake awareness campaigns aimed at preventing encroachment.

Potential Impacts	Management Actions
Environmental impact	
Visual and landscape impact management	• Elaborate landscaping and maintenance of these sites can limit the viewpoints to the facilities and thus reduce their visual impact.
Risk of water pipeline bursts leading to water wastage	• Regular check, repair, and maintenance of the water pipeline • Activate a community watch group for information sharing on the status of the water line. • Implement a leak detection and repair program (including records of past leaks and unaccounted- for water to identify potential problem areas) • The risk of pipeline bursts is low as the pipeline design, including the selection of pipe material and pipe pressure classes, has been carried out to minimize this risk. • This risk shall be further minimized through regular inspection, repair and maintenance of the pipeline by the Operator, Meru Water and Sanitation Services (MEWASS)
Increased domestic wastewater generation	• The client to ensure all household are connected to the new reticulations.
Health and Safety Impacts	
Health and Safety Risks	• Regular check, repair and maintenance of the water pipeline and sewer lines by Meru Water and Sanitation Services (MEWASS) officials. • Activate a community watch group for information sharing on the status of the water line and sewer lines. • Implement a leak detection and repair program (including records of past leaks and unaccounted- for water to identify potential problem areas) • Development of an inventory of system components, with information including age, construction materials, and drainage areas served elevations. • Carry continuous Public Health Awareness

E-9.5 Negative Impacts during decommissioning phase and Recommended Mitigation Measures

Potential Impacts	Management Actions
Environmental Impacts	
Solid Waste Generation	• All removed materials that shall not be used for other purposes must be removed and recycled/reused as far as possible;
	• Where recycling/reuse of the removed materials and other demolition waste is not possible; the materials should be taken to a licensed waste disposal site, or arrangements made with the County Government;
	• Donate reusable demolition waste to charitable organizations, individuals, and institutions;
Degeneration of vegetation at the construction site	• Implement an appropriate re-vegetation programme to restore the site to better status;
	• Consider use of indigenous plant species in re-vegetation;
	• Trees should be planted at suitable locations so as interrupt slight. • Lines (screen planting), between the adjacent residential area and the development;
Noise pollution	• Prepare a decommissioning plan to guide activities;
	• Monitor noise levels as per the NEMA Environmental Management and Coordination (Noise and Excessive Vibration Pollution) (Control) Regulations, 2009 & OSHA, 2007;
	• The noise emission characteristics should be considered during selection and mobilization of decommissioning equipment; and • Sensitize staff to switch off machinery and vehicles when not in use;
Health and Safety Impacts	
Occupational Health and Safety	• Provide the correct PPE for the workers when conducting the demolition activities. • Conduct training on health and safety procedures to the workers prior to commencement of demolition. • Proper plans should be made prior to demolition so as to contain the raw sewage and other wastewater that poses as health risk to

Potential Impacts	Management Actions
	human beings and the environment, to prevent the workers and surrounding communities from getting into contact with it.

E.10 Environmental and Social Management and Monitoring Plan (ESMMP)

An Environmental and Social Management and Monitoring Plan (ESMMP) has been developed whose pursuit can greatly improve the overall net effect of the project. This Report observes that the bulk of adverse impacts will manifest at the Construction stage in which case, the core effort in mitigation will be concentrated in the contract for construction. The contract for construction should bear clauses binding the contractor to implement impact mitigation as part of the civil works.

E.11 Findings

The following are the finding of the Environmental and Social Impact Assessment.

- The major positive impacts of this project will include improved health, air quality, employment opportunities, economic growth, technology, and knowledge transfer, as well as mitigating related adverse impacts.
- The project activities are likely to cause, albeit on a small scale, interruptions with traffic, risk of accidents, emission of dust, waste generation and increase in noise and vibration.
- The study has proposed several measures to reduce negative impacts including amelioration of social negative impacts, noise abatement, waste management, reduction of soil erosion, and prevention of accidents and health hazards.
- Monitoring has been identified as an important process in the protection of the environment of the project area since it will reveal changes and trends brought about mainly by construction activities.

E.12 Conclusion

The proposed project is environmentally, legally, and socially acceptable. The potential significant environmental impacts can be adequately mitigated by the proposed measures, and it is the responsibility of the proponent and all other actors to see to it that the measures are implemented. This way, the environmental threats will be downscaled to acceptable levels.
It is based on the above, that it is recommended that the project be issued with the necessary clearance for the project to commence implementation.

E.13 Recommendations

The Environmental Social Impact Assessment (ESIA) team recommends the following:

i. All mitigation measures need to be specified in tender and contract documents and must be included in the engineering drawings, specifications, and bills of quantities.
ii. The Contractor will be required to prepare a Construction Environment & Social Management Plan (CESMP) which shall be approved by the proponent before the beginning of works. Within the C-ESMP suite, the following instruments should be prepared:
    - ❖ Health and Safety Management Plan.
    - ❖ Traffic Management Plan.
    - ❖ Labour, Influx and Local Recruitment Management Plan.
    - ❖ Spoil Management Plan.
    - ❖ Stakeholder management Plan.
    - ❖ Emergency Response Plan.
    - ❖ A Gender Responsive Grievance Redress Management Plan for Internal and external grievances.
    - ❖ Child Protection Strategy.
    - ❖ Waste Management Plan.
iii. Diligence on the part of the contractor and proper supervision by the project Engineer during construction and the initial operation phase is crucial for mitigating impacts.
iv. Contractor shall be required to commit to implementing the Environment, Social Health, and Safety (ESHS) Provisions by developing site-specific (ESHS) plans.
v. At project implementation stage, the Contractor to report to the project management team comprising of the Consultant and the project proponent monthly on how Environment, Social Health, and Safety (ESHS) provision detailed in this Environmental Social Impact Assessment are addressed.
vi. The proponent should be given all the available support to implement the project.
vii. Necessary permits should be issued by the licensing authority so that the work can commence such and National Environment Management Authority (NEMA) license, Directorate of Occupational Safety and Health Services (DOSHS) permit, Business permit and any other relevant that may be required.
viii. Periodic environmental and social monitoring is required by KISIP 2 team to ensure that mitigation measures have been implemented to prevent or avert any negative impacts of the project.

ix. On completion of the road and Civil Works, KISIP 2, the proponent to commission an independent Consultant to undertake an initial Environment, Social, Health and Safety Audit as required by Environmental (Impact Assessment and Audit) Regulations 2003 with 2019 amendments.
x. The audit shall identify nonconformities which the Contractor together with the Client shall address through the defect's liability period of the Project. This audit shall also form basis of annual Project self-audits by the Client.
xi. To reduce GHG emissions, the contractor should ensure plant and equipment are properly serviced and use fuel which is free from impurities.
xii. Contractor to involve a community liaison person.
xiii. Project workers should have a transparent, open, available, and anonymous GRMs.

CHAPTER 1: INTRODUCTION

1.1. Project Background

The Government of Kenya received credit facility from the World Bank through International Development Association (IDA) and Agence Française de Développement (AFD) towards the cost of the Second Kenya Informal Settlements Improvement Project (KISIP 2) whose primary goal is to improve living conditions in informal settlements in selected towns in Kenya. The objective of the assignment is to prepare infrastructure upgrading plans, detailed engineering designs, procurement documents, resettlement action plan (RAP) and environmental and social impact assessment (ESIA) reports; and supervision of infrastructure construction works in selected informal settlements in Nyeri, Tharaka Nithi, Meru and Wajir Counties as shown in Figure 1-1.

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

The proposed project will comprise the following four components.

Component 1 (Integrated Settlement Upgrading): KISIP 2 has built on the lessons learned from KISIP 1 and has combined tenure regularization and infrastructure into one integrated upgrading approach to save both money and time, ensuring better coordination between the two interventions in a settlement and deepening the project's overall impact on the participating communities by supporting tenure regularization and infrastructure upgrading in the same communities. Thus, two main interventions have been identified under this component: (i) tenure regularization; and (ii) infrastructure upgrading. Settlements will benefit from one or both interventions depending on the initial condition of the settlement. Under tenure regularization, KISIP 2 will support the chain of

Figure 1- 1: KISIP 2 Project Areas Locations

activities required to regularize tenure for people living on uncontested public lands. Based on experiences of KISIP 1, the project will minimize displacement of residents in planning using 'adoptive' planning approach to minimize displacement of residents in informal settlements. Under infrastructure upgrading, KISIP 2 will support the same types of investments: 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. The menu will also include investments related to prevention of crime and violence, including but not limited to community centres. Most of the infrastructure will contribute to climate resilience and the project will have substantial climate change adaptation and mitigation co-benefits.

Component 2 (Socio-Economic Inclusion Planning): This component will support the development of community-level socio-economic plans. The plans intend to identify together with the communities their socio-economic needs and then address how best the needs can be met.

Component 3 (Institutional Capacity Development for Slum Upgrading): The Project will support institutional and policy development at national and county levels. Activities will include supporting the review of the 2005-2020 National Slum Upgrading and Prevention Strategy, the development of county-specific slum upgrading and prevention strategies, developing financing mechanisms for slum upgrading at county level, and developing strategies to plan for urban growth, prevent crime and violence and to ensure adoptive planning in informal settlements.

Component 4 (Program Management and Coordination): This component will finance activities of the NPCT and the CPCTs 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), and communication and community development.

The Principal Secretary, State Department of Housing and Urban Development, Ministry of Lands, Public Works, Housing and Urban Development Second Kenya Informal Settlements Improvement Project (KISIP 2) has appointed Gath Consulting Engineers Ltd in JV with Losai Management Limited to provide Consultancy services for Infrastructure Upgrading Plans, Detailed Engineering Designs and Preparation of Procurement Documents and Construction Supervision of Infrastructure Improvement Works in Selected Informal Settlements in Nyeri, Meru, Tharaka-Nithi and Wajir Counties.

The Environmental Management and Coordination (Impact Assessment and Audit) Regulations, 2019 stipulates that either Comprehensive or Summary Environmental and social Impact Assessment (ESIA) Project Reports should be prepared for low and medium risk projects listed in the Second Schedule. The proposed project interventions in Salama

Informal settlement falls in the category of medium risk projects under the Environmental Management and Coordination Act (Amendment), 2019, thus a Comprehensive ESIA Project report is required. It is in response to this provision, that this report has been prepared

This is an Environmental and Social Impact Assessment (ESIA) Comprehensive Project Report (CPR) for the interventions proposed in Salama Informal settlement in Meru County.

The scope of construction works proposed for Salama informal settlement involves construction of:

i. Water pipelines
   - Water main line 1 55m OD75 HDPE Pipeline
   - Distribution line 1 227m HDPE Pipeline
   - 1No. Water Kiosk
   - 20 household connections

ii. 1No. High mast flood lights

iii. 0.479km of Asphalt paved roads with sidewalk

1.2. Project Justification and Benefit

The primary reason for upgrading the road in Salama informal settlement is to improve mobility and access of the region. The current state of the road (narrow) has continued to pose a great challenge to residents and other road users resulting in high production cost in terms of high vehicle operation cost and longer travel times. Upgrading of the road therefore would bring about improved economic benefit to the residents in this settlement and so to the Meru town. Further water reticulation together with household connection will lead to improved heath and reduced water borne diseases.

1.3. Objectives of the ESIA

1.3.1 General Objective

The Principal Secretary, State Department of Housing and Urban Development, Ministry of Lands, Public Works, Housing and Urban Development Second Kenya Informal Settlements Improvement Project (KISIP II) is proposing to improve, water distribution, road works and security lighting in Salama informal settlements in Meru County.

The main legislation that governs environmental management in Kenya is the Environmental Management & Coordination (Amended) Act of 2015 typically referred to as EMCA. EMCA calls for Environmental Impact Assessment (EIA) (under Section 58) to guide the implementation of environmentally sound decisions and empowers stakeholders to participate in the sustainable management of natural resources. Part V from Sections 42 – 57 deals with Protection and Conservation of the Environment while Part VI deals with

Integrated Environmental Impact Assessment. Projects likely to cause environmental impacts require an environmental and social impact assessment study to be carried out.

The proposed interventions require preparation of a comprehensive environmental and social impact assessment report because it belongs to the activities listed in Schedule II (3, c) water supply and distribution infrastructure and Schedule 11 (2, a) construction and rehabilitation of roads including collectors and access roads. The key purpose of the ESIA report is to ensure that the key environmental and social issues associated with the project are identified early enough so that the necessary mitigation measures are noted and integrated in the final project design. This ESIA CPR is part of the NEMA requirement and is expected to assist NEMA in decision making concerning the project licensing.

1.3.2 Specific Objectives of ESIA Investigations

This Environmental & Social Impact Assessment (ESIA) is expected to achieve the following objectives:

i. To present existing environmental, social and cultural setting of the target project area
ii. To identify potential environmental and social impacts (direct and indirect), including opportunities for enhancement; this includes the cumulative impact of the proposed project and other developments which are anticipated;
iii. To generate feasible alternative investments, sites, technologies, and designs,
iv. To provide preventive, mitigating, and compensatory measures
v. To provide detailed results of the public consultation and
vi. To prepare an Environmental and Social Management and monitoring Plan to mitigate the identified impacts so as to ensure sustainability of the proposed projects.
vii. To recommend cost effective measures to be implemented to mitigate against the expected impacts

1.4. Project Study Scope and Objectives

1.4.1 Project Objectives

The main objective of this proposed project is to improve access to basic services of residents in participating urban informal settlements and strengthen institutional capacity for slum upgrading in Kenya. This will be achieved by investing in infrastructure based on plans developed in consultation with the community, by supporting planning, surveying and issuance of land documents for residents of informal settlements, and by strengthening capacity of county administrations to deliver on their mandates.

1.4.2 Scope

The scope of services is limited to selected informal settlements in the four (4) counties. The assignment will be undertaken in two stages, and the scope of each stage is as outlined below:

Stage 1: Preparation of the Settlement Upgrading Plan, Engineering Designs, and Procurement Documents:

Stage 1.1: Preparation of Draft Settlement Upgrading Plans, Engineering Designs and Procurement Documents

This part of stage 1 includes:

i. Community sensitisation and consultation on the assignment;
ii. Draft settlement upgrading plan, including feasibility studies and preliminary designs for the proposed infrastructure investments, including screening for potential environmental and social impacts, involuntary resettlement, and impacts on vulnerable and marginalized groups (indigenous persons) as per the screening checklists and guidance provided in the project's Environmental and Social Management Framework (ESMF), Resettlement Policy Framework (RPF), and Vulnerable and Marginalized Groups Framework (VMGF);
iii. Environmental and Social Impact Assessment (ESIA);
iv. Environmental Management Plans (ESMPs);
v. Preliminary cost estimates;
vi. Economic analysis of proposed investments;
vii. Resettlement Action Plan (RAP) for the settlements; and Vulnerable and Marginalized Groups Plans, where applicable;
viii. Draft procurement documents for each of the designed infrastructure, incorporating at minimum appropriate qualification requirements (technical and financial qualifications, personnel, financial resources, and equipment}), bills of quantities/scope of works, specifications, environmental and social requirements, drawings, conditions of contract, and draft construction works programme.

Stage 1.2: Preparation of Final Settlement Upgrading Plans, Engineering Designs and Procurement Documents

This stage will involve:

i. Detailed engineering design;
ii. Phasing plan for each county;
iii. Operations and maintenance manuals for the proposed infrastructure;
iv. Estimates of the proposed investments and operating costs, and

v. Final procurement documents for the designed infrastructure incorporating at minimum appropriate qualification requirements {technical and financial qualifications, personnel, financial resources, and equipment}, bills of quantities/scope of works, specification, environmental and social requirements, drawings, conditions of contract and draft construction works programme. These procurement documents to be prepared shall be based on applicable World Bank's standard procurements and procurement regulations.

Stage 2: Construction Supervision:

This stage includes activities for quality control/assurance, time control, cost control and safety control.

1.5. ESIA Approach and Methodology

The ESIA was carried out in line with the provisions of the Environmental Management and Coordination 2015 and the Environmental (Impact Assessment and Audit) Regulations 2003 amended in 2019. The ESIA was also guided by the provisions of the World Bank Operational Safeguard Policies; World Bank OP 4.01 on environmental assessment, OP 4.12 on involuntary resettlement and OP 4.11 on physical cultural resources. An Environmental and Social Management Plan comprising of an impact mitigation plan and modalities for monitoring and evaluation was then developed to guide environmental management during all phases of project development. The assessment involved the following:

1.5.1 Literature Review

The Consultant reviewed literature related to the proposed project and the project area. These included project drawings, and other studies on physiography, geology, hydrogeology, water resources, and socioeconomics of the project area. Legislation, policies, and procedures including Constitution of Kenya, World Bank Operation safeguards County Integrated Development Plan, Kenya National Bureau of Statistics (KNBS), KISIP 2 social and environmental management were also reviewed.

1.5.2 Environmental and Social Screening

Screening process was undertaken to decide whether the proposed interventions in Salama informal settlements needed to be subjected to an ESIA study or not. The Environmental Management and Coordination Act (EMCA) 2015 specifies the projects for which should be subjected to an Environmental and Impact Assessment (EIA) before commencement of project activities. In this this schedule water supply and distribution infrastructure, waste disposal including distribution network and construction and rehabilitation of roads including collectors and access roads are classified under medium risk projects requiring preparation of ESIA Comprehensive Report consisting of the likely environmental effects before implementation.

Based on this classification the proposed project was therefore subjected to an Environmental and social impact Assessment. Principal Secretary, State Department of Housing and Urban Development, Ministry of Lands, Public Works, Housing and Urban Development Second Kenya Informal Settlements Improvement Project (KISIP 2), appointed M/s Losai Management Limited in JV with Gath Consulting Engineers Ltd as a firm of expert to undertake the ESIA assessment and prepare an ESIA report in fulfilment of the EMCA 2015 and Environmental (Impact Assessment and Audit) Regulations, 2019.

1.5.3 Environmental and Social Scoping

Scoping process involved the identification of significant environmental and social issues associated with the proposed works. The impacts of the proposed project were assessed through project site visits and the following;

- Evaluation of the location, extent of the water connections and the current land use of the affected area.
- Evaluation of the design and proposed construction activities, materials and methodology
- One on one interviews with key stakeholders and proposed project beneficiaries were applied in the determining location of pipeline available way leaves especially in areas where there are no settlements and general opinions of the people.
- Discussion with the area residents on the potential impacts related to project implementation activities and corresponding mitigation measures.

1.5.4 Baseline Data Collection

Baseline data were collected on the proposed project site and the area residents.

The data collected was on aspects such as topography, local flora and fauna, soils and geology, socioeconomics, existing and past activities including human settlements, local surface and groundwater resources, ambient air quality and noise levels (qualitative), waste management practices, and natural resources and cultural heritage aspects of the project areas.

1.5.5 Identification, Prediction and Determination of Environmental Impacts

A systematic approach was used to rank identified impacts according to their significance determined by consideration of project activity **event magnitude** and **receptor sensitivity**. The expected significance of environmental impacts was assessed considering:

- **Extent**: An area of influence covered by the impact. In this sense, if the action produces a much-localized effect within the space, it is considered that the impact is low (1). If, however, the effect does not support a precise location within the project environment, having a pervasive influence beyond the project footprint, the impact shall be at location level (3) or could be County (5).

- **Timing:** Refers to the moment of occurrence, the time lag between the onset of action and effect on the appearance of the corresponding factor. We consider five categories according to this time period is zero, up to 1 year (short term), or more than two years, which are called respectively medium term (3), long-term (4), and permanent (5).
- **Intensity:** refers to the degree of impact on the factor, in the specific area in which it operates, ranked from low (1) to high (5).
- **Probability:** Refers to the likelihood of the impact occurring during the project implementation, this is also ranked as Probable (1) to highly probable.

Receptor Sensitivity determined by:

- **Presence** – whether biological species present are unique, threatened, protected or not vulnerable and are present during a period of high sensitivity (e.g. breeding, spawning or nesting). For human receptors, whether they are permanently present to uncommon in the area of impact and for physical features whether those present are highly valued or of limited or no value. For physical receptors/features, whether they are national or international value (e.g. state protected monument), local or regional value and is sensitive to disturbance or none of the above; and
- **Resilience** – how vulnerable people and/or species and/or features are to the change or disturbance associated with the environmental interaction with reference to existing baseline conditions and trends (such as trends in ecological abundance/diversity/status, ambient air quality etc.) and their capacity to absorb or adapt to the change. For physical receptors/features, highly vulnerable, undergoes moderate but sustainable change which stabilizes under constant presence of impact source or unaffected or marginally affected.

1.5.6 Stakeholder Consultations

Household survey and one stakeholder consultation was held in Muslim Primary School on September 27, 2023 and November 25,2023 respectively to inform project stakeholders of the proposed project; to explain the likely impacts (positive/negative) of implementing the project; and to obtain views, concerns, comments and suggestions from interested and affected parties regarding the proposed project.

Key informants' interviews, administration of structured questionnaires and public meeting was held (filled questionnaires and Minutes are Annex 2 and Annex 3.). Detailed outcome of consultation including stakeholders interviewed is discussed in Chapter 6 of this report.

Table 1- 1: List of KII Consulted

Name	Designation
Nephat Mwangi	Public Health Officer
National Planning and Economics	Economist

Name	Designation
Ezra Mwenda	County Government Electrical Engineer
Joyce Mwangi	Assistant County Commissioner (ACC)

Table 1- 2: List of Participants

Meeting Date- September 27,2023 **Venue-Muslim Primary School**	
List of participants	**Number**
Male	13
Female	12
Total participants	25

CHAPTER 2: PROJECT DESCRIPTION AND DESIGN

2.1 Introduction

The proposed projects intend to cover three informal settlements in Meru County namely Salama, Mjini and Majengo. The Consultant conducted topographical survey and conditional assessment of the each of the proposed informal settlement in the month of October 2023.

This section presents the project alternatives in, water roads, and lighting projects, which are the proposed projects being considered for intervention in Salama Informal Settlement Meru County.

2.2 Existing Water Supply Condition

Salama settlement is well connected with MEWASS distribution system. The plots are connected to an individual level but further reticulation is done by landlords for their tenants.

The distribution network comprises of PVC pipes ranging from OD 100-OD 50.

Further reticulation is necessary due to the recent tenure regularization.

2.2.1 Water Pipelines

The distribution network comprises of PVC pipes ranging from DN 100-OD 50. The existing system has since dilapidated greatly leading to many occurrences of bust pipes.

2.3 Existing sanitation condition

The settlement has no sewer reticulation. The community is highly dependent on pit latrines but due to their shallow nature and high demand, majority of the pit latrines are full and have hence been decommissioned.

There is a major trunk line that passes on the periphery of the settlement hence there is existing infrastructure within the area.

Trunk line at Salama

A Cross Pipe Culvert With Outlet Partially Obstructed By A Sewer Concrete Pipe

Figure 2- 1: Existing trunk line within Salama

Source: Photographs taken by Consultant during site visit.

2.3.1 Sewer Lines

The settlement is currently not sewered, the residents use of latrines and septic tanks.

2.4 Existing Road Condition

The current road is a gravel earth road with a moderately open road reserve, with infrastructure, particularly electricity poles. This road network provides access to various facilities, including residences, a mosque, Meru Muslim Primary School, Kenya Medical Training College-Meru campus and Meru Central Farmers' Cooperative Union. The existing road reserve varies from 4 to 10 meters, while the desired width is 8.9 to 10 meters. The horizontal alignment features a combination of smooth curves, straight sections, one cross junction and two T-junctions within the settlement area. It's crucial to emphasize that any required realignment for safety and design standards will strictly conform to the available road reserve constraints. Furthermore, the road spans a terrain that transitions from flat to rolling, with gradients reaching up to 12%. There’s a steep staircase access to the settlement from the southern side but not favourable to PWD´s.

The settlement lacks adequate drainage infrastructure with only one cross culvert near the mosque. Its outlet is partly obstructed by a sewer concrete pipe and no well-defined side drains. To improve drainage without disturbing the resident’s access within the settlement, extra culvert crossings will be integrated into the road design accompanied by well-structured side drains.

2.5 Proposed water interventions

2.5.1 Water Pipelines

The area is currently covered with reticulation water pipelines of uPVC. The current infrastructure is dilapidated extensively with many points of repairs being evident. The Consultant recommends the use of HDPE pipes to ensure longevity and reduce maintenance costs. The pipe sizes range from OD 75 to OD 50 totalling to about 0.715km of pipeline. The pipes will be butt fussed and pressure tested to inspect for leaks

2.5.2 Individual Connections

The settlement has since been demarcated during the KISIP 1 project. The plot numbers indicate there are a total of 20 plots within the settlement. A connection of each settlement is recommended with an individual meter for each for easier monitoring of consumption levels.

2.5.3 Water Kiosk

The area landlords have extensively developed their properties. This has led to the disparity in the number of occupants per pot. Due to the fluctuation of the number of people per plot, the individual connections per plot may not fully serve the residents. The proposal to have 1No. Water kiosk within the settlement should address this predicament. 1 water kiosk will be located at Easting 349990 and Northing 5803 to serve the western part of the settlement while the other at Easting 350231 and Northing 5434to serve the eastern part of the settlement. The water kiosk will be located within the compound of the mosque.

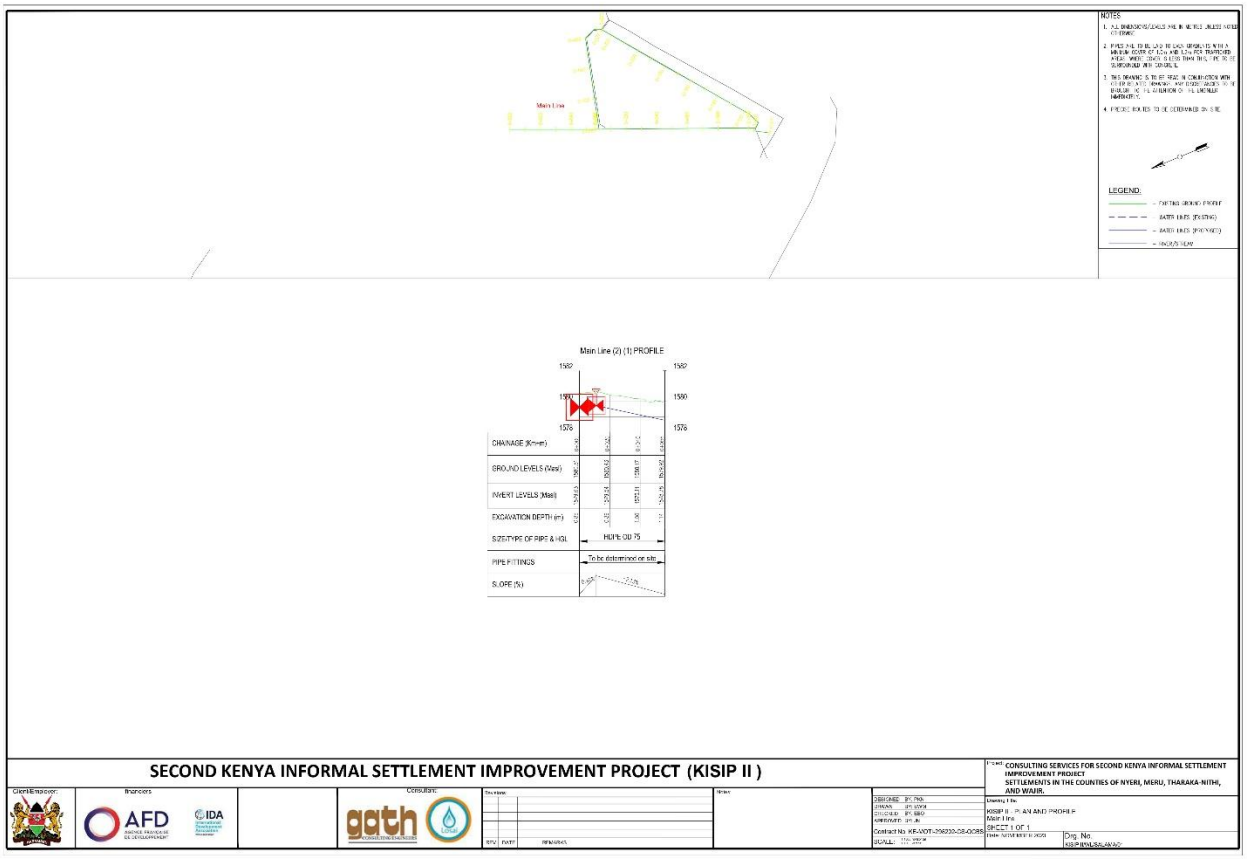


Figure 2- 2: Plan and profile for the main line

Source: Consultant's Book of drawings

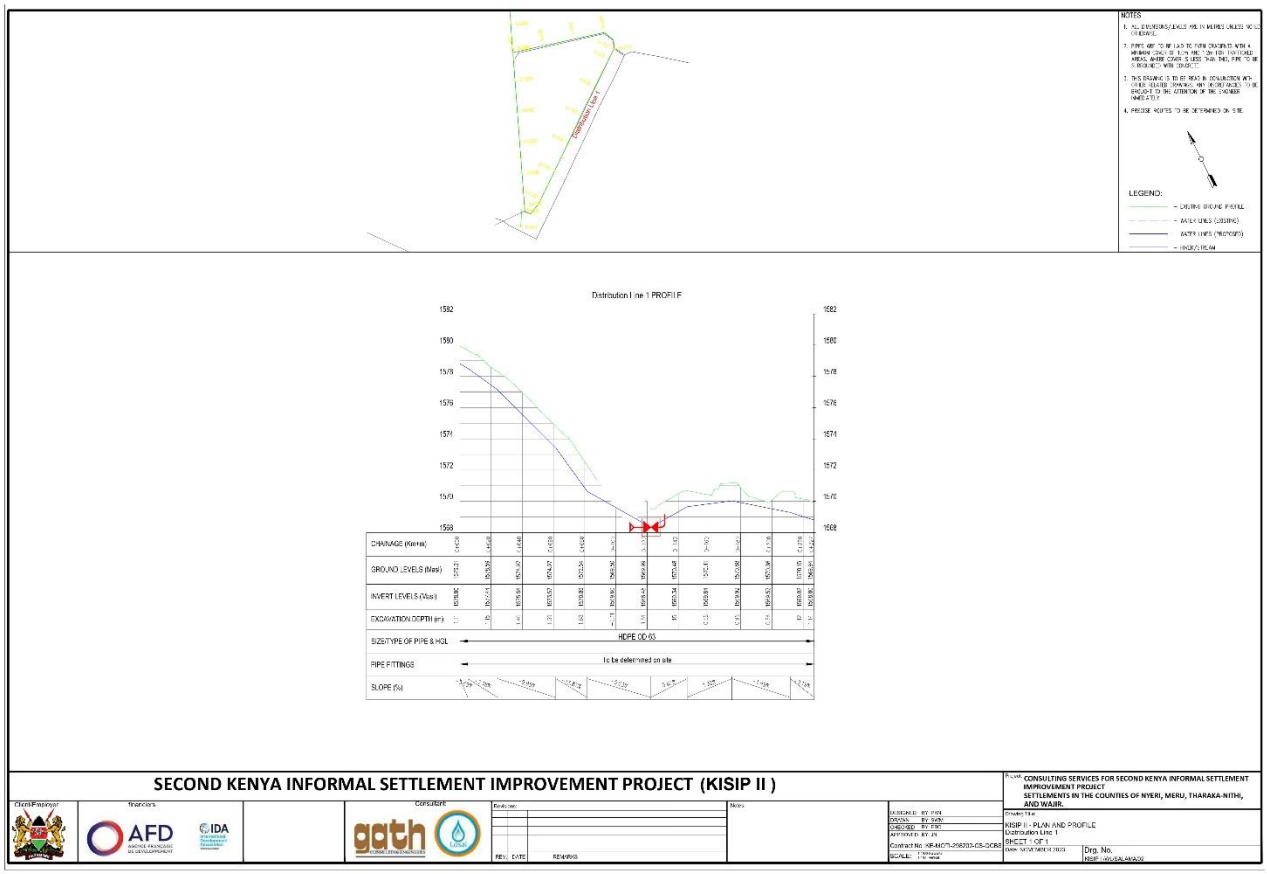


Figure 2- 3: Plan and profile distribution line 1

Source: Consultant's Book of drawings

2.5.4 Fire Hydrant

Informal settlements are prone to extensive damage once fire breaks out due to the choice of construction material and closeness of the structures. To counter this situation, a fire hydrant has been proposed to be located at Easting 350048 and Northing 5548. The location is ideal as it is at the major junction of the settlement. It is also located within a high point within the settlement and would therefore have the necessary pressure in case of a fire outbreak within the settlement.

2.6 Proposed road network

The works will constitute upgrading to Asphalt paved roads with sidewalk long roads that serve residential areas and social amenities within the informal settlements. The major works to be executed under the Contract comprise mainly of but are not limited to the following:

i. Site clearance
ii. Earthworks to formation level
iii. Regular maintenance of passage of traffic during construction including diversion works as necessary to meet regulatory requirements.
iv. Pavement Construction as follows:
    a. Fill with suitable material to formation level
    b. Construction of a 300mm improved Subgrade layer to 100% MDD
    c. Provide and process 250mm thick layer of neat gravel sub-base layer
    d. Provide, spread and Compact 150mm of cement stabilized base layer
    e. Provide, spread and Compact 50mm thick Asphalt Concrete Type 1(0/14mm) as wearing course.
v. Footpath
    a. Provide, spread and Compact 150mm thick neat gravel base to walkways (where applicable)
    b. Provide, spread and Compact 50mm quarry dust
    c. Provide 60mm paving blocks
vi. Construction of drainage and protection Works
vii. Road furniture
viii. Identification and relocation of services
ix. Maintenance of passage of traffic through the work
x. Any other activity not listed above but may be deemed necessary and instructed by the Engineer

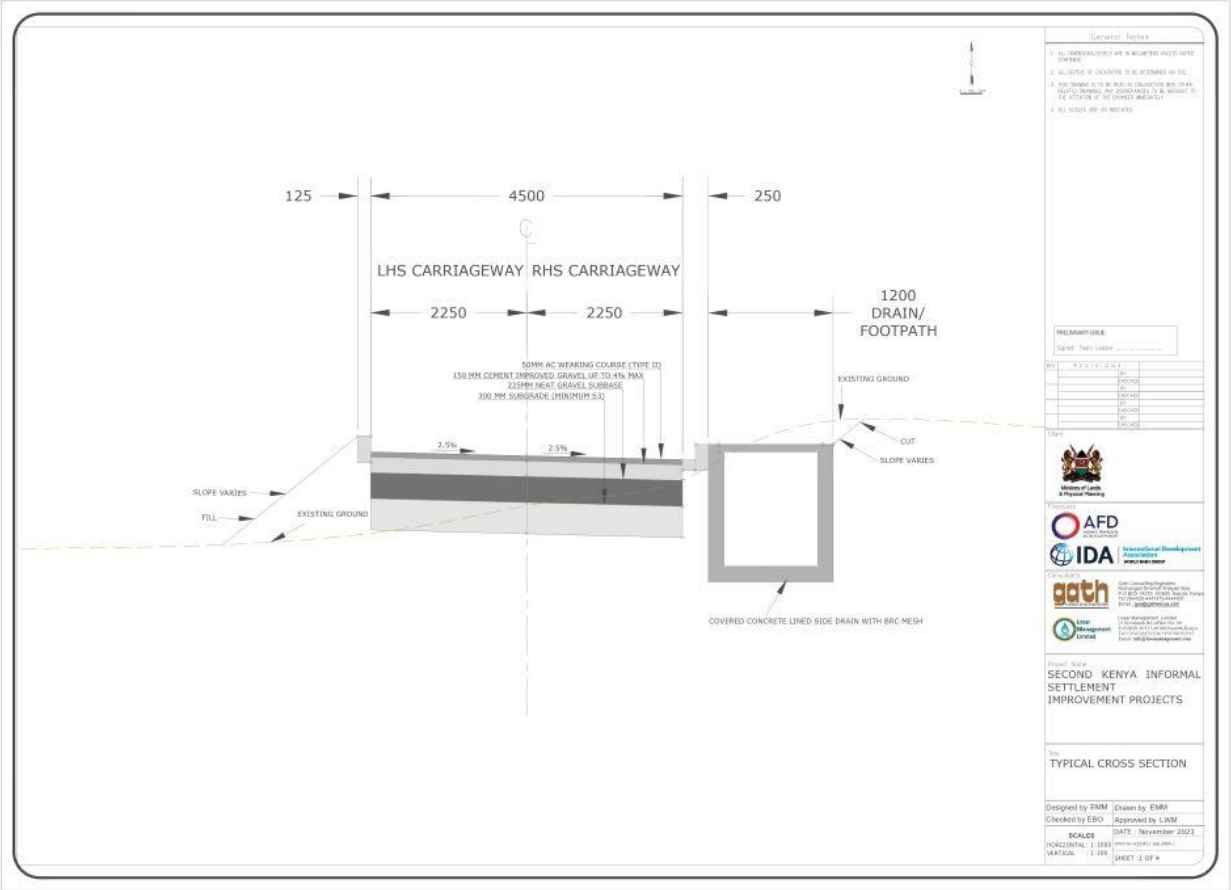


Figure 2- 4: Road cross section

Source: Consultant's Book of drawings

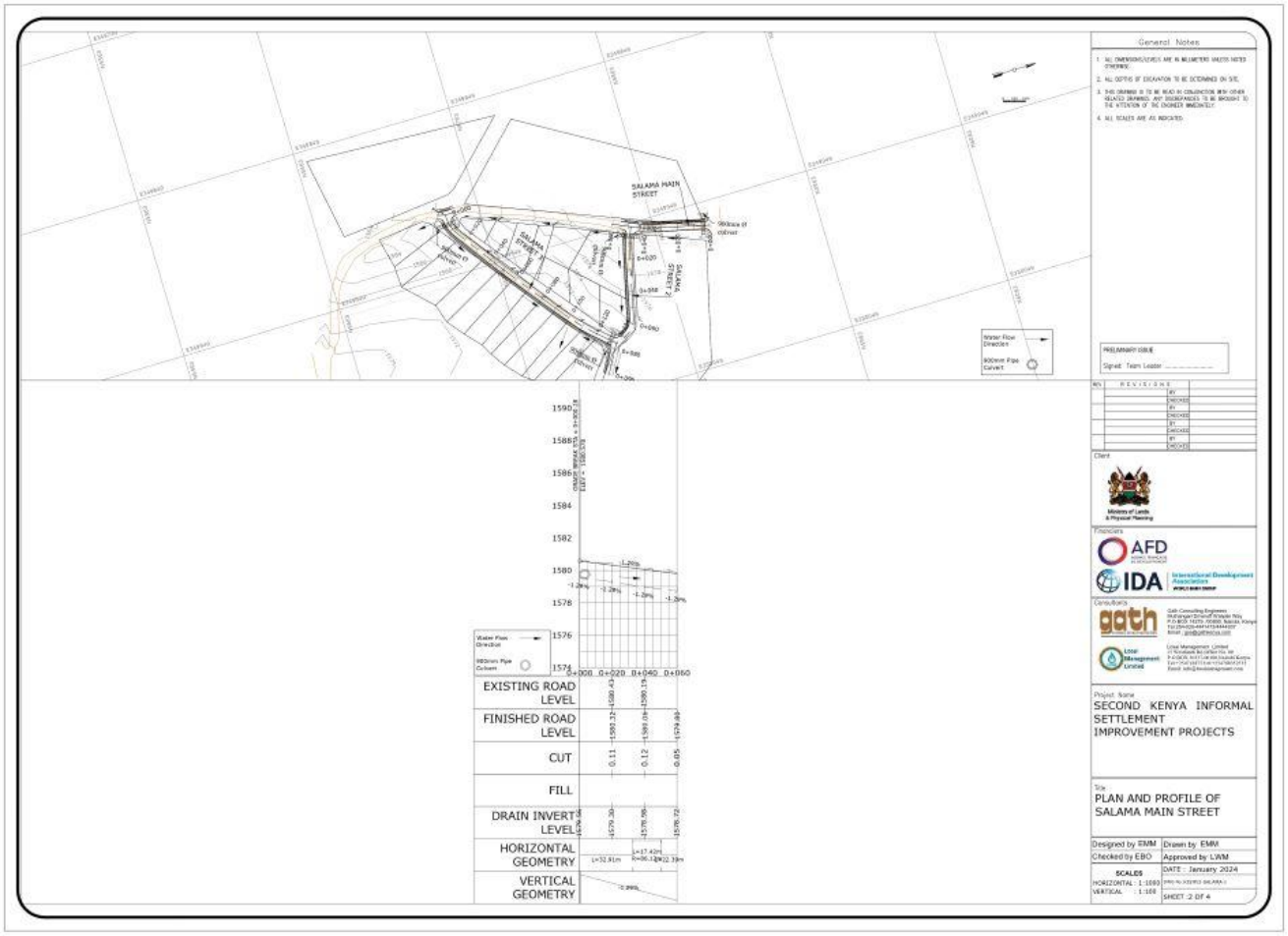


Figure 2- 5: plan and profile Salama main street

Source: Consultant's Book of drawings

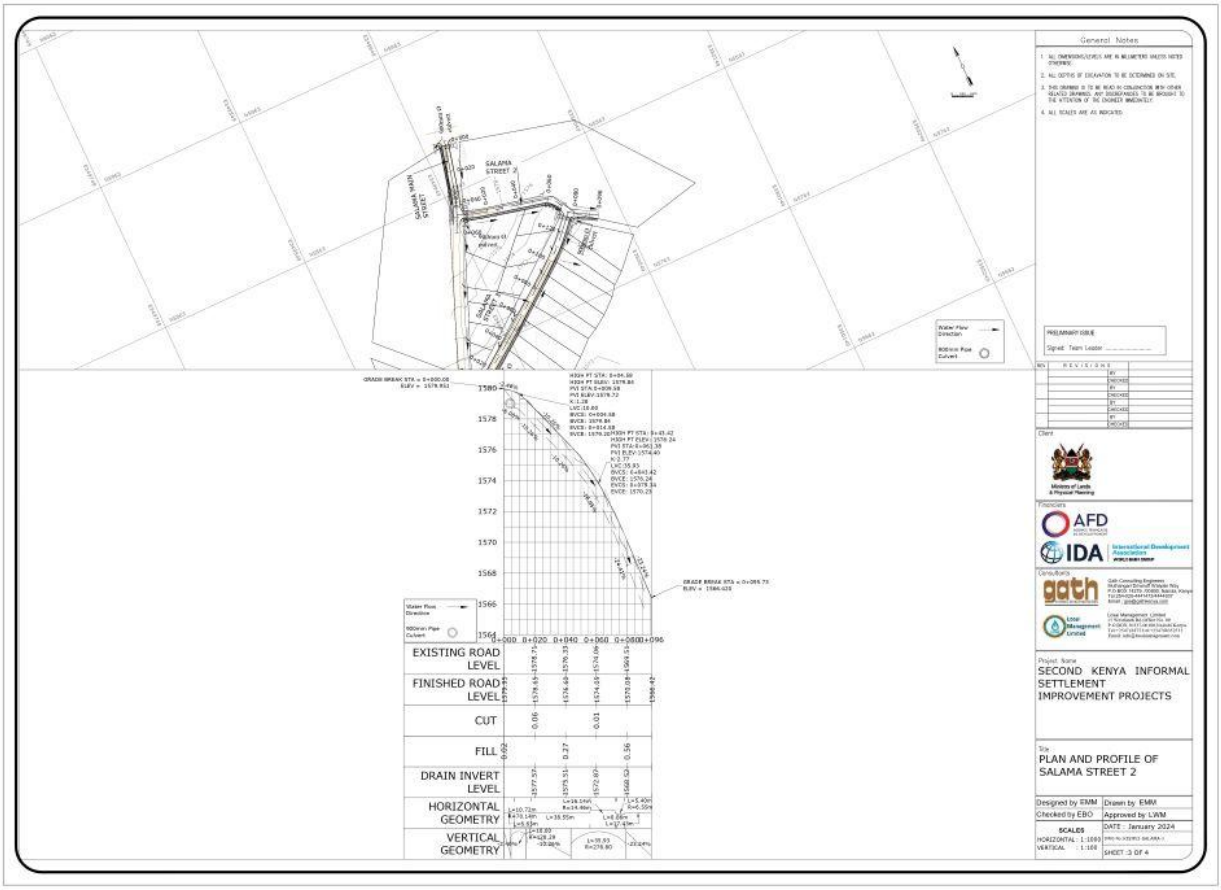


Figure 2- 6: plan and profile Salama street 2

Source: Consultant's Book of drawings

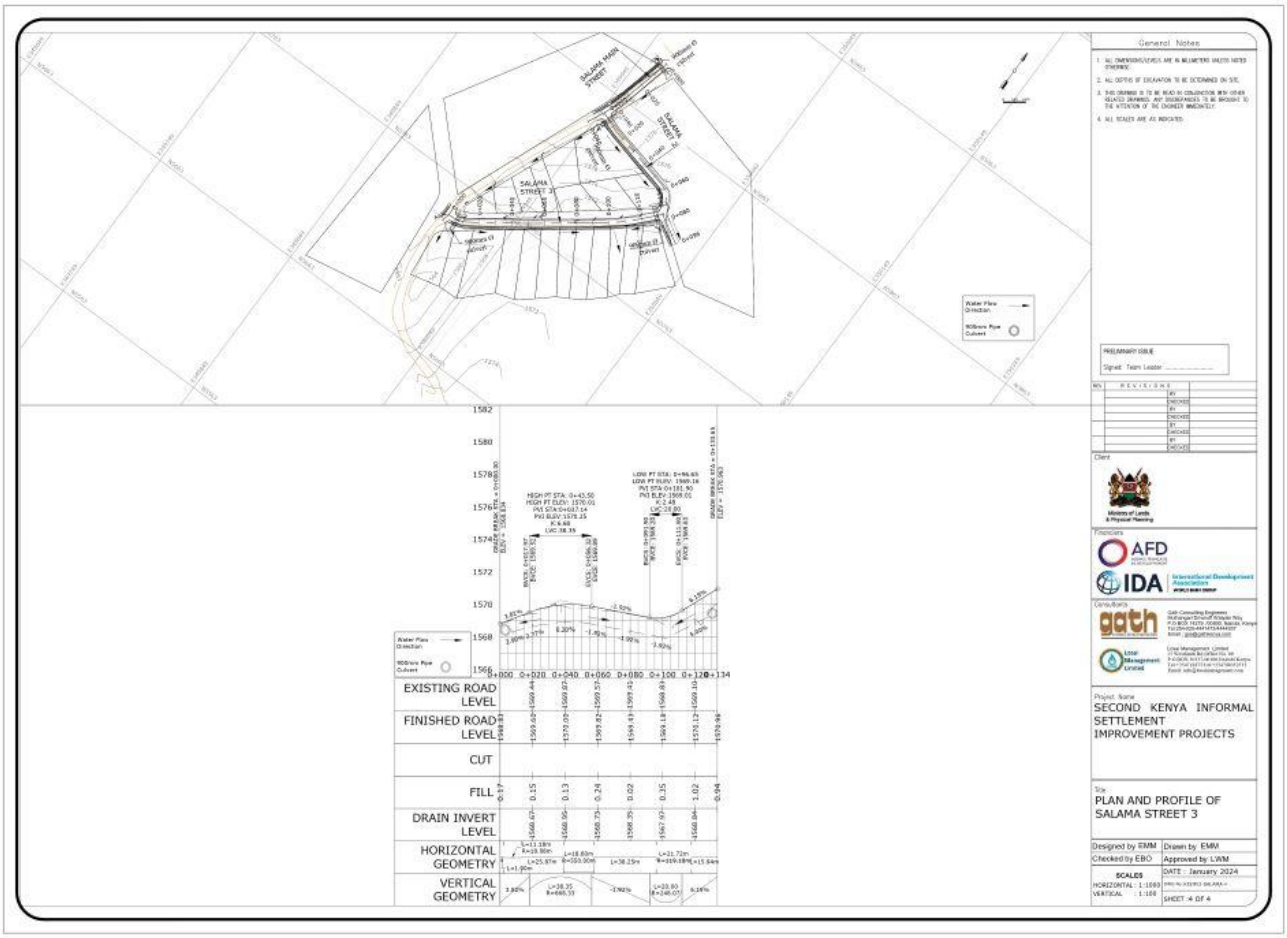


Figure 2- 7: plan and profile Salama street 3

Source: Consultant's Book of drawings

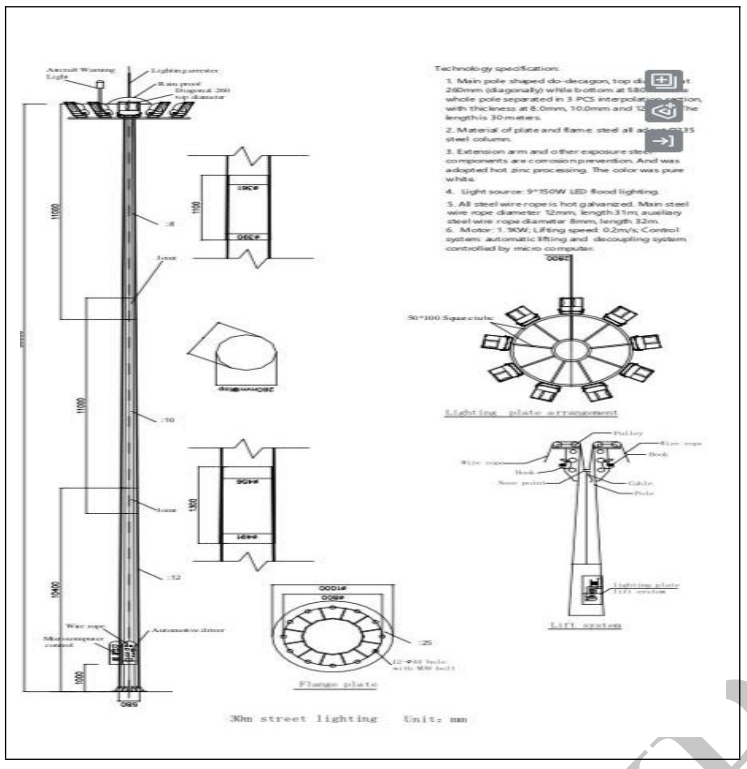


Figure 2- 8: proposed design for high mast

Source: Consultant's Book of drawings

2.7 Mainstreaming Climate Resilience in Meru Infrastructural Projects

As part of our commitment to promoting climate resilience and sustainability in infrastructure development, the design of the Infrastructural Projects has been done in alignment with existing design standards and codes, factoring in Climate Resilience aspects. These parameters are engineered to enhance the low carbon footprint while addressing the unique environmental, economic, and social challenges of the region.

A. Water

The Water component has been designed using the Ministry of Water and Irrigation (MWI) Practice Manual for Water Supply Services in Kenya, 2005 edition. Further reference has been made from the following generally acceptable sources: WHO Report No. 4- Design and Selection Criteria for Communal Water Supply (1972); and IRC for Community Water Supply and Sanitation – Technical Paper Series No. 18. Climate change resilience has been factored as:

(i) **Pipeline Material and Depth:** Given the current varying terrain of the project area which makes it prone to soil erosion especially during flash floods, high-density polyethylene

(HDPE) pipes have been recommended due to their durability and resistance to corrosion;

a. The depth of pipelines is within the recommended limit in the water design manual to safeguard against exposure and damage from surface run-off;
b. A minimum pipe slope of 0.2% has been considered to prevent siltation in pipes during high intensity rainfall;
c. 150mm thick mass concrete surround has been provided to maintain alignment and structural integrity of the pipes- This ensures the pipes are not destroyed or dislodged from erosion caused by flowing water, abrasive sediments, or shifting soil during high intensity rainfall

(ii) **Adequate Storage Capacity:** Given the prolonged drought periods in the County, the design has factored in provision of a storage tank to conserve water for use during dry spells. For the proposed elevated steel tank, adequate anchorage has been provided to mitigate against wind effects;

(iii) **Control Valves:** The pipeline has been designed incorporating strategic location of control valves to reduce wastage of the scarce resource during servicing of the pipelines in case of leaks;

(iv) **Washout Valves:** The pipeline has been designed incorporating strategic location of washout valves for flushing of pipelines in case there is penetration of storm water and soil sediments during high intensity rainfall;

(v) **Water Conservation:** Given the limited water resource, the design has incorporated provision of water connections to ensure customers are conserving water for use during dry spells and ensure continuity of supply to customers on the downstream areas;

a. Proper meter chambers have been provided with lockable concrete covers to prevent damage of meters by storm water during high intensity rainfall;
b. The type of water meters provided has also considered the expected climate change patterns in the project areas to ensure high accuracy at all times

Generally, the design has incorporated climate informed design principles from the Ministry of Water and Irrigation (MWI) Practice Manual.

B. Sanitation Infrastructure Resilience

Design of sanitation interventions will be based on the Sewer Design Manual and best practices with regards to solid waste management. The climate resilience measures include:

a. Waste Management Systems: Modern waste collection systems have been proposed to help mitigate sanitation challenges exacerbated by climate change. These systems have

been designed to withstand extreme weather events and ensure proper disposal of waste to prevent contamination of water sources during floods.

b. **Infrastructure Location:** Sanitation facilities have been properly sited, away from water sources, to minimize pollution risks from flooding and soil erosion, considering the county's topography and flood-prone areas.

C. Structures

The design of structures has been done in alignment with the Euro codes and British standards provided to enhance their resilience to wind, temperature and earthquakes:

- Euro code 1- resilience of structures to wind and temperature;
- Euro code 7- geotechnical investigation and designs;
- Euro code 8- earthquake resilience;
- BS 8110 part 1-1997- structural use of concrete;
- BS 5925 -code of practice for ventilation principles and designing for natural ventilation; and
- BS 5268- structural use of timber.

Given the prolonged heat stress in the areas, proper roofing materials have been considered; adequate natural ventilation has been provided to increase resilience in extreme heat; and engineered joints in concrete have been considered to allow for concrete expansion and contraction due to temperature.

Due to the common flash floods within the area, the design has given an allowance for disposal of the rain water and drainage system to drain off the flood water.

D. Street Lighting

Lighting will be provided in line with the Street Design Manual for Urban Areas in Kenya and the Kenyan Building Code. The spacing between two light poles should be approximately three times the height of the fixture. Seismic, wind and flood components have been incorporated in the design.

a. **Proper Selection and Installation of Poles:** Steel poles will preferably be used and adequate foundation depths provided to mitigate against wind and flood effects;
   - Stainless steel and rust resistant paint will be used to prevent corrosion of the light pole;

b. **Power Source**: The street lighting has been designed to utilize the renewable solar energy with adequate battery capacity having a positive impact on greenhouse gas emissions. An allowance for connection to mains back up has been provided incorporated in the design for use during the rainy days considering 3-7 cloudy/rainy days;

c. **Adaptive Lighting Controls:** Adaptive lighting controls including motion sensors, light control and time control have been incorporated in the design to ensure optimal energy usage. This will enhance energy efficiency by adjusting light levels based on ambient light conditions and pedestrian or vehicular traffic patterns;
d. **Energy Efficient Technologies:** Energy efficient technologies including Light Emitting Diodes (*LED: 240w with Bridgelux/CREE/Philipsled chips 3030, 160-170LM/W, 6000K ~6500K (customized 2700k-6500k)*) have been incorporated in the design to enhance energy consumption and reduce greenhouse gas emissions.

E. High Mast Flood Lights

Lighting will be provided in line with the Street Design Manual for Urban Areas in Kenya and the Kenyan Building Code. Seismic, wind and flood components have been incorporated in the design.

a. **Proper Selection and Installation of High Mast Columns:** Steel poles fabricated from 30mm thick heavy duty corrosion free mild steel will be used and adequate foundation depths provided to mitigate against wind and flood effects;
    - Rust resistant white and red paint will be used on the outer surface to prevent corrosion of the light pole;
b. **Adaptive Lighting Controls:** Adaptive lighting controls including motion sensors, light control and time control have been incorporated in the design to ensure optimal energy usage. This will enhance energy efficiency by adjusting light levels based on ambient light conditions and traffic patterns;
c. **Energy Efficient Technologies:** Energy efficient technologies including Light Emitting Diodes (*9No. 400W LED floodlight fittings)*) have been incorporated in the design to enhance energy consumption and reduce greenhouse gas emissions

F. Roads

The road design has been in alignment to required road design manuals and standards incorporating climate projection. Recommendations from Street Design Manual for Urban Areas in Kenya (SDMUAK) on provision of green infrastructure on the urban roads environment have been provided so that road surfaces will have shade and support interception and infiltration of rainfall. The road designs incorporate several key parameters aimed at reducing the carbon footprint and enhancing environmental sustainability:

(i) **Site Access and Sustainability:** Site clearance will be carried out within the road corridor boundaries, ensuring that trees and vegetation outside this designated area remain undisturbed. Additionally, the project includes plans to plant trees along the corridor. This

initiative aims to offer shade, enhance air quality, and contribute to carbon sequestration, aligning with environmental sustainability goals.

(ii) **Road Width:** The variable width from 4.5m to 5.5m is designed to cater for local traffic demands while minimizing land use and disturbance to the natural environment. This careful balance ensures that the roads are sufficient for community needs without excessive deforestation or land degradation.

(iii) **Drainage Systems:** The design includes both U-Drains and Trapezoidal Drains, with some sections featuring a concrete-covered U-Drain that doubles as a footpath. This innovative use of space ensures effective water management while providing safe pedestrian pathways, reducing the need for separate infrastructure and thus lowering the environmental impact. For the drainage systems in Salama settlements, a standard design featuring a 1-meter-deep drain was implemented across the board, lined with A142 BRC MESH. This design was consistently applied even in areas where minimal stream nodes (<1) suggested small watershed catchments typically suited for shallower drains. The choice to standardize the drain depth allows for a uniform approach to storm water management, potentially offering greater resilience to unexpected heavy rainfall and providing a buffer for future climate variability. To further ensure the durability and resilience of road infrastructure in response to climate variability, 900mm standard pipe culverts are incorporated into the design. These culverts are essential for facilitating the swift and effective passage of storm water, particularly crucial during heavy rainfall events, which are expected to increase in frequency and intensity due to climate change. The culverts prevent road surface erosion and reduce the risk of flooding, both of which can cause significant damage to the road infrastructure and surrounding ecosystems.

(iv) **Concrete Kerbs and Channels (100mm x 200mm):** The adoption of locally sourced concrete for the construction of kerbs and drainage channels significantly minimizes transportation-related emissions and bolsters the local economy. These concrete structures play a pivotal role in water management by channelling runoff effectively, thus preventing erosion alongside the roads. This strategic intervention not only diminishes the frequency of required road maintenance but also contributes to a reduction in the carbon footprint associated with such upkeep activities.

(v) **Pavement Structure:** The engineered multi-layer pavement structure is composed of a 50mm Type II asphalt concrete, a 150mm layer of cement-improved gravel, a 255mm sub base, and a robust 300mm subgrade. This optimizes durability and minimizes the frequency of maintenance. By enhancing the bearing capacity of the layers where needed, and substituting with superior materials as required, the design ensures a longer lifecycle for the road. Project roads in Salama settlements have sections of subgrade class S1 and S2 that

need be improved to achieve a new bearing strength of S3. The improved subgrade for the project roads is guided by RDM III manual. Alternatively, sections of subgrade class S1 and S2 can be excavated and replaced with suitable borrowed gravel of minimum class S3. This thoughtful approach not only conserves resources but also diminishes the environmental impact that often accompanies road repair and maintenance operations. Through these enhancements, the pavement structure stands as a paragon of sustainability, contributing to a reduced carbon footprint.

(vi) **Locally Sourced Materials:** The commitment to using materials sourced from the local area like Subuiga and Kambao reduces carbon emissions related to transport while supporting local industries. This approach also ensures that the materials are suitable for the local environment, improving the longevity and sustainability of the road infrastructure.

(vii) **Community Engagement:** We worked closely with local communities to ensure that the resulting infrastructure met high standards of quality and was tailored to the community's needs and sustainability objectives. Through a series of community engagement workshops, valuable local knowledge was gathered, informing the design process with insights into regional weather patterns and ecological considerations. This collaborative approach promoted a sense of community ownership over the project, vital for its enduring maintenance and viability. The dedication to this inclusive strategy led to the creation of a road system that not only enables safe and efficient transport but also advances sustainable development in the region.

2.8 Project Cost

The total cost for the project is approximately KES. 68,329,641.1 million, as shown in table 2-1 below.

Table 2- 1: Project Cost

No	Component	Description	Cost (Ksh)
1.	Preliminary and general items		
2.	Water supply	• 0.715km OD50-OD75 HDPE Pipeline • 1No. Water Kiosk • 20 household connections	2,688,985.00
3.	Roads	0.479km of Roads	27,896,293.81

4.	High mast flood light	1No. High mast flood Light	3,448,550.00
5.	Day works	Day works Water and Roads	2,893,831.33
6.	Environmental	Environmental and social safeguards	6,490,000.00
BILL TOTAL EXCLUSIVE OF VAT			51,221,620.02
ADD 15% CONTINGENCY			7,683,243.00
BILL TOTAL INCLUSIVE OF CONTINGENCY			58,904,863.02
ADD 16% VAT TAX			9,424,778.08
BILL TOTAL INCLUSIVE OF VAT AND CONTINGENCY			68,329,641.10

Source: Consultant's BoQ

CHAPTER 3: ANALYSIS OF PROJECT ALTERNATIVES

3.1 Overview

Regulation 18(1) of Legal Notice 101 specifies the basic content of an Environmental Impact Assessment Study / Project Report after which, subsection (i) requires an analysis of alternatives. Analysis of Project Alternatives requires comparison of feasible alternatives for the proposed Project in terms of: Project site, Project technology, Potential Environmental and Social Impacts, capital and recurrent costs, suitability under local conditions, and acceptability by neighbouring land users.

This chapter describes and examines the various alternatives considered during the design of the Project. The consideration of alternatives is one of the proactive sides of environmental and social assessment required to enhance Project design. This is achieved through examining options instead of only focusing on the more defensive task of reducing adverse impacts of a single design option. The alternative that was considered for the project was focused on:

3.1 Road project

The design team has ensured as much as possible that the project shall be constructed within available public land and existing public way leaves. This shall eliminate cases of resettlement and reduce project costs that are usually related to compensation.

3.1.1 Analysis of Alternative project site

According to the field surveys and stakeholder consultations it was noted that no alternative route is preferred to the existing proposed route. The reason being that the road is existing in the settlement and what is required is upgrading to make it better. An alternative route/site would mean denying the residents their right to development.

3.1.2 Alternative project design

Salama Main Street

Salama Main Street is a 60-meter road in Salama settlement. The proposed road is a 4.5m wide road with a 1.2m footpath over a concrete lined drainage channel. The road is on slightly sloping terrain with an elevation gain of 2m. The current state of the road is an earth road with no drainage channels.

The road was proposed due to its importance and effective service area. The road offers an access to the settlement and its paving with asphalt will ensure the settlement standards are upgraded.

Salama Street 2

Salama Street 2 is a 96-meter road in Salama settlement. The proposed road is a 4.5m wide road with a 1.2m footpath over a concrete lined drainage channel. The road is on steeply sloping terrain with an elevation gain of 12m. The current state of the road is an earth road with no drainage channels.

The road was proposed due to its importance and effective service area. The road offers an alternative access to the settlement and its paving with asphalt will ensure the settlement standards are upgraded.

Salama Street 3

Salama Street 3 is a 134-meter road in Salama settlement. The proposed road is a 4.5m wide road with a 1.2m footpath over a concrete lined drainage channel. The road is generally flat. The current state of the road is an earth road with no drainage channels.

The road was proposed due to its importance and effective service area. The road offers an alternative access to the settlement and completes the loop around the settlement and its paving with asphalt will ensure the settlement standards are upgraded.

3.1.3 Alternative Technology

The proposed project shall be constructed using modern, locally, and internationally accepted materials to achieve public health, safety, security, and environmental aesthetic requirements. Equipment that saves energy and water shall be given priority without compromising on cost or availability factors. The use of local stones, cement, sand (washed and clean), metal bars, pipes and fittings that meet the Kenya Bureau of Standards requirements is recommended.

3.1.4 No Project Alternative

This alternative means that the status quo remains. This alternative describes a situation where the proposed projects shall not be put up. It is advantageous in that there shall be no negative impacts to biophysical the environment. The ‘’No project action alternative’’ shall however mean that all the potential benefits will be forgone. Thus the “No project Alternative” is not tenable.

3.2 Water project

Alternative site

The proposed project shall involve improvement works in Salama informal settlement leading to an increase in water coverage and household connections. Residents in the informal settlement have suffered from lack of potable drinking water for a long time. Thus, the

intervention is specifically meant to cure this problem. The sites have been considered in consideration of elevation and proximity to the settlement.

Salama Main Line

Salama main water line is a 55m HDPE water line of OD 75. The line is designed to serve Salama from an off-take by the WSP at the entrance of the settlement. The line is designed to serve Salama with plenty of water as per their demand. This will ensure more water is consumed within the settlement and more revenue is earned by the WSP.

Distribution line 1

Distribution line 1 is a 227m HDPE water line of OD 63. The line branches from Main line 1. The lines importance is to serve the larger of the settlement that is situated in the interior of Salama. The line is also designed to serve the Mosque with water. The line will ensure that more people are connected with water therefore increasing the revenue for the WSP and further ensuring the residents have a consistent water supply.

3.2.1 Alternative Design

For water component, Salama sources its water from the MEWASS distribution system. The quantity of water from the system is adequate to meet the existing demand. Hence, the project has focused on extension of the water distribution system.

3.2.2 Alternative Technology.

The proposed project will incorporate use of technologies that will ensure sustainability and environmental conservation. The project will incorporate climate resilience through:

- Use of highquality pipe materials especially within the most vulnerable sections of the network;
- Elevation of the pumping stations; increase pipe depths in areas prone to surface run-off;
- Stabilizing landslide prone areas including provision of gabions;

The proposed project shall be constructed using modern, locally, and internationally accepted materials to achieve public health, safety, security, and environmental aesthetic requirements. Equipment that saves energy and water shall be given priority without compromising on cost or availability factors. The use of HDPE pipes local stones, cement, sand (washed and clean), metal bars, and fittings that meet the Kenya Bureau of Standards requirements is recommended and shall be adopted.

3.2.3 No project Alternative

This implies the maintenance of status quo. As such the water shortage and attendant ills will continue. This is therefore not sustainable.

3.3 Security Lighting

3.3.1 Analysis of Alternative project site

According to the field surveys and stakeholder consultations it was noted that no alternative site is preferred to the existing proposed site. The reason being that the existing road has adequate road reserves and the street lighting will be installed following the sites where the existing street lighting has been installed. An alternative route/site would mean denying the residents their right to development

3.3.2 Alternative Project Design

The design standards shall be based on KS IEC 60598-2-5 1998 floodlights the Street Design Manual for Urban Areas in Kenya and the Kenyan Building Code. The spacing between two light poles should be approximately three times the height of the fixture. Due to high population density, street lighting was provided to improve the visibility and safety; other advantages of road lighting is the general feeling of security and protection and reduction in crimes. Street lighting will be provided at intersection, level crossings and in places where there are obstructions to traffic movements.

3.3.3 Alternative Technology

The designs shall incorporate climate resilience through use of;

- Climate change impacts, seismic and wind components will be incorporated in the design

The proposed project shall be constructed using modern, locally, and internationally accepted materials to achieve public health, safety, security, and environmental aesthetic requirements. Equipment that saves energy and water shall be given priority without compromising on cost or availability factors. The use of solar powered and energy saving street lighting, stainless steel and rust resistant paint that meet the Kenya Bureau of Standards requirements is recommended and will be considered.

The source of power should preferably be an onsite renewable source e.g. solar with a mains back up so that the power is less affected by both mains supply outages and rainy days.

3.3.4 No Project Alternative

This alternative means that the status quo remains. This alternative describes a situation where the proposed projects shall not be put up. It is advantageous in that there shall be no negative

impacts to biophysical the environment. The ‘’No project action alternative’’ shall however mean that all the potential benefits will be forgone. Thus the “No project Alternative” is not tenable.

From the above analysis of alternatives, the ‘Proposed Project Options’ are the most suitable that should be adopted for the three interventions. This is because they have more positive impacts to the environment and the community in the project area with minimal negative impacts that can be minimized or avoided with the implementation of the proposed mitigation measures as details in the Environmental and Social management and Monitoring Plan (ESMMP).

CHAPTER 4: ENVIRONMENTAL AND SOCIAL BASELINE CONDITION

4.1 Introduction

Baseline conditions entail the sum-total of all biophysical and geo-physical condition of the project area. Gathering of baseline data is necessary to meet the following objectives:

- To understand key social, cultural, economic, and political conditions in areas potentially affected by the proposed project;
- To provide data to predict, explain and substantiate possible impacts;
- To understand the expectations and concerns of a range of stakeholders on the proposed development;
- To inform the development of mitigation measures; and
- To benchmark future socio-economic changes/impacts and assess the effectiveness of mitigation measures.

4.2 Environmental Characteristic of the Project Area

4.2.1 Overview of Meru County

Meru County is one of the Forty-Seven (47) counties of Kenya strategically located east of Mt. Kenya, whose peak cuts through the outskirt of its southern boundary. The county has a total area of 6,936.2Km^2 out of which 972.3Km^2 is gazetted forest. The county borders five counties; to the North it borders Isiolo County, to the East Tharaka/Nithi County, to the South West Nyeri County and to the West Laikipia County. It spans the equator lying 0^{o}6' North and 0 ^{o}1' South and between latitudes 37^o West and 38^o East (CIDP 2018-2022).

Meru County has only nine (9) constituencies divided into 45 electoral wards

Figure 4- 1: Location Map of Meru County

Table 4- 1: Meru County Sub county and Wards

#	Constituency	Electoral Wards
1.	Tigania East	Mikinduri,Muthara, Kiguchwa, Thangatha, Karama
2.	Tigania West	Mbeu,Nkomo,Kianjai,Akithi,Athwana
3.	Igembe North	Naathu, Amwathi, Antubetwee/Kiongo, Ntunene and Antuambui.
4.	Igembe South	Maua, Akachiu, Kiegoi/Antubochiu, Kanuni and Athiru Gaiti.
5.	North Imenti	Nyaki East, Nyaki West, Ntima East, Ntima West and Municipality
6.	South Iment	Igoji East, Igoji West, Abogeta East, Abogeta West, Nkuene, Mitunguu.
7.	Buuri	Kisima, Ruiri/Rwarera, Timau, Kiirua/Naari and Kibirichia.
8.	Igemebt Central	Kangeta,Njia,Athriru Rujine,Akirangodu,Igembe East
9.	Meru Central	Mwangathia, Abothuguchi Central, Abothuguchi West and Kiagu.

Source: Meru County CIDP 2018-2022

4.2.2 Project Area

Salama informal settlement is located in Municipality ward, Imenti North sub-county. It measures 7.5 acres and has a population of 1,000 people. The settlement plan contains 25 plots comprising of 18 individually owned plots, 5No. Commercially used plots, 1No Mosque and 1No. School. Figure 4-2 shows the location map of the project area.

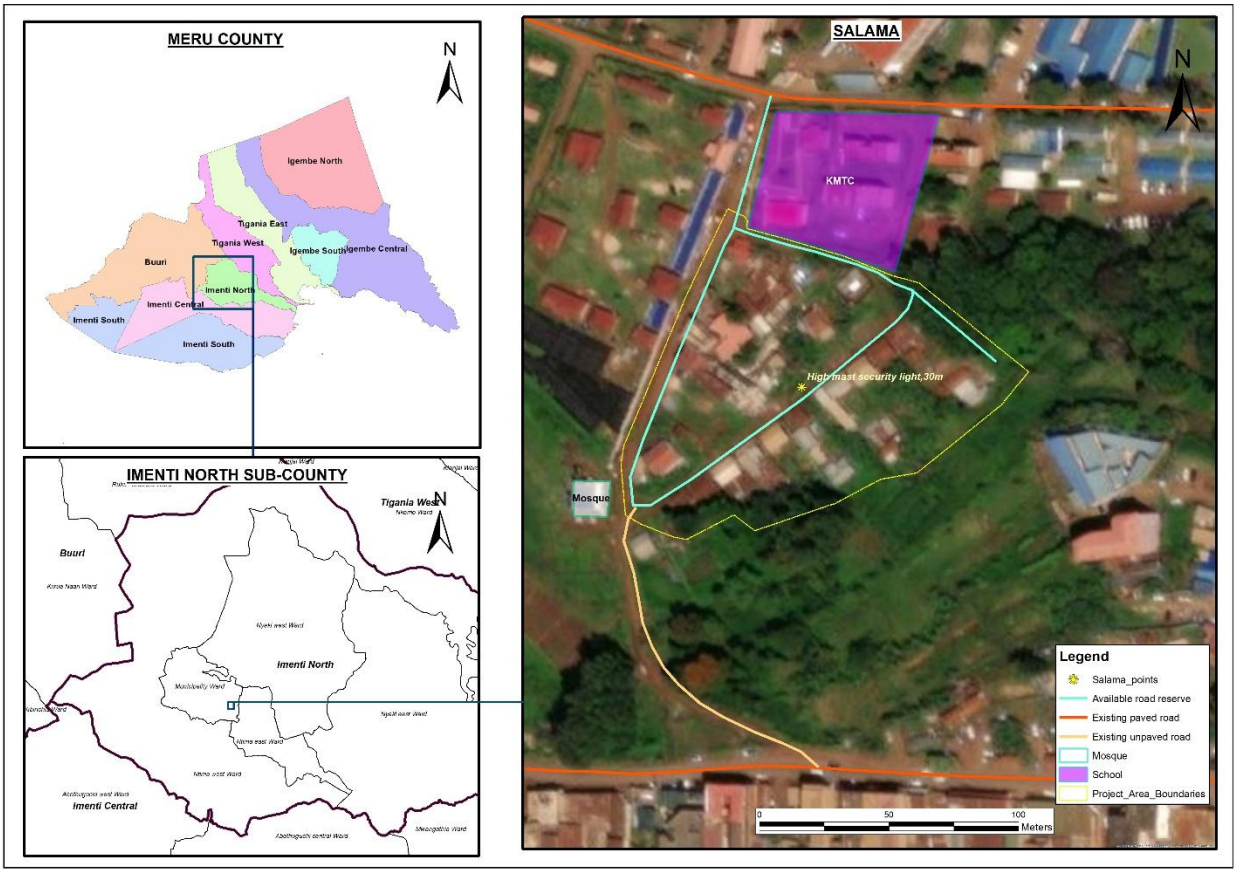


Figure 4- 2: Salama informal settlement

Source: Consultant

4.2.3 Climate

There are two seasons in the project area with the long rains occurring from mid-March to May and short rains from October to December. Temperatures range from a low of 8°C to a high of 32°C during the cold and hot seasons respectively.

4.2.4 Climate Change Profile

Meru County is one of the Forty-Seven (47) counties of Kenya strategically located east of Mt. Kenya, whose peak cuts through the outskirt of its southern boundary. The county has a total area of 6,936.2Km^2 out of which 972.3Km^2 is gazetted forest. The county borders five counties; to the North it borders Isiolo County, to the East Tharaka/Nithi County, to the South West Nyeri County and to the West Laikipia County. It spans the equator lying 0°6' North and 0°1' south and between latitudes 37° west and 38° east.

The county's position on the eastern slopes of Mt Kenya and the equator has highly influenced its natural conditions. Altitude ranges from 300m to 5,199m above sea level. This has influenced the atmospheric conditions leading to a wide variety of microclimates and agro-ecological zones. The drainage pattern in the county is characterized by rivers and streams originating from catchment areas such as Mt. Kenya and Nyambene ranges in the North of the county. The rivers cut through the hilly terrain on the upper zones to the lower zones and drain into the Tana and Ewaso Nyiro Rivers. The rivers form the main source of water for both domestic and agricultural use

Meru County is characterized by high agricultural productivity attributed to favourable climatic conditions and fertile lands. High-input, rain-fed agriculture complemented by irrigation is the main source of livelihood in the County, contributing about 80% to the average household income. Maize, bananas, potatoes and dairy cattle are the key value chain commodities that contribute to both household food security and livelihoods.

Meru County has a range of climates within the county ranging from relatively hot and dry in the north and east portions (<750 mm precipitation and >23°C) to cooler and moist in the central and western parts of the county (>1500 mm precipitation and <15°C). Due to this strong gradient in climate throughout the county, flooding, dry spells, and heat stress, are all hazards that exacerbate the impacts of climate change and variability. Further, the increase in population continues to exert pressure on forest resources through growing demand on forest products, services and land for alternative uses. The country has experienced a major decrease in forest cover over the past years

The absence of County-specific legislations on enforcing national climate change policies, lack of political goodwill, and a lack of mechanisms to coordinate, implement and monitor interventions are the most common institutional hindrances to disaster risk management and climate change adaptation.

Historic analysis of weather in Meru county shows that both dry spells and extreme precipitation are hazards in the county. Dry spells are longer during the second wet season averaging around 65 consecutive days of moisture stress, but ranging between 60 and 80 in any given year. The first wet season only experienced approximately 45 consecutive days of moisture stress, ranging from 30-60 in any given year. Extreme precipitation and flood risks4 are quite high on average in both seasons. The first season consistently experienced high single day precipitation, with more than 70% of years experiencing greater than 20 mm of precipitation in a single day. However the second wet season was more highly variable from year to year, and had multiple years with very high precipitation events greater than 50 mm in a single day. Climate has already been observed to change in the county. Since 1981, the first

wet season has experienced a moderate (1ºC) increase in mean temperature and associated reduction in crop cycle, a significant increase in heat stress days, and no detectable change in precipitation. The second wet season experienced a mild (~0.5ºC) increase in temperature, and no change in precipitation. Looking to the future in the years of 2021-2065, both extreme precipitation and prolonged moisture stress are projected to occur, but the changes are quite different during different seasons. Within 30 years (by the early 2040's) temperature is projected to increase by 0.3 ºC, with the first wet season projected to experience even greater changes. And by this time, precipitation is projected to decrease by 0.4% in the first wet season, and increase of 25% in the second wet season. Consecutive days of moisture stress is projected to substantially increase in the first wet season from approximately 45 days to over 75 days (more than 50% increase). However, moisture stress is projected to decrease in the second wet season, with the number of consecutive moisture stressed days decreasing from more than 60 days to less than 25 days. Extreme precipitation is projected to remain approximately unchanged during the first wet season, but increase by 40-60% in the second wet season, depending on the level of greenhouse gas emissions (greater emissions resulting in greater change). These projections of future climate change under the two climate scenarios Representative Concentration Pathways (5-RCP 2.6 and RCP 8.5) - show some differences, but generally show the same trends in future projections. In general, the greater the greenhouse gas emissions, the greater the increase in moisture stress during the first season and increase in intense precipitation during the second season.

Source: https://cgspace.cgiar.org/rest/bitstreams/119947/retrieve#:~:text=The%20altitude%20ranges%20between%201830,1800%20m%20above%20sea%20level.- Climate Change Risk Profile Meru County

4.2.5 Ecological Conditions

The lower midland zones are only found in lower parts of Buuri and Tigania which borders Isiolo County. The county has varied ecological zones ranging from upper highlands, lower highlands, upper midlands and lower midlands which has greatly influenced the major economic activities. The upper highlands zones cover majority of the county's area ranging from Imenti South, Imenti Central, Imenti North, Part of Tigania East, Part of Tigania West, Igembe Central and Igembe South constituencies. The lower midland zones are only found in lower parts of Buuri, Igembe North and Tigania East and West which borders Laikipia and Isiolo Counties.

4.2.6 Physical and Topographical Features

The drainage pattern in the project area is characterized by rivers and streams originating from catchment areas such as Mt. Kenya and Nyambene ranges in the North.

4.2.7 Soil and Geology Characteristics

The soil structure in the project area comprises mainly of volcanic soils, which are dark reddish brown, well drained, friable and very calcareous and derived from tertiary volcanic rocks. These are suitable for agricultural development. The geology is prevalently basement system rocks consisting of undifferentiated quartzo and is covered by a layer of Kenya Basalt.

4.2.8 Surface and Ground Water Resources

Salama settlement is well connected with MEWASS water. The residents are, however, reliant on community water supply projects whose major source is the Kathita weir intake

The distribution network comprises of PVC pipes ranging from OD 100- OD 50

Further reticulation is necessary due to the recent tenure regularization

4.2.9 Solid and liquid wastes

Mismanagement of waste was observed within the settlement which included open dumping of solid waste as well as burning of waste. Waste and garbage disposal is mostly managed by the county government. Mismanagement of waste was observed within the settlement which included open dumping of solid waste as well as burning of waste.

Figure 4- 3: mismanaged waste within the settlement

4.2.10 Land Use

Land in the project area is utilized in diverse ways that include: agricultural, residential, educational, public purpose, public utilities, transportation, industrial, recreation and conservation and commercial.

4.2.11 Land ownership categories/ classification

The land in the county falls under 3 categories as defined by Kenyan constitution: public land, community land and private land. The project will be implemented on public land

4.2.12 Settlement patterns

Settlement is organized human habitation. The types of settlement patterns found in Meru includes; linear settlements, dispersed settlements, urban settlements, rural settlement.

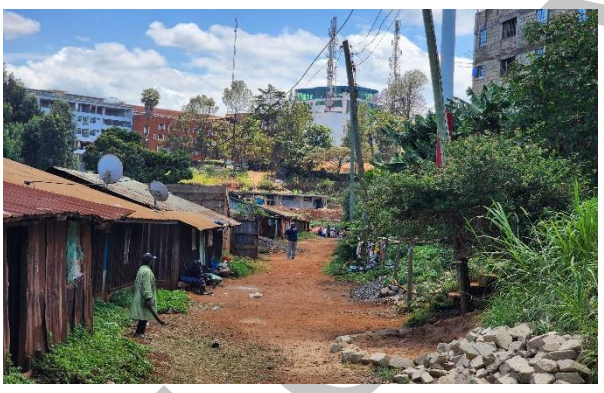
The project area is an informal settlements found in Meru town.

4.2.13 Roads Network

The settlement lacks adequate drainage infrastructure with only one cross culvert near the mosque. Its outlet is partly obstructed by a sewer concrete pipe and no well-defined side drains.

To improve drainage without disturbing the resident's access within the settlement, extra culvert crossings will be integrated into the road design accompanied by well-structured side drains.

Existing 8.9m road reserve



Existing 4 m reserve with visible encroachment from residential buildings, electricity poles and a high mast flood light

Figure 4- 4: Existing road

4.2.14 Energy Access

According to Kenya Population Census 2009, the main source of energy for cooking by household is wood fuel and charcoal which accounts for 86.1 per cent and 6.6 per cent respectively. The number of household connected to electricity is 13.6 per cent; those using paraffin are 4.5 per cent, gas 2.4 per cent, biogas 0.1 per cent and solar 6.6 per cent. Major public and private institutions are connected to national grid but the major challenge for the county is how to connect the over 85 per cent households with electricity.

According to the Energy Regulatory Commission (ERC), Kenya's energy needs derive primarily from three sources: wood fuel, petroleum and electricity (which account for 69%, 22% and 9% of total energy respectively). Given the heavy reliance on biomass and petroleum (non - renewable sources of energy), the Kenyan Government has set its eyes on the development of harnessing viable renewable sources of energy. Meru County has mapped the energy zone, that is, solar, wind and small hydro and is partnering with private investors to generate the energy. Meru County boasts of immense green energy generation potential. The potential can be tapped from the main rivers with good site for hydro-power, a wind speed of approximately 7m/s ideal for wind energy and solar radiation of 6.2KWh/m2 /day. As part of its project "MWANGAZA SOKONI", the county government has installed a total of 270 floodlights targeting

the market centres. To improve access to electricity the county has intends to undertake a project "LAST TRANSFORMER" that seeks to install 90 transformers per year.

The existing high mast flood lights in the settlement were in good condition.

4.2.15 Green space

The community has a green space on a plot owned by the Muslim community. It is the request of the community to improve the space as it is highly prone to erosion.

4.2.16 Noise pollution Levels

The project will ensure it adheres to the noise permissible levels in accordance with the provisions of EMCA (Noise and Excessive Vibrations) Regulations of 2009 as presented in Tables 4-2 and 4-3.

Table 4- 2: Maximum permissible noise levels

Zone		**Sound Level Limits dB(A) (Leq,14 h)**		**Noise Rating Level (NR) (Leq,14 h)**	
		Day	**Night**	**Day**	**Night**
A.	Silent Zone	40	35	30	25
B	Places of worship	40	35	30	25
C.	Residential : Indoor	45	35	35	25
	Outdoor	50	35	40	25
D.	Mixed residential (with some commercial and places of entertainment)	55	35	50	25
E.	Commercial	60	35	55	25

Time Frame

- Day: 6.01 a.m. - 8.00 p.m.
- Night: 8.01 p.m. - 6.00 a.m. (Leq, 10h)

Table 4- 3: maximum permissible noise levels for construction sites

Facility		***Maximum Noise Level Permitted (Leq) in dB(A)***	
		Day	**Night**
(i)	Health facilities, educational institutions, homes for disabled etc.	60	35
(ii)	Residential	60	35

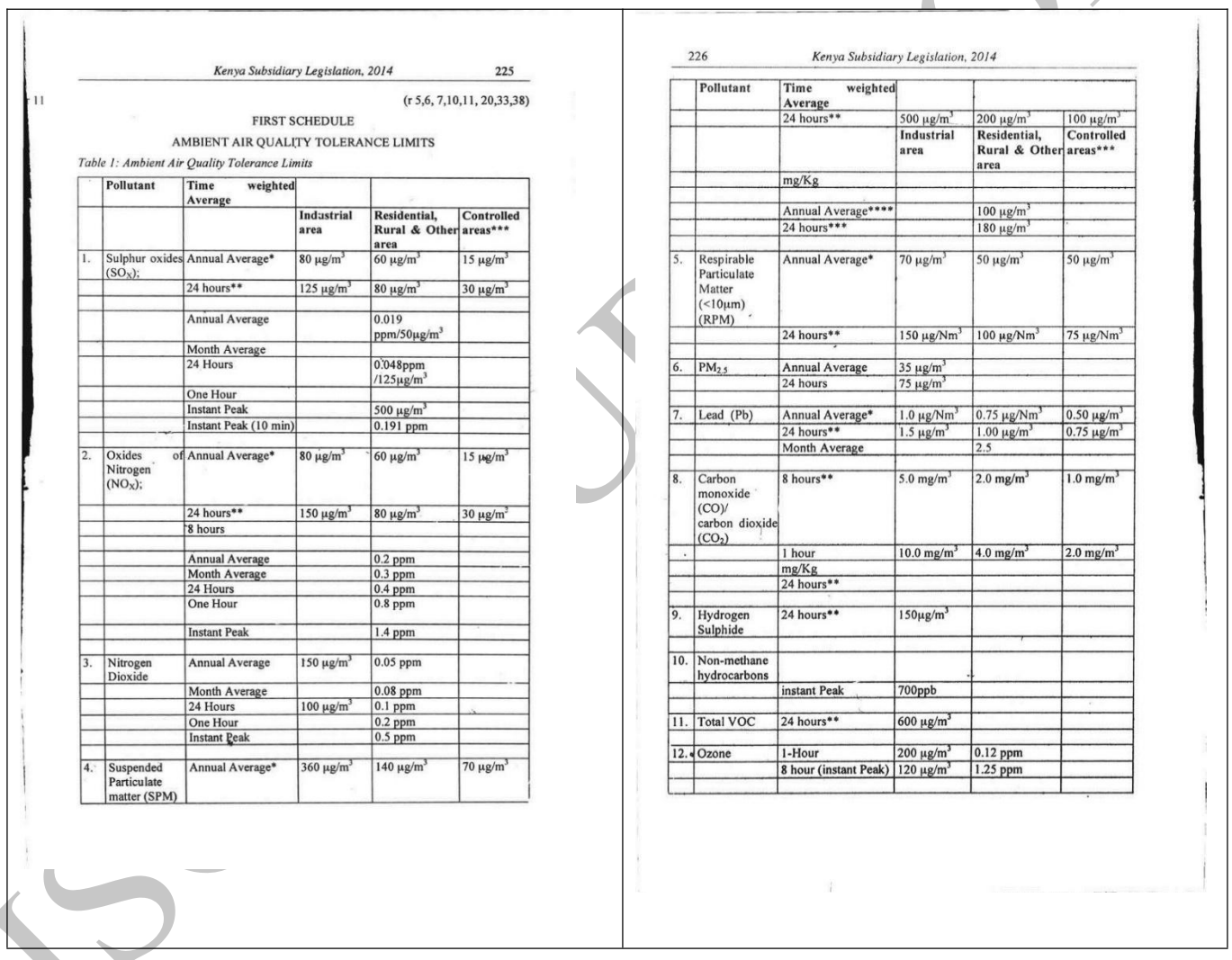
(iii)	Areas other than those prescribed in (i) and (ii)	75	65

Source: EMCA (Noise and Excessive Vibrations) Regulations of 2009

4.2.17 Air quality Tolerance Levels

According to EMCA (Air Quality Regulations) 2014, the air tolerance levels that will be adhered to by the Contractor are presented in Table 4-4

Table 4- 4: Air quality Tolerance Limits



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(r 5,6, 7,10,11, 20,33,38)

FIRST SCHEDULE

AMBIENT AIR QUALITY TOLERANCE LIMITS

Table 1: Ambient Air Quality Tolerance Limits

	Pollutant	Time weighted Average	Industrial area	Residential, Rural & Other area	Controlled areas***
1.	Sulphur oxides (SO_X);	Annual Average*	80 µg/m³	60 µg/m³	15 µg/m³
		24 hours**	125 µg/m³	80 µg/m³	30 µg/m³
		Annual Average		0.019 ppm/50µg/m³	
		Month Average			
		24 Hours		0.048ppm /125µg/m³	
		One Hour			
		Instant Peak		500 µg/m³	
		Instant Peak (10 min)		0.191 ppm	
2.	Oxides of Nitrogen (NO_X);	Annual Average*	80 µg/m³	60 µg/m³	15 µg/m³
		24 hours**	150 µg/m³	80 µg/m³	30 µg/m³
		8 hours			
		Annual Average		0.2 ppm	
		Month Average		0.3 ppm	
		24 Hours		0.4 ppm	
		One Hour		0.8 ppm	
		Instant Peak		1.4 ppm	
3.	Nitrogen Dioxide	Annual Average	150 µg/m³	0.05 ppm	
		Month Average		0.08 ppm	
		24 Hours	100 µg/m³	0.1 ppm	
		One Hour		0.2 ppm	
		Instant Peak		0.5 ppm	
4.	Suspended Particulate matter (SPM)	Annual Average*	360 µg/m³	140 µg/m³	70 µg/m³

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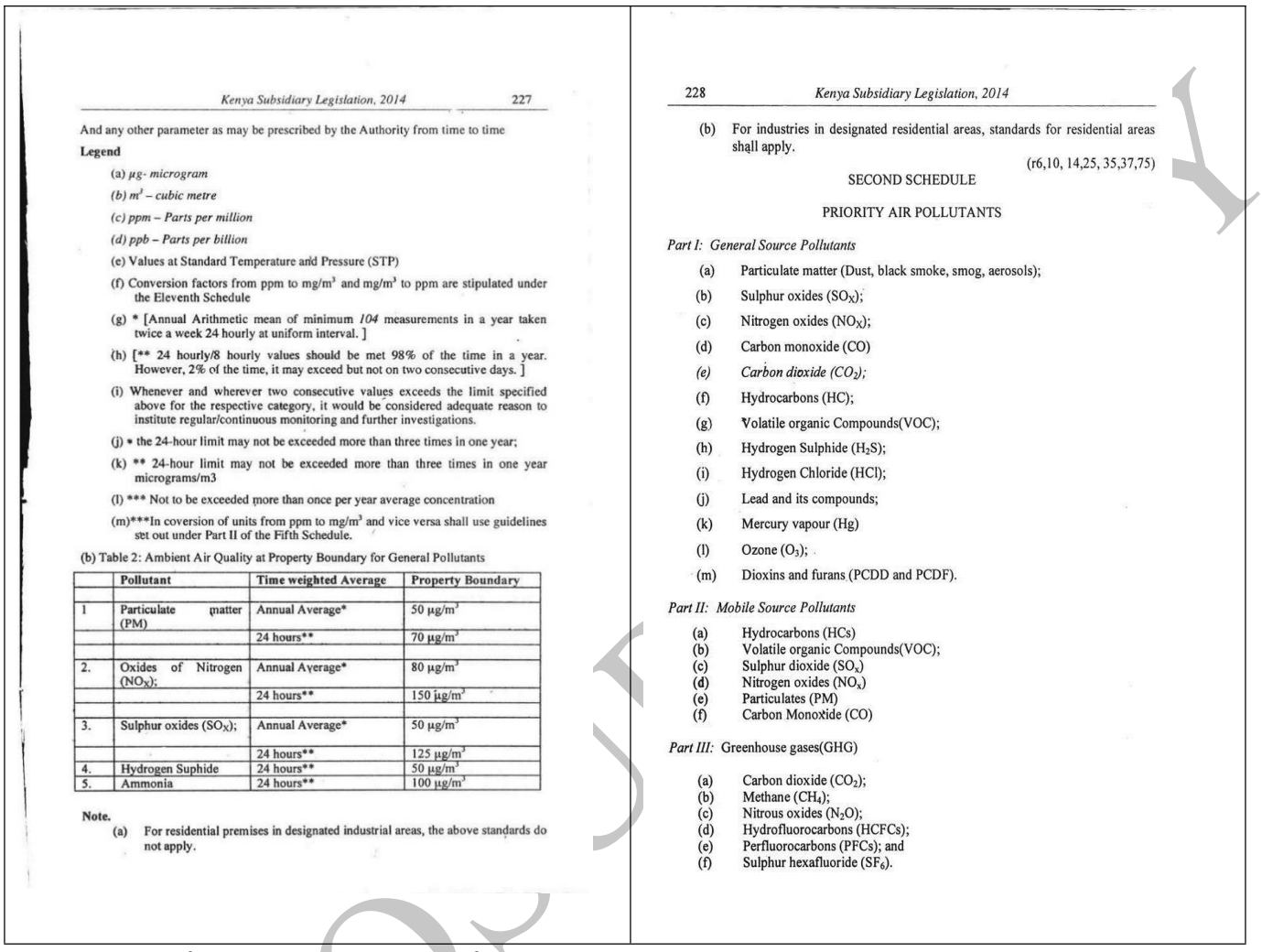
	Pollutant	Time weighted Average			
		24 hours**	500 µg/m³	200 µg/m³	100 µg/m³
			Industrial area	Residential, Rural & Other area	Controlled areas***
		mg/Kg			
		Annual Average****		100 µg/m³	
		24 hours***		180 µg/m³	
5.	Respirable Particulate Matter (<10µm) (RPM)	Annual Average*	70 µg/m³	50 µg/m³	50 µg/m³
		24 hours**	150 µg/Nm³	100 µg/Nm³	75 µg/Nm³
6.	$PM_{2.5}$	Annual Average	35 µg/m³		
		24 hours	75 µg/m³		
7.	Lead (Pb)	Annual Average*	1.0 µg/Nm³	0.75 µg/Nm³	0.50 µg/m³
		24 hours**	1.5 µg/m³	1.00 µg/m³	0.75 µg/m³
		Month Average		2.5	
8.	Carbon monoxide (CO)/ carbon dioxide (CO_2)	8 hours**	5.0 mg/m³	2.0 mg/m³	1.0 mg/m³
		1 hour	10.0 mg/m³	4.0 mg/m³	2.0 mg/m³
		mg/Kg			
		24 hours**			
9.	Hydrogen Sulphide	24 hours**	150µg/m³		
10.	Non-methane hydrocarbons				
		instant Peak	700ppb		
11.	Total VOC	24 hours**	600 µg/m³		
12.	Ozone	1-Hour	200 µg/m³	0.12 ppm	
		8 hour (instant Peak)	120 µg/m³	1.25 ppm	



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And any other parameter as may be prescribed by the Authority from time to time

Legend

(a) *µg- microgram*

(b) *m^3 – cubic metre*

(c) *ppm – Parts per million*

(d) *ppb – Parts per billion*

(e) Values at Standard Temperature and Pressure (STP)

(f) Conversion factors from ppm to mg/m^3 and mg/m^3 to ppm are stipulated under the Eleventh Schedule

(g) * [Annual Arithmetic mean of minimum *104* measurements in a year taken twice a week 24 hourly at uniform interval.]

(h) [** 24 hourly/8 hourly values should be met 98% of the time in a year. However, 2% of the time, it may exceed but not on two consecutive days.]

(i) Whenever and wherever two consecutive values exceeds the limit specified above for the respective category, it would be considered adequate reason to institute regular/continuous monitoring and further investigations.

(j) * the 24-hour limit may not be exceeded more than three times in one year;

(k) ** 24-hour limit may not be exceeded more than three times in one year micrograms/m3

(l) *** Not to be exceeded more than once per year average concentration

(m)***In coversion of units from ppm to mg/m^3 and vice versa shall use guidelines set out under Part II of the Fifth Schedule.

(b) Table 2: Ambient Air Quality at Property Boundary for General Pollutants

	Pollutant	Time weighted Average	Property Boundary
1	Particulate matter (PM)	Annual Average*	50 µg/m^3
		24 hours**	70 µg/m^3
2.	Oxides of Nitrogen (NO_X);	Annual Average*	80 µg/m^3
		24 hours**	150 µg/m^3
3.	Sulphur oxides (SO_X);	Annual Average*	50 µg/m^3
		24 hours**	125 µg/m^3
4.	Hydrogen Suphide	24 hours**	50 µg/m^3
5.	Ammonia	24 hours**	100 µg/m^3

Note.

(a) For residential premises in designated industrial areas, the above standards do not apply.

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(b) For industries in designated residential areas, standards for residential areas shall apply.

(r6,10, 14,25, 35,37,75)

SECOND SCHEDULE

PRIORITY AIR POLLUTANTS

Part I: General Source Pollutants

(a) Particulate matter (Dust, black smoke, smog, aerosols);
(b) Sulphur oxides (SO_X);
(c) Nitrogen oxides (NO_X);
(d) Carbon monoxide (CO)
(e) Carbon dioxide (CO_2);
(f) Hydrocarbons (HC);
(g) Volatile organic Compounds(VOC);
(h) Hydrogen Sulphide (H_2S);
(i) Hydrogen Chloride (HCl);
(j) Lead and its compounds;
(k) Mercury vapour (Hg)
(l) Ozone (O_3);
(m) Dioxins and furans (PCDD and PCDF).

Part II: Mobile Source Pollutants

(a) Hydrocarbons (HCs)
(b) Volatile organic Compounds(VOC);
(c) Sulphur dioxide (SO_x)
(d) Nitrogen oxides (NO_x)
(e) Particulates (PM)
(f) Carbon Monoxide (CO)

Part III: Greenhouse gases(GHG)

(a) Carbon dioxide (CO_2);
(b) Methane (CH_4);
(c) Nitrous oxides (N_2O);
(d) Hydrofluorocarbons (HCFCs);
(e) Perfluorocarbons (PFCs); and
(f) Sulphur hexafluoride (SF_6).

Source: EMCA (Air Quality Regulations) 2014

4.2.18 Water Quality – Standard Effluent Discharge into the Environment

The project will adhere to the standard effluent discharge into the environment stipulated by Environmental Management and Co-ordination (Water Quality) Regulations, 2006 presented in Table 4-5

Table 4- 5: standard effluent discharge into the environment

Parameter	Max Allowable(Limits)
1,1,1-trichloroethane (mg/l)	3
1,1,2-trichloethane (mg/l)	0.06
1,1-dichloroethylene	0.2
1,2-dichloroethane	0.04

Parameter	Max Allowable(Limits)
1,3-dichloropropene (mg/l)	0.02
Alkyl Mercury compounds	Nd
Ammonia, ammonium compounds, NO_3 compounds and NO_2 compounds (Sum total of ammonia-N times 4 plus nitrate-N and Nitrite-N) (mg/l)	100
Arsenic (mg/l)	0.02
Arsenic and its compounds (mg/l)	0.1
Benzene (mg/l)	0.1
Biochemical Oxygen Demand (BOD 5days at 20 °C) (mg/l)	30
Boron (mg/l)	1.0
Boron and its compounds – non marine (mg/l)	10
Boron and its compounds –marine (mg/l)	30
Cadmium (mg/l)	0.01
Cadmium and its compounds (mg/l)	0.1
Carbon tetrachloride	0.02
Chemical Oxygen Demand (COD (mg/l)	50
Chromium VI (mg/l)	0.05
Chloride (mg/l)	250
Chlorine free residue	0.10
Chromium total	2
cis –1,2- dichloro ethylene	0.4
Copper (mg/l)	1.0
Dichloromethane (mg/l)	0.2
Dissolved iron (mg/l)	10
Dissolved Manganese(mg/l)	10
E.coli (Counts / 100 ml)	Nil
Fluoride (mg/l)	1.5
Fluoride and its compounds (marine and non-marine) (mg/l)	8
Lead (mg/l)	0.01
Lead and its compounds (mg/l)	0.1
n-Hexane extracts (animal and vegetable fats) (mg/l)	30
n-Hexane extracts (mineral oil) (mg/l)	5
Oil and grease	Nil
Organo-Phosphorus compounds (parathion, methyl parathion, methyl demeton and Ethyl parantrophenyl phenylphosphorothroate, EPN only) (mg/l)	1.0
Polychlorinated biphenyls, PCBs (mg/l)	0.003

Parameter	Max Allowable(Limits)
pH (Hydrogen ion activity marine)	5.0-9.0
pH (Hydrogen ion activity--non-marine)	6.5-8.5
Phenols (mg/l)	0.001
Selenium (mg/l)	0.01
Selenium and its compounds (mg/l)	0.1
Hexavalent Chromium VI compounds (mg/l)	0.5
Sulphide (mg/l)	0.1
Simazine (mg/l)	0.03
Total Suspended Solids, (mg/l)	30
Tetrachloroethylene (mg/l)	0.1
Thiobencarb (mg/l)	0.1
Temperature (in degrees Celsius) based on ambient temperature	3
Thiram (mg/l)	0.06
Total coliforms (counts /100 ml)	30
Total Cyanogen (mg/l)	Nd
Total Nickel (mg/l)	0.3
Total Dissolved solids (mg/l)	1200
Colour in Hazen Units (H.U)	15
Detergents (mg/l)	Nil
Total mercury (mg/l)	0.005
Trichloroethylene (mg/l)	0.3
Zinc (mg/l)	0.5
Whole effluent toxicity	
Total Phosphorus (mg/l)	2 Guideline value
Total Nitrogen	2 Guideline value

Source: EMCA (Water Quality) Regulations, 2006

4.3 Social Characteristics of the Project Area

4.3.1 Demographic Features of Meru County

4.3.1.1 Population Size, Composition and Distribution

The demographic features of a population are a crucial statistical basis for development planning. Examples of demographic characteristics include age, race, gender, ethnicity, religion, income, education, home ownership, sexual orientation, marital status, family size, health and disability status, and psychiatric diagnosis. The population structure of a given region is thus defined by the different characteristics that a population can be broken up or distributed.

4.3.1.2 County Population Structure by Sub County

Segregation of population according to the age groups is important in determining the numbers of the different groups to determine the necessary policies to address their needs. Table 4-6 gives a summary of the population of the county by sex and sub-county

Table 4- 6: population (by sub-county and sex)

SUBCOUNTY	MALE	FEMALE	INTERSEX	TOTAL
Buuri East	38101	38497	-	76598
Buuri West	40496	40264	2	80762
Igemebe Central	111208	110200	4	221412
Igembe North	83364	85949	4	169317
Igembe South	80192	81446	8	161646
Imenti North	88506	89056	5	177567
Imenti South	103338	103162	6	206506
Meru Central	66920	66894	4	133818
Tigania Central	51814	52916	-	104730
Tigania East	35352	37194	3	72549
Tigania West	67715	72241	5	139961
Meru National	283	102	-	385
Mt.Kenya Forest	409	54	-	463

(Source KNBS 2019)

The county had a total population of 1545714 comprising 767,698 males, 777,975 females and 41 inter-sex as determined by the 2019 population and housing census. The county's annual population growth rate is 0.75%.

4.3.1.3 County Population Structure by Age

The age structure of a population refers to the proportionate numbers of people in different age categories in a given population for a defined time. It is a natural characteristic of a population in a country or a region. The age structure is closely related to the birth rate, death rate and migration of a population. Table 4-7 gives a summary of the population of the county by selected age groups and sex

4.3.1.4 Population Projections by Age Cohort

The County's population growth rate is estimated at 2.1 per cent per annum. The projected population of the county in 2018 is 1,635,264, consisting of 808,596 males and 826,668 females as shown in table 4-7 below. The county population is projected to grow to 1,703,945 in 2020 and 1,775,511 in 2022. The growth in population will be a strain on available resources such as land, water and natural resources but on the other hand provides opportunity for growth

Table 4- 7: Population projections by age cohort

Age Cohort	2009			2018			2020			2022		
	M	F	T	M	F	T	M	F	T	M	F	T
0-4	96,281	94,618	190,899	116,084	114,079	230,163	120,959	118,871	239,830	126,039	123,863	249,903
5-9	92,235	91,013	183,248	111,206	109,732	220,938	115,877	114,341	230,218	120,744	119,143	239,887
10-14	83,925	83,627	167,552	101,186	100,827	202,013	105,436	105,062	210,498	109,864	109,474	219,338
15-19	66,694	68,934	135,628	80,412	83,112	163,524	83,789	86,603	170,392	87,308	90,241	177,549
20-24	58,646	67,282	125,928	70,708	81,120	151,829	73,678	84,528	158,206	76,773	88,078	164,850
25-29	57,824	62,432	120,256	69,717	75,273	144,990	72,645	78,435	151,080	75,696	81,729	157,425
30-34	49,753	47,685	97,438	59,986	57,493	117,478	62,505	59,907	122,412	65,130	62,423	127,554
35-39	38,562	37,611	76,173	46,493	45,347	91,840	48,446	47,251	95,697	50,481	49,236	99,717
40-44	26,851	26,547	53,398	32,374	32,007	64,381	33,734	33,352	67,085	35,150	34,752	69,903
45-49	25,258	25,891	51,149	30,453	31,216	61,669	31,732	32,527	64,260	33,065	33,893	66,958
50-54	19,096	19,901	38,997	23,024	23,995	47,018	23,991	25,002	48,993	24,998	26,052	51,051
55-59	15,455	14,333	29,788	18,634	17,281	35,916	19,417	18,007	37,424	20,232	18,764	38,996
60-64	12,757	13,053	25,810	15,380	15,738	31,118	16,026	16,399	32,425	16,699	17,087	33,787
65-69	7,611	8,234	15,845	9,177	9,927	19,104	9,562	10,344	19,906	9,964	10,779	20,742
70-74	7,305	8,361	15,666	8,807	10,080	18,887	9,177	10,504	19,681	9,562	10,945	20,507
75-79	4,478	4,879	9,357	5,399	5,883	11,282	5,626	6,130	11,756	5,862	6,388	12,250
80+	7,379	10,848	18,227	8,897	13,079	21,976	9,271	13,628	22,899	9,660	14,201	23,861
Age NS	546	396	942	658.545	477.828	1136.373	686.20389	497.89678	1184.1	715.02	518.81	1233.8329
Total	670,656	685,645	1,356,301	808,596	826,668	1,635,264	842,557	861,388	1,703,945	877,945	897,566	1,775,511

(KNBS 2019*)*

4.3.1.5 County Population of the Urban Centres

The share of the urban population has been increasing in the recent past and this is expected to grow exponentially over the next decade.

Table 4- 8: Population by Urban Area

URBAN CENTRE	POPULATION
Meru Town	80191
Nkubu	7675
Laare	5358
Timau	10571
Maua	50826

(Source KNBS 2019)

Meru town is the most populated town with 80191 residents in 2019 and is expected to reach. Nkubu town had a population of 7,675 in 2019.Laare had a population of 5358 in 2019, Timau had a population of 10571 in 2019 and Maua had a population of 50826.. All towns serve as Sub County headquarters, and this has immensely contributed to their fast growth. Meru Municipality is expected to grow fast in the corning years. These towns are expected to attract more migrants in search of employment and business opportunities. This will increase demand for social amenities such as housing, sewerage systems, water services, healthcare centres, car parks and other facilities.

4.3.1.6 Population Projection by Urban Centres

The urban population is projected at 68,687 males and 70,007 females as at 2018 with approximately 60 per cent of the total urban population residing in Meru Town. The rise of urban population from 115,033 in 2009 to the projected figure of 150,587 in 2022 is expected to provide an expanding urban market but will also strain the available urban resources. This calls for prior planning of available resources and expansion of social and economic facilities in the urban areas to accommodate the expanding population. The growth in population within the urban centres will expand central markets for agricultural and industrial products within these centres that call for investment in the agricultural value chain to meet this demand. Creation of income generating opportunities, sensitizing the population against drug and substance abuse will also help check the crime rate which is usually high in urban areas.

Table 4- 9: Population Projection by urban centres

Urban Centres	2009 (Census)			2018 (Projection)			2020 (Projection)			2022 (Projection)		
	M	F	T	M	F	T	M	F	T	M	F	T
Meru Town	33,460	34,428	67,888	40,342	41,509	81,852	42,036	43,252	85,289	43,802	45,069	88,871

Nkubu Town	6,695	6,591	13,286	8,072	7,946	16,018	8,411	8,280	16,691	8,764	8,628	17,392
Maua Town	15,008	15,212	30,220	18,095	18,341	36,435	18,855	19,112	37,966	19,647	19,914	39,560
Muthara Town	1,806	1,833	3,639	2,178	2,210	4,387	2,269	2,303	4,572	2,365	2,400	4,764
Total	**56,969**	**58,064**	**115,033**	68,687	70,007	138,693	71,572	72,947	144,518	74,578	76,011	150,587

Source: KNBS 2019

4.3.1.7 Population of Projections for Special Age Groups

Table 4-10 provides information on selected age groups which include the population under the age of one, under the age of five years, primary school age, secondary school age, youthful population, reproductive age, labour force and the aged population in the county.

Table 4- 10: population projection for special groups

Age Group	2009			2018			2020			2022		
	M	F	T	M	F	T	M	F	T	M	F	T
Under 1	19,502	19,282	38,784	23,514	23,248	46,762	24,501	24,225	48,726	25,530	25,242	50,772
Under 5	90,876	89,267	180,143	109,568	107,628	217,194	114,169	112,148	226,316	118,965	116,858	235,822
Primary School Age (6-13)	140,238	139,773	280,011	169,082	168,521	337,603	176,183	175,599	351,782	183,583	182,974	366,557
Secondary School age (14-17)	56,602	58,290	114,892	68,244	70,280	138,523	71,110	73,231	144,341	74,096	76,307	150,403
Youth Population (15-29)	183,164	198,646	381,810	220,837	239,503	460,340	230,112	249,562	479,675	239,777	260,044	499,821
Reproductive age – female (15-49)	-	336,480	336,480	-	405,687	405,687	-	422,726	422,726	-	440,481	440,481
Labour force (15-64)	375,210	383,767	758,977	452,383	462,700	915,082	471,383	482,133	953,516	491,181	502,383	993,564
Aged Population (65+)	26,538	32,718	59,256	31,996	39,447	71,443	33,340	41,104	74,444	34,740	42,831	77,571

Source: KNBS 2019

Under 1 year: In this age cohort, the projections for the year 2018 indicate that there will be 46,762 children, an increase of 20.5 per cent from 2009 census. This population is projected to be 50,772 children by 2022. This accounts for approximately 3 per cent of the total population. The increase in the population under the age of one is attributed to decline in infant mortality rate due to immunization programs that have been scaled up by the health sectors in the county. There is also increase in the number of mothers delivering in health care facilities due to the introduction of free maternity program. There is need to train more health care professionals so as to reduce the ratio of health care workers to population and improve maternal services.

Under 5 years: The projected number of persons under five years of age in the county stood at 217,194 in 2018, this being a 21 per cent increase from the 2009 population census. This population consists of 107,628 females and 109,568 males and constitutes 14 per cent of total population. It is projected to increase to 226,316 and 235,822 by the year 2018 and 2022 respectively. This increase in population calls for more efforts in providing additional facilities in pre-schools and primary schools, consistent with government policies to provide free universal primary education. As this population is also vulnerable to diseases, response strategies call for measures to upscale immunization programmes. To curb cases of malnutrition and stunting, strategies aimed at improving nutritional status should also be encouraged

Primary School Age Group (6-13 Years): The population of primary school going age was projected to be at 337,603 in 2018. This is projected to increase to 351,782 in 2020 and 366,557 in the year 2022. Currently this group accounts for approximately 21 per cent of the total population. Appropriate measures need to be put in place to provide necessary facilities such as teaching and learning materials. Physical facilities and teachers to cater for the needs of this age group need to be put in place to address the current challenge and the projected growth in this age group.

Secondary School Age Group (14-17 Years): The population of the secondary school age children stood at 138,523 in 2012, an increase of 20.5 per cent from 114,892 in 2009 census. This population is expected to increase further to 144,341 and 150,403 in 2020 and 2022 respectively. This comprises approximately 8.5 per cent of the total population. The current free primary school education coupled with the subsidized secondary education policies by the government are expected to yield a high transition rate. There is therefore an increasing pressure to expand the secondary school facilities while improving the existing ones in order to achieve high quality education.

Youth Population (15-29 Years): This population is projected at 460,340 in 2018, an increase of 21 per cent from 2009 census figure of 381,810. It is projected to rise to 479,675 and 499,821

by 2020 and 2022 respectively. This population constitutes mainly secondary school going age and those in tertiary institutions such as universities and other middle level colleges. It is a population that policies on education and employment need to target if efforts to address unemployment and associated insecurity are to be effective. Policies on population control could also be more effective if this group was well targeted since it constitutes the bulky of the reproductive age population.

Reproductive Age Group (15-49 Years): Women aged between 15 and 49 years represent the reproductive age. In 2018, this population is projected at 405,687, a 20.5 per cent increase from 336,480 according to 2009 population census. The age group is projected to be 422,726 and 440,481 in 2020 and 2022 respectively. The current projection accounts for 24.8 per cent of the total county population. This calls for increase in family planning, nutrition and health access programmes for the women and projects that support women to be self-reliant. Programmes that enhance women health and health education are essential to reduce both maternal and child mortalities. Policies that encourage women to deliver in health care facilities as well as attending pre-natal and post-natal clinics could go a long way in achieving this objective.

Labour Force Age Group (15-64 Years): The 2018 labour force is projected to be 915,082 persons. It's projected that this population will rise to 953,516 in 2020 and 993,564 by 2022. This calls for improvement in agriculture and investment and other sectors to provide employment opportunities for the increasing labour force especially the youthful population who accounts for 68 per cent of the total population. To increase productivity of this group, adequate employment opportunities will need to be created. The key sectors to focus in employment creation include agriculture, trade & investment, ICT, finance and tourism

Aged population (65+): The aged population (over 65 years) was projected to be 71,443 in 2018, an increase of 20.5 per cent from the 2009 census figure of 59,256. It's further projected to be 74,444 by 2020 and 77,571 by 2022. This population currently accounts for 4 per cent of the total county population. This calls for increment in allocation of funds to programs that target the aged such as the voucher system to minimize dependency. Such programs should be designed to incorporate healthcare and nutritional support.

4.3.1.8 Demographic Dividend Potential

Table 4-11 shows the demographic dividend potential of Meru County. Demographic dividend refers to the accelerated economic development that a country can attain by slowing down the pace of population growth while at the same time making strategic investments in the health, education, economic, and governance sectors. A bigger proportion of working people in the total population coupled with decreasing dependent sections of the population, is a

prerequisite for opening of this window of opportunity. Kenya will attain this window of opportunity by 2038. Evidence however shows that Counties in Kenya are at different stages of demographic transition. The demographic window of opportunity for Meru County is estimated to open by the year 2023 if the current fertility and mortality levels persist. To take advantage of this window, the County is making specific and strategic investments in four focus areas of the demographic dividend, namely; health and wellbeing, education and skills development, employment and entrepreneurship and rights, governance and youth empowerment as guided by the County Adolescent and Youth Survey reports of 2015 and the Kenya's Demographic Dividend Roadmap

Table 4- 11: Demographic Dividend Potential

Category	2009	2014	2017	2022	2030
Population Size	1,356,301	1504184	1,601,629	1,775,511	2,073,797.00
Population below 15 (%)	39.9%	44.2%	46.8%	51.7%	60.4%
Population 15-64 (%)	55.6%	61.4%	65.3%	72.2%	84.3%
Population above 65 (%)	4.4%	4.9%	5.2%	5.7%	6.7%
Dependency ratio	78.7	73.4	67.9	62.4	57
Fertility rate	5	4	3.1	3	2

(Source: KNBS, 2009 & NCPD, 2017)

4.3.2 Archaeological, Historical and Cultural Sites

Meru County is mainly a Christian stronghold. Although there are Catholics, Presbyterian and Anglican faithful's, the Methodist church commands the largest following in this region, with Muslims and Hindus most of whom live around Meru town including the project area comprising the smallest religious group. There are no archaeological, historical, and cultural sites in the project area.

4.3.3 Education

There are education facilities within the region include; Meru Muslim Primary and Meru Muslim Secondary School.

4.3.4 Health Facilities

The settlement relies on the Meru Teaching and Referral Level 5 Hospital.

4.3.5 Religious Institutions

The settlement has 1No mosque

4.3.6 Economic Activities

Meru Town is a bustling urban centre with a diverse range of economic activities. Its economy is driven by both agricultural and commercial activities. Farmers grow a variety of crops, including maize, beans, potatoes and horticultural products. The project area has a vibrant retail sector with numerous shops, markets, supermarkets, and informal traders selling a wide range of goods, including food, clothing, electronics, and household items.

CHAPTER 5: POLICY, LEGAL AND INSTITUTIONAL FRAMEWORK

5.1 Introduction

Development of infrastructure projects is dealt with under several laws, By-laws, regulations and Acts of parliament, as well as policy documents and it is not possible to bring all these statutes under one heading. This chapter therefore outlines the policy, legal, regulatory and institutional framework for Environmental Management in Kenya which calls for compliance by all development Projects.

5.2 Environmental Policy Framework

5.2.1 The National Environment Action Plan (NEAP)

The National Environmental Action Plan (NEAP) is one of the anchor policies that support environmental protection and relevant to this project. The NEAP was a deliberate policy effort to integrate environmental considerations into the Country's economic and social development. The integration process was to be achieved through a Multi-sectoral approach to develop a comprehensive framework to ensure that environmental Management and conservation of natural resources are an integral part of societal decision-making.

Relevance to the proposed project.

The NEAP has indicated how resources within particular sections of the country should be managed in order to ensure their sustainable utilization. The project should be implemented and operated based on these guidelines.

5.2.2 National Land Policy

Chapter 2 of the policy is linked to constitutional reforms; regulation of property rights is vested in the government by the Constitution with powers to regulate how private land is used in order to protect the public interest. The Government exercises these powers through compulsory acquisition and development control. Compulsory acquisition is the power of the State to take over land owned privately for a public purpose. However, the Government must make prompt payment of compensation.

Chapter 4 of the land policy under Environmental Management Principles, the policy provides actions for addressing the environmental problems such as the degradation of natural resources, soil erosion, and pollution. For the management of the urban environment it provides guidelines to prohibit the discharge of untreated waste into water sources by industries and local authorities; it also recommends for appropriate waste management systems and procedures, including waste and waste water treatment, reuse and recycling.

The policy goes further to advocate for environmental assessment and audit as a land management tool to ensure environmental impact assessments and audits are carried out on all land developments that may degrade the environment and take appropriate actions to correct the situation. Public participation has been indicated as key in the monitoring and protection of the environment. Chapter 4 further advocates for the Implementation of the polluter pays principle which ensures that polluters meet the cost of cleaning up the pollution they cause, and encourage industries to use cleaner production technologies.

Relevance

The project proponent shall implement the ESMP to ensure that the environment within project area and adjacent areas is not polluted by the subsequent activities during construction and operational phases.

5.2.3 Kenya Vision 2030

The Kenya Vision 2030 aspires for the country firmly interconnected through a network of roads, railways, ports, airports, water and sanitation facilities and telecommunications. According to Vision 2030, Kenya is a water scarce country. The economic and social developments anticipated by Vision 2030 shall require more high quality water supplies than at present. The country, therefore, aims to conserve water sources and start new ways of harvesting and using rain and underground water. The 2030 Vision aims at ensuring that water and sanitation is improved, available and accessible to all.

Relevance

The proposed project is in line with the vision 2030 as it shall lead to water availability, improved security and improved road network in Salama informal settlement.

5.2.4 The Kenya Environmental Sanitation and Hygiene Policy 2016-2030

The Kenya Environmental Sanitation and Hygiene Policy 2016-2030 (KESHP) envisions a clean, healthy, and economically prosperous Kenya free from sanitation and hygiene related diseases and seeks to ensure universal access to improved sanitation, clean and healthy environment by 2030.

Relevance

The Contractor shall need to abide by this provision.

5.2.5 Sessional Paper No. 3 of 2016 on National Housing Policy

The Sessional Paper No. 3 of 2016 on National Housing Policy is expected to ensure progressive realization of the right to accessible and adequate housing and reasonable standards of

sanitation for every person as per Article 43 of the Constitution. It also intends to arrest the deteriorating housing conditions countrywide and bridge the shortfall in housing stock arising from demand that far surpasses supply particularly for low-income housing in urban areas. This scenario is because of high population growth rate, rapid urbanization, widespread poverty, escalating costs of providing housing and cumbersome approval processes.

The shortage in affordable housing is manifested through overcrowding and proliferation of slums and informal settlements. In the rural areas, the problem manifests itself in poor quality of the housing fabric and lack of basic services such as clean drinking water. The Policy therefore aims at: -

- Enabling the low-income households to access housing, basic services and infrastructure necessary for a healthy living environment especially in urban and peri-urban areas.
- Encouraging integrated, participatory approaches to slum upgrading and improvement, including income generating activities that effectively combat poverty.
- Creating a National Social Housing Development Fund to be financed through budgetary allocations and financial support from development partners and other sources for rental social housing and related infrastructure, and other low-cost housing programmes.
- Establishing a framework that enables the National Social Housing Development Fund to support research and slum upgrading.
- Promoting and funding of collaborative research on the development of low-cost building materials and construction technologies.
- Contributing to the harmonization of existing laws governing urban development factors that interact with housing delivery especially housing infrastructure to facilitate more cost-effective housing development; and
- Facilitating increased investment by the private sector in the production of housing for low and middle-income urban dwellers.

5.2.6 Kenya Affordable Housing Programme Development Framework Guidelines

The purpose of these Development Framework Guidelines (DFGs) is to provide qualitative guidance on the key components of the Affordable Housing Programme. These guidelines provide instruction on how the vision and policies of the GoK, through the State Department of Housing, Urban Development (SDHUD), will be implemented and how progress will be monitored and reviewed. The aim of the guidelines is to set out the following:

- The rationale, priority needs, and trade-offs to achieve consistency between the assessment, policy formulation, and delivery of affordable housing.

- ❖ The affordable housing delivery mechanisms and the means to ensure their financial viability, including the different sources of subsidy.
- ❖ Consistent information for key stakeholders on the process of the development and delivery of affordable housing.

5.2.7 The National Policy for Disaster Management.

Regulating urban development to only those areas which are suitable, avoiding ecologically fragile areas; Encouraging sustainable use of resources and ecosystems; Undertaking EIA for all private and public projects increase public awareness on environment.

The proponent has integrated climate change impacts such as extreme flooding into the design of the project. Adequate drainage will be constructed along the proposed access road. Promoting the mainstreaming of disaster management and climate change into development planning and management for sustainability. Providing for well-structured participation of society in disaster management by integrating traditional coping strategies into the disaster management systems and supporting climate change disaster risk reduction initiatives among others.

5.2.8 The National HIV Policy

Ensuring that new development projects encourage preventive and responsible behaviour both for the workers involved in such projects and the local people within which projects are taking place as a goal towards curtailing the spread of the disease.

The proponent is advised to put in place adequate measures to ensure that implementation of the proposed projects does not heighten the spreads of HIV and AIDS

5.2.9 The National Gender and Development Policy, 2011.

Considering the needs and aspirations of all Kenyan men, women, boys, and girls across economic, social, and cultural lines and ensuring the empowerment of women.

Implementation of the proposed project will create employment and business opportunities. Where such opportunities are directly linked to the proponent and the contractor (especially during construction and operation) the proponent is advised to ensure that there is equal opportunity across gender. They are further advised (applying the principles of sustainable development) not to discriminate against people with disabilities.

5.2.10 National Sustainable Waste Management Policy

The National Sustainable Waste Management Policy outlines the benefits of managing waste as a resource in Kenya, including economic, social, and environmental advantages. The policy

recognizes that sustainable waste management is critical to delivering on Kenya's constitutional right to a clean and healthy environment, achieving sustainable development goals, and realizing the nation's leadership in the blue economy. The policy aims to establish an enabling regulatory environment that prioritizes waste minimization and contributes to a circular economy. It also supports county governments' mandate to provide sustainable waste management services and provides the framework for coordinated action at the national level. The policy proposes a waste hierarchy that includes reducing waste generation, reusing materials, effective and affordable waste collection, and proper treatment and disposal of residual waste in well-engineered and regulated landfills. The policy also advocates for the creation of green jobs and the formalization of the waste picker sector to improve livelihoods.

5.2.11 National Environment Policy, 2013

Kenya has a National Environment Policy prepared and approved in 2013 by the Ministry of Environment, Water and Natural Resources. Its overall goal is to provide better quality of life in Kenya for present and future generations through sustainable management and use of the environment and natural resources. The policy has nine chapters which provide information on how this goal will be achieved through promoting Environmental Quality Health whereby the most pressing problems include but not limited to water supply and sanitation. The relevant policy statements under this section are three; 1) Improve the management and conservation of water supply sources, 2) Promote technologies for efficient and safe water use, especially in respect to wastewater use and recycling and 3) Provide incentives for private sector investment and development of appropriate water and sanitation technologies and infrastructure for waste management.

Relevance

The Project shall implement the Environmental and Social Management and Monitoring Plan (ESMMP) to mitigate the impacts of the resulting impacts during the construction and operational phases of the Project; this will ensure that the sensitive ecosystems are not destabilized by the subsequent Project activities.

5.2.12 National Water Policy

The overall goal of the policy is to guide the achievement of sustainable management, development, and use of water resources in the country. The overall objective of the policy is to provide a framework that is dynamic, innovative, and effective for re-engineering the water sector.

It builds on the successes, challenges, and lessons learnt from the previous policies of 1999, 2012, and the provisions of the Kenya Vision 2030 on water conservation and management.

The water policy proposes to mitigate the challenges and threats facing the water sector by ensuring that coordination and accelerated partnerships are mainstreamed in the management and provision of water resources. It also sets the goal of enhancing protection of watersheds and other catchment areas in the country.

The specific objectives related to water provision are:

- To accelerate the delivery of water supply services through progressive realization of the human right to water towards universal access,
- To promote the development of water harvesting and storage infrastructure,
- To strengthen sustainable water resource management in the country, and
- To mainstream climate change considerations and disaster risk reduction through the water sector.

5.3 Overview of Relevant Legislation

5.3.1 Constitution of Kenya 2010

Article 42 of Bill of Rights of the Kenyan Constitution provides that every Kenyan has a right to a clean and healthy environment, which includes the right to have the environment protected for the benefit of present and future generations through legislation and other measures.

Part II of Chapter 5 of the Constitution (Environment and Natural Resources), (I) the State clearly undertakes to carry out the following:

- Ensure sustainable exploitation, utilization, management and conservation of the environment and natural resources, and ensure the equitable sharing of the accruing benefits.
- Work to achieve and maintain a tree cover of at least ten per cent of the land area of Kenya.
- Protect and enhance intellectual property in, and indigenous knowledge of, biodiversity and the genetic resources of the communities.
- Encourage public participation in the management, protection, and conservation of the environment; Protect genetic resources and biological diversity.
- Establish systems of environmental impact assessment, environmental audit, and monitoring of the environment.
- Eliminate processes and activities that are likely to endanger the environment.

Part (II) “Every person has a duty to cooperate with State organs and other persons to protect and conserve the environment and ensure ecologically sustainable development and use of natural resources. Chapter 5 on Land and Environment emphasizes on the following:

- Land use and management shall by law benefit local communities.
- Community land is protected from encroachment by State.
- Law shall protect Rivers, forests, and water bodies.
- Equitable access to land.
- All lawful land rights are secured; only someone who has stolen land needs to worry.
- County governments shall manage land in trust of the people according to the constitution.

Further, Article 70 states that if a person alleges that a right to a clean and healthy environment recognized and protected under Article 42 has been, is being or is likely to be, denied, violated, infringed, or threatened, the person may apply to a court for redress. The project should ensure compliance with the Constitution in so far as equitable sharing of the resources between the stakeholders is concerned.

Relevance to the proposed project.

The project should ensure that the sustainability of livelihoods and biological resources within the project areas are protected. Any development proposals should also be cognizant of the increased powers under the Constitution given to communities and individuals to enforce their rights through legal redress.

5.3.2 The Environmental Management and Coordination (Amendment) Act, 2015

The Act provides for the establishment of a legal and institutional framework for the management of the environment and for matters connected therewith and incidental thereto. Just as in the new constitution, Part II of EMCA confers to every person the right to a clean and healthy environment and to its judicial enforcement. The new Constitution and EMCA therefore obligates the project's Executing Agency and Contractor to work in a clean environment and not to contravene the right of any person within its zone of influence, to this entitlement. EMCA has provided for the development of several subsidiary legislations and guidelines which govern environmental management and are relevant to the project implementation. These include:

a) The Environmental (Impact Assessment and Audit) Regulations, 2009 Legal Notice No. 101

The Environmental Impact Assessment and Audit Regulations state in Regulation 3 states that "the Regulations should apply to all policies, plans, programme, projects, and activities specified in Part IV, Part V and the Second Schedule of the Act.

Part III of the Regulations indicates the procedures to be taken during preparation, submission, and approval of the environmental project report.

Part 4(1) of the Regulation further states that: "no Proponent shall implement a project".

a) Likely to have a negative environmental impact; or
b) For which an environmental impact assessment is required under the Act or these Regulations unless an environmental impact assessment has been concluded and approved in accordance with these Regulation.

Relevance

This ESIA CPR report has been compiled to comply with EMCA and the Environmental (Impact Assessment and Audit) Regulations, 2003.

b) The Environmental Management and Coordination (Waste Management) Regulations, 2006 Legal Notice No. 121

These Regulations were published in the Kenya Gazette Supplement No. 69, Legislative Supplement No. 37, and Legal Notice No. 121 of 29th September 2006. The regulations provide details on management (handling, storage, transportation, treatment, and disposal) of various waste streams including:

- Domestic waste.
- Industrial waste.
- Hazardous and toxic waste.
- Pesticides and toxic substances.
- Biomedical wastes; and
- Radioactive waste.

Regulation No. 4 (1) makes it an offence for any person to dispose of any waste on a public highway, street, road, recreational area or in any public place except in a designated waste receptacle. Regulation 5 (1) provides categories of cleaner production methods that should be adopted by waste generators to minimize the amount of waste generated and they include:

I. Improvement of production process through
- Conserving raw materials and energy.
- Eliminating the use of toxic raw materials and wastes.
- Reducing toxic emissions and wastes.

II. Monitoring the product cycle from beginning to end by
- Identifying and eliminating potential negative impacts of the product.
- Enabling the recovery and re-use of the product where possible,
- Reclamation and recycling and
- Incorporating environmental concerns in the design and disposal of a product.

Regulation 6 requires waste generators to segregate waste by separating hazardous waste from non- hazardous waste for appropriate disposal. Regulation 15 prohibits any industry from discharging or disposing of any untreated waste in any state into the environment. Regulation 17 (1) makes it an offence for any person to engage in any activity likely to generate any hazardous waste without a valid Environmental Impact Assessment license issued by NEMA.

Relevance

The proposed project, during construction phases shall generate wastes which shall need to be disposed of as per the guidelines in the regulations.

c) The Environmental Management and Coordination (Water Quality) Regulations, 2006 Legal Notice No. 120

These Regulations were published in the Kenya Gazette Supplement No. 68, Legislative Supplement No.36, and Legal Notice No. 120 of 29th September 2006. The Regulations provides for sustainable management of water resources including prevention of water pollution and protection of water sources (lakes, rivers, streams, springs, wells, and other water sources).

It is an offence under Regulation No. 4 (2), for any person to throw or cause to flow into or near a water resource any liquid, solid or gaseous substance or deposit any such substance in or near it, as to cause pollution. Regulation No. 11 further makes it an offence for any person to discharge or apply any poison, toxic, noxious or obstructing matter, radioactive waste or other pollutants or permit the dumping or discharge of such matter into the aquatic environment unless such discharge, poison, toxic, noxious or obstructing matter, radioactive waste or pollutant complies with the standards for effluent discharge into the environment.

Relevance

The proponent should ensure that waste is handled, stored, transported, and disposed as per this regulation.

d) The Environmental Management and Coordination (Noise and Excessive Vibration Pollution) (Control) Regulations, 2009 Legal Notice No. 61

These regulations were published as legal Notice No. 61 being a subsidiary legislation to the Environmental Management and Co-ordination Act, 2015. The regulations provide information on the following:

- Prohibition of excessive noise and vibration.
- Provisions relating to noise from certain sources.

- Provisions relating to licensing procedures for certain activities with a potential of emitting excessive noise and/or vibrations and Noise and excessive vibrations mapping.

According to regulation 3 (1), no person shall make or cause to be made any loud, unreasonable, unnecessary, or unusual noise which annoys, disturbs, injures or endangers the comfort, repose, health or safety of others and the environment. Regulation 4 prohibits any person to (a) make or cause to be made excessive vibrations which annoy, disturb, injure, or endanger the comfort, repose, health or safety of others and the environment; or (b) cause to be made excessive vibrations which exceed 0.5 centimetres per second beyond any source property boundary or 30 meters from any moving source.

Regulation 5 further makes it an offence for any person to make, continue or cause to be made or continued any noise more than the noise levels set in the first schedule to these Regulations, unless such noise is reasonably necessary to the preservation of life, health, safety, or property.

Regulation 12 (1) makes it an offence for any person to operate a motor vehicle which (a) produces any loud and unusual sound; and (b) exceeds 84 dB(A) when accelerating. According to sub-regulation 2 of this regulation, no person shall at any time sound the horn or other warning device of a vehicle except when necessary to prevent an accident or an incident. Regulation 13 (1) provides that except for the purposes specified in sub-Regulation (2) there under, no person shall operate construction equipment (including but not limited to any pile driver, steam shovel, pneumatic hammer, derrick or steam or electric hoist) or perform any outside construction or repair work so as to emit noise in excess of the permissible levels as set out in the Second Schedule to these Regulations.

Regulation 19 (1) prohibits any person to carry out activities relating to fireworks, demolitions, firing ranges or specific heavy industry without a valid permit issued by the Authority. According to sub-regulation 4, such permit shall be valid for a period not exceeding three months.

Relevance

The Contractor for road works and civil works shall be required to ensure compliance with the above regulations to promote a healthy and safe working environment throughout the construction phase. This shall include regular inspection and maintenance of equipment and prohibition of unnecessary hooting of vehicles.

e) The Environmental Management and Coordination (Conservation of Biological Diversity and Resources, Access to Genetic Resources and Benefit Sharing) Regulations, 2006 Legal Notice No. 160

Part II of Regulations, section 4 states that no person shall engage in any activity that may have adverse impacts on ecosystems, lead to introduction of exotic species or lead to unsustainable use of natural resources without an EIA license. The regulation puts in place measures to control and regulate access and utilization of biological diversity that include among others banning and restricting access to threatened species for regeneration purposes. It also provides for protection of land, sea. Lake or river declared to be a protected natural environmental system in accordance with section 54 of EMCA, 2015

Relevance

It is recommended that landscaping programme should involve use of certified plant species to prevent them from affecting project area negatively in terms of invading wetlands, vegetation and even farmlands. Erosion prevention techniques used by the contractor should not involve use of untested exotic plant species that might eventually colonize the project area.

Other relevant EMCA 2015 to be considered during construction and operation of the project are.

- Environmental Management and Coordination (Wetlands, Riverbanks, Lake Shores, and Sea Shore Management) Regulation, 2009.
- Environmental Management and Coordination (Fossil Fuel Emission Control) Regulations, 2006.
- The Environmental Management and Coordination (Controlled Substances) Regulations, 2007 Legal Notice No. 73.

Relevance

EMCA 2015 and above listed regulations shall form the main statutory instruments which shall guide the implementation of the project so that any likely adverse impacts that could be caused by the project are promptly mitigated as recommended in this assessment. This report is also in compliance with the requirement of the EIA/EA regulations.

5.3.3 Water Act 2016

Section 73 of the Act allows a person with a license to supply water (licensee) to make regulations for purposes of protecting against degradation of sources of water which he is authorized to take. Under the Act, the licensee could be a local authority, a private Trust or an individual and the law shall apply accordingly under the supervision of the Regulatory Agency.

Section 75 and sub-section 1 allows a licensee for water supply to construct and maintain drains, sewers, and other works for intercepting, treating or disposing of any foul water arising or flowing upon land for preventing water belonging to the licensee or which he is authorized to

take for supply from being polluted. However, if the proposed works shall affect or is likely to affect any body of water in the catchment, the licensee shall obtain consent from the Water Resources Authority.

Relevance

This Act shall be relevant during both the construction and operation phases of the project whereby the Contractor and Proponent shall ensure that all relevant water resources are not polluted from both liquid and solid wastes.

5.3.4 Water Rules 2021

These Regulations implement provisions of the Water Act, no. 43 of 2016. They shall apply to the regulation, management, use and development of all water resources, perennial or seasonal and including water resources of the territorial sea.

Matters covered by these Regulations include: prescription of water use activities; issue of approvals, permits and authorizations for water use and waterworks; guidelines on surface water, including declaration of a watercourse, wetlands, land reclamation, water use for irrigation and Works Associated for protection and control of fish; groundwater development, including borehole and issue of specific permits and authorizations; water quality monitoring and liquid waste disposal, including control of water pollution, water quality monitoring; inspection and controls concerning waterworks; water use charges, including penalties for misuse or for over-abstraction; roles and powers of water resource users associations and basin water resources committees; identification of protected and designated groundwater conservation areas; composition of reserve; categories of water sector professionals and contractors and issue of related permits and licenses.

Relevance

The project shall ensure that the riparian areas are respected and are not interfered with.

5.3.5 The Penal Code CAP 63

Chapter XVII on “Nuisances and offences against health and convenience” contained in the penal code strictly prohibits the release of foul air into the environment which affects the health of the persons. It states, “Any person who voluntarily vitiates the atmosphere in any place so as to make it noxious to the health of persons in general dwelling or carrying on business in the neighbourhood or passing along a public way is guilty of a misdemeanour”.

Relevance to the proposed project.

Waste disposal and other project related activities shall be carried out in such a manner as to conform to the provisions of the code.

5.3.6 County Government Act No. 17 of 2012

Part II of the Act empowers the county government to oversee functions described in Article 186 of the constitution, (county roads, water and Sanitation, Health). Part XI of the Act vests the responsibility of planning and development facilitate the development of a well-balanced system of settlements and ensure productive use of scarce land, water, and other resources for economic, social, ecological, and other functions across a county. This arrangement has been adopted for interventions in order not to conflict with provisions of the Kenyan Constitution.

Relevance

The Contractor will be expected to carry out implementation of the project in consultation with the Meru County

5.3.7 Traffic Act, Chapter 403.

This Act consolidates the laws relating to traffic on all public roads. It also prohibits the encroachment on and damage of roads including land reserved for roads.

Relevance

The proposed project is essentially under the provision of this Act. In compliance, engineering design will include road furniture that will assist motorists comply with the Act. The design is based on Kenyan Roads Design Manual

5.3.8 Public Roads and Roads of Access Act (Cap. 399).

Section 8 and 9 of the Act provides for the dedication, conservation or alignment of public travel lines including construction of access roads adjacent to lands from the nearest part of a public road. Section 10 and 11 allows for notices to be served on the adjacent landowners seeking permission to construct the respective roads.

Relevance

Already public meetings were held during public consultations and notifications to effect this.

5.3.9 The Kenya Roads Act (CAP 399) NO. 2, 2007.

An Act of Parliament that provides for the establishment of the Kenya National Highways Authority, the Kenya Urban Roads Authority, and the Kenya Rural Roads Authority with clear and separated mandates. Part II of the Act establishes the various Roads Authorities in Kenya and outlines their functions.

Section 8 and 9 of the Act provides for the dedication, conservation or alignment of public travel lines including construction of access roads adjacent to lands from the nearest part of a

public road. Section 10 and 11 allows for notices to be served on the adjacent landowners seeking permission to construct the respective roads. Already public meetings were held during public consultations and notifications to this effect issued.

Section 23 of the Act outlines procedures for acquisition of land for the purpose of the Authority's development while Section 24 (1) allows any authorized employee of an Authority to enter upon any land and survey such land or any portion thereof for the purposes of the Authority's development activities. Section 24 (2) provides that where any damage to land is caused by reason of the exercise of the powers conferred by this section, the owner or occupier of the land shall be entitled to compensation therefore in accordance with this Act.

Relevance of the Project

By undertaking this project, the project proponent is exercising his mandate and, that include planning, designing, construction and maintenance of Government assets in the field of built environment and infrastructure development.

5.3.10 The Physical and Land Use Planning Act, 2019

The Physical and Land Use Planning Act, 2019 is an act of Parliament to make provision for the planning, use, regulation, and development of land and for connected purposes. The Act provides a vital link with the Environment Management and Co-ordination Act. For example, Section 36 of the Act states that "In connection with a development application a local authority is of the opinion that proposals for industrial location, dumping sites, sewerage treatment, quarries or any other development activity shall have injurious impact on the environment, the applicant shall be required to submit together with the application an environmental impact assessment report". This reinforces EIA requirements under EMCA 2015

Relevance

The Act directs, regulates, and harmonizes development and use of land over the Country. The large part of the project is designed to utilize public land. This was to avoid cases of acquisition of private property and resettlement complications.

5.3.11 Occupational Health and Safety Act (OSHA 2007)

This legislation provides for protection of workers during construction and operation phases. It is tailored at implementation of the EHS plan in compliance with the relevant sections of this Act. The EMP prepared under this assessment has provided for specific health and safety aspects to be complied with during implementation of the project.

Subsection 18 - Sanitary conveniences

Sufficient and suitable sanitary conveniences for persons employed in the factory/ workplaces shall be provided, maintained, and kept clean, and effective provision shall be made for lighting the conveniences and where persons of both sexes are, such conveniences shall afford proper separate accommodation for persons of each sex.

Subsection 21 – Prime movers

Every flywheel directly connected to any prime mover and every moving part of any prime mover, shall be securely fenced, whether the flywheel or prime mover is to be situated in an engine –house or not. Head and tailrace of every water wheel and of every water turbine shall be securely fenced. Every part of electric generators, motors and rotary converters and every flywheel directly connected thereto shall be securely fenced unless it is in such a position or of such construction as to be safe to every person employed or working in the premises as it would be if securely fenced.

Subsection 22 -Transmission Machinery

(1) Every part of transmission machinery shall be securely fenced unless it is in such a position or of such construction as to be safe to every person employed or working in the premises, as it would be if securely fenced.

(2) Efficient devices or appliances shall be provided and maintained in every room or place where work is carried on by which the power can promptly be cut-off from transmission machinery in that room or place.

(3) Every machine intended to be driven by mechanical power shall be provided with an efficient starting and stopping appliance, the control of which shall be in such a position as to be readily and conveniently operated by the person operating the machine.

Subsection 25 - Construction and maintenance of fencing

All fencing or other safeguards provided in pursuance of the foregoing provisions shall be of substantial construction, constantly maintained, and kept in position while the parts required to be fenced or safe guarded are in motion or in use except when any such parts are necessarily exposed for examination and for any lubrication or adjustments shown by such examination to be immediately necessary.

Subsection 13 – Cleanliness

Every factory/workplace shall be kept in a clean state and free from effluent arising from any drain, sanitary convenience or nuisance.

Subsection 14 – Overcrowding

A factory/ workplace shall not while work is carried on be so overcrowded as to cause risk of injury to the health of the persons employed therein. Standard cubic space allowed for every person in a workroom should not be less than three hundred and fifty cubic feet.

Section 51- Air pollution

Preventive measures shall be put in place during operation of the project to prevent fumes and exhaust gases from entering the atmosphere.

Relevance to the Project

The Act provides Occupational Health and Safety guidelines which shall be followed by both the contractor and supervising consultant during implementation of the project to avoid injuries and even loss of life to workers and neighbouring community.

5.3.12 The Public Health Act (Cap.242)

Part IX section 115 of the Act states that no person/institution shall cause nuisance or condition liable to be injurious or dangerous to human health. Section 116 requires Local Authorities to take all lawful, necessary, and reasonably practicable measures to maintain their jurisdiction clean and sanitary to prevent occurrence of nuisance or condition liable for injurious or dangerous to human health. Such nuisance or conditions are defined under section 118 and include nuisances caused by accumulation of materials or refuse which in the opinion of the medical officer of health is likely to harbour rats or other vermin.

Relevance

The Act provides guidelines to the contractor on how he shall manage all wastes (Liquid and Solid Wastes) emanating from the project in a way not to cause nuisance to the community, this Act during construction shall be read alongside the waste management regulations of EMCA 2015 for utmost compliance. The Act also shall be applied to ensure that the food that is provided to the workers during construction of the project meets the safety requirements.

5.3.13 Climate Change Act, 2016

The Climate Change Act aims to reduce vulnerability to climate change and improve our country's ability to take advantage of the opportunities that climate change offers. The Act is to be applied for the development, management, implementation, and regulation of mechanisms to enhance climate change resilience and low carbon development for the sustainable development of Kenya.

The Purpose and Objectives Clause of the Act (Part 1, Section 3) provides that-

(2) Without prejudice to subsection (1), this Act shall be applied to all sectors of the economy by the national and county governments to –

a) Mainstream climate change responses into development planning, decisions making, and implementation.
b) Build resilience and enhance adaptive capacity to the impacts of climate change.
c) Formulate programme and plans to enhance the resilience and adaptive capacity of humans and ecological systems to the impacts of climate change.
d) Mainstream and reinforce climate change disaster risk reduction into strategies and actions of public and private entities.
e) Mainstream intergenerational and gender equity in all aspects of climate change responses.

Relevance

The development and implementation of the proposed interventions will contribute toward the stated objectives of the climate change act.

5.3.14 Employment Act 2007

This is an Act of parliament that applies to all employees employed by any employer under a contract of service. The Act came in operation in June 2008. Employment of children in the following forms is prohibited in the following sections of the Act:

53. (1) notwithstanding any provision of any written law, no person shall employ a child in any activity that constitutes worst form of child labour.

56. (1) No person shall employ a child who has not attained the age of thirteen years whether gainfully or otherwise in any undertaking.

(2) A child of between thirteen years of age and sixteen years of age may be employed to perform light work which is

(a) Not likely to be harmful to the child's health or development; and

(b) Not such as to prejudice the child's attendance at school, his participation in vocational orientation or training Programs approved by Minister or his capacity to benefit from the instructions received.

Relevance

The proponent and the contractor shall need to understand the requirements of the Act during employment. Equal opportunity should be given to all both men and women to ensure equity.

5.3.15 Work Injury Benefits Act (WIBA) 2007

It is an act of Parliament to provide for compensation to workers for injuries suffered in the course of their employment. It outlines the following:

- Employer's liability for compensation for death or incapacity resulting from accident.
- Compensation in fatal cases.
- Compensation in case of permanent partial incapacity.
- Compensation in case of temporary incapacity.
- Persons entitled to compensation and methods of calculating the earnings.
- No compensation shall be payable under this Act in respect of any incapacity or death resulting from a deliberate self-injury.
- Notice of an accident, causing injury to a workman, of such a nature as would entitle him for compensation shall be given in the prescribed form to the director.

Relevance

The Contractor shall need to abide by all the provisions of WIBA.

5.3.16 The National Museums and Heritage Act-Cap 216 (2006)

Kenya is rich in its antiquities, monuments, cultural and natural sites which are spread all over the country and the Act aims to preserve this national heritage.

The National Museums of Kenya is the custodian of the country's cultural heritage, its principal mission being to collect, document, preserve and enhance knowledge, appreciation, management, and the use of these resources for the benefit of Kenya and the world.

Through the National Museums of Kenya many of these sites are protected by law by having them gazetted under the Act.

- Section 30 of the Act requires all discoveries of buried artefacts to be reported to the NMK/GoK.

Relevance

In case of discoveries of buried artefacts reporting to the NMK/GoK will be carried out.

5.3.17 Environmental and Land Court Act) 2011)

The Act gives effect to Article 162(2) (b) of the constitution by establishing the Environment and Land Court that has original and appellate jurisdiction. Per Section 4(2) and (3), it is a court with the status of the High Court. It exercises jurisdiction throughout Kenya and pursuant to section 26, is expected to ensure reasonable and equitable access to its services in every County.

The principal objective of this Act is to enable the Court to facilitate a just, expeditious, proportionate, and accessible resolution of disputes governed by the Act.

The Court exercises its jurisdiction under Section 162 (2) (b) of the Constitution and has power to hear and determine dispute relating to: a) Environmental planning and protection, climate issues, land use planning, title, tenure, boundaries, rates, rates, rents, valuations, mining minerals and other natural resources; b) Compulsory acquisition of land ;c) land administration and management ;d) Public private and community land contracts, choses in action or other instrument granting any enforceable interests in land and e) any other dispute relating to environment and land.

Nothing in the Act Precludes the Court from hearing and determining applications for redress of a denial, violation, or infringement of, or threat to, rights or fundamental freedom relating to land and to clean and healthy environment under Section 42, 69 and 70 of the constitution.

Relevance

Grievances encountered during implementation of the project will be resolved using the GRM proposed in Subsection 8.5 and 8.6 of this report. Those not satisfied will be advised to seek justice though the environmental Court.

5.3.18 Sustainable Waste Management Act, 2022.

The new Sustainable Waste Management Act (SWMA) ushers a new era in waste management in Kenya whereby a linear model is discarded, and a circular model of waste management is embraced. The Act provides for new governance framework in waste management with establishment of Waste Management Council, expanded role of County Governments and Extended Producer Responsibility Schemes. In addition, the Act prescribes the need to establish new infrastructure for waste management such as segregation at source, proper transportation, material recovery facilities, and closure of dumpsites, sanitary landfills, and national waste information system.

Relevance

The Contractor shall need to abide by this provision.

5.3.19 Urban Areas and Cities Act, 2011.

An Act of Parliament to give effect to Article 184 of the Constitution; to provide for the classification, governance and management of urban areas and cities; to provide for the criteria of establishing urban areas, to provide for the principle of governance and participation of residents and for connected purposes.

Relevance

The proposed interventions shall be aligned with the development plans and strategies of the county governments. The project team shall abide to the requirements stipulated in this Act.

5.3.20 National Construction Authority (NCA) 2011

The National Construction Authority (NCA) is a state corporation, established under the National Construction Authority Act No. 41 of 2011, with the mandate to oversee the construction industry in Kenya and coordinate its development. National Construction Authority (NCA) is a statutory body whose main function is to regulate, streamline and build capacity in the construction industry.

Relevance

The Contractor shall acquire necessary permits and licenses during the construction period. The Contractor shall abide to the rules and regulations stipulated in this Act.

5.4 World Bank Operational Safeguard Policies

Like in any project financed by, or with financial participation of, the World Bank, the environmental and social safeguards as defined in the Bank's Operational Procedures (OPs) will be respected for the purposes of this project implementation. Applicability of the safeguard policies to the project is discussed in the following sub sections.

5.4.1 Operational Policy 4.01: Environmental Assessment

The Operational Policy on Environmental Assessment (OP 4.01) is applied by the World Bank to identify, avoid, and mitigate the potential negative environmental and social impacts associated with Bank lending operations. The purpose of Environmental Assessment is to provide guidance for environmental and social assessment of the WB financed projects, improve decision making, to ensure that project options under consideration are sound and sustainable, and that potentially affected people have been properly consulted. The proposed interventions, road upgrading within and around Salama informal settlement project area in all phases including, change in the landscape not just at the quarry or borrow sites (loss of materials), establishment of secondary businesses , influx of new populations in search of new opportunities, interference with existing ways of life, GBV, increased conflicts, pressure for increased demand on existing resources, increase in traffic during the operation phase leading to an increase of foreign members to the community. This Environmental and Social Impact Assessment (ESIA) and environmental and social management plan (ESMP) has been carried out to fulfil the requirements of this policy. In addition, at least consultations have been carried out with

project affected people and other stakeholders (during the design engineer, ESIA preparation and the disclosure requirements.

5.4.2 Operational Policy 4.11-Physical Cultural Resources

This policy guides in preserving physical cultural resources and helps reduce chances of their destruction or damage. The policy considers Physical Cultural Resources (PCR) to be resources of archaeological, paleontological, historical, architectural, and religious (including graveyards and burial sites), aesthetic or other cultural significance. This policy applies to all projects requiring a Category A or B Environmental Assessment under OP 4.01, projects located in, or in the vicinity of, recognized cultural heritage sites. There is a potential of the project affecting some of these sites, whose exact location is unknown as such a "Chance Finds Procedures", has been presented in section 8.8 of this report.

5.4.3 The Bank's Operational Policy 4.12: Involuntary Resettlement

The objective of this policy to avoid where feasible, or minimize, exploring all viable alternative project designs to avoid resettlement. This policy is applicable in situations involving involuntary taking of land and involuntary restrictions of access to legally designated parks and protected areas. The policy aims to avoid involuntary resettlement to the extent feasible, or to minimize and mitigate its adverse social and economic impacts.

The policy advocates for the participation of displaced/affected persons in the resettlement planning and implementation process with the objective of ensuring that the livelihoods of affected persons are restored to levels that are better than or equal to their former living standards.

The policy prescribes compensation and other resettlement measures to achieve its objectives and requires that borrowers prepare adequate resettlement planning instruments prior to project appraisal of proposed projects.

The policy provides for the preparation of appropriate and accessible grievance mechanisms for such affected persons to offer an avenue where they can register complaints and solutions provided.

This Policy is not applicable for this project. This is because there will be no resettlement. Thus, a no RAP is required. However, a Grievance Redress Mechanism (GRM) for this project has been prepared and included in section 8.5 and 8.6 of this report.

5.4.4 World Bank Directive on Vulnerable Groups

The project area has no marginalized communities. The term "vulnerability" refers to those individuals or groups who, by virtue of, for example, their age, gender, ethnicity, religion,

physical, mental or other disability, social, civic or health status, sexual orientation, gender identity, economic disadvantages or indigenous status, and/or dependence on unique natural resources, may be more likely to be adversely affected by the project impacts and/or more limited than others in their ability to take advantage of project benefits

Such an individual/group is also more likely to be excluded from/unable to participate fully in the mainstream consultation process and as such may require specific measures and/or assistance to do so. This will consider considerations relating to age, including the elderly and minors, and including in circumstances where they may be separated from their family, the community, or other individuals upon whom they depend.

The aged and vulnerable were consulted during stakeholder engagements. They have been incorporated into the SEC and GRC.

5.4.5 World Bank Policy on Access to Information, 2015

The World Bank policy on access to information sets out the policy on public access to information in its possession. This Policy supersedes the World Bank Policy on Disclosure of Information and took effect on July 1, 2010.

This Policy is based on five principles:

- Maximizing access to information.
- Setting out a clear list of exceptions.
- Safeguarding the deliberative process.
- Providing clear procedures for making information available.
- Recognizing requesters' right to an appeals process.

In disclosing information related to member countries/borrower in the case of documents prepared or commissioned by a member country/borrower (in this instance, safeguards assessments and plans related to environment, resettlement, and indigenous peoples, OP/BP 4.01, Environmental Assessments, OP/BP 4.10 and OP/BP 4.12 Involuntary Resettlement); the bank takes the approach that the country/borrower provides such documents to the Bank with the understanding that the Bank will make them available to the public.

5.5 World Bank GROUP Environmental, Health and Safety (EHS) Guidelines

The Environmental, Health and Safety (EHS) Guidelines are technical reference documents with general and industry-specific examples of Good International Industry Practice (GIIP). When one or more members of the World Bank Group are involved in a project, these EHS Guidelines

are applied as required by their respective policies and standards. These General EHS Guidelines are used in addition to the local guidelines to provide mitigation measures for the various environmental and social impacts that will be identified in this report. The main EHS guidelines that will be used alongside local policies include:

- Environmental Guidelines
- Occupational Health and Safety Guidelines
- Community Health and Safety Guidelines
- Construction and Decommissioning Guidelines

5.5.1 Environmental Guidelines

These guidelines will govern the Contractor's activities during the construction of the road, elevated water tank, water reticulation and household connections and the construction works impacts on the physical environment.

The guidelines include:

a) **Air Emissions and Ambient Air Quality** – which provide the air quality standards, limits and monitoring requirements for construction works. The guidelines incorporate WHO air quality guidelines on the major air pollutants expected from the Contractor's machinery and equipment.

b) **Wastewater and Ambient Water Quality** – These guidelines will be key particularly in the Contractor's camp and the impacts of wastewater generation and treatment before release into the environment, to prevent pollution of the surrounding physical environment. The contractor should ensure they connect the campsite to the existing sewer network have to establish onsite treatment of wastewater, proper channelling of storm water to prevent contamination of the physical and social environment. The guidelines call for monitoring of wastewater from the site through testing and inspections for which the Contractor will have to establish a plan for management and monitoring.

c) **Waste Management** – All construction works are expected to produce one or more forms of waste. The construction of the road, water and reticulation networks will be of no exception. Construction wastes and Domestic wastes are expected from the Contractor's site as well as the camp. The Contractor will have to prepare a waste management plan using these guidelines that conform to the local legal framework provided in this chapter.

d) **Noise** – Use of several equipment and plant is bound to generate some level of noise, which are bound to have a negative impact on the surrounding environment and in particular sensitive receptors (human settlements and wildlife). These impacts will be short-lived during the construction phase of the project. The guidelines also provide the maximum noise levels, provided in the Noise and Excessive Vibration Pollution Control Regulations – Schedule 1-3, which the Contractor should strive to adhere to. The guidelines also call for baseline and annual monitoring of noise generation within the Contractor's site to establish compliance to the guidelines and local regulation.

5.5.2 Occupational Health and Safety Guidelines

These guidelines are geared towards ensuring the safety of the staff on site and within the Contractor's camp. The guidelines with regards to occupational health and safety include:

a) **General Facility Design and Operation** – These guidelines will guide the Contractor's workspace. The Contractor will have to provide suitable potable water supply for the staff, suitable lavatories, fire precaution measures (extinguishers and safety drills) and first aid services.

b) **Communication and Training** – This will provide for communication and training of staff and visitors to the site, to govern behaviour within the site. This is necessary to ensure safety while operating within the site. The Contractor will need to employ a health and safety officer fulltime on site who will oversee ensuring safety and communication of safety within the site.

c) **Physical Hazards** – These guidelines will govern the exposure of the workers to physical dangers including excavation sites, bridge sites, noise, dust, welding, manual handling, work environment temperatures. The guidelines provide fall protection when working at height and work hour limits (8 hours' maximum).

d) **Personal Protective Equipment (PPE)** - Personal Protective Equipment (PPE) provides additional protection to workers exposed to workplace hazards in conjunction with other facility controls and safety systems. PPE is a last resort that is above and beyond the other facility controls and provides the worker with an extra level of personal protection. The Contractor will have to provide the relevant PPE for staff on site for the different job descriptions. In addition, visitors to site will have to be provided with some minimal form of PPE during their visits.

e) **Monitoring** - Occupational health and safety monitoring programs should verify the effectiveness of prevention and control strategies. The selected indicators should be representative of the most significant occupational, health, and safety hazards, and the

implementation of prevention and control strategies. The Contractor will have to employ a health and safety officer who will come up with an occupational health and safety monitoring program for implementation by the Contractor. In addition, the Contractor will provide a clinic and log of accidents and incidences on site as a control measure for ensuring health and safety.

5.5.3 Community Health and Safety Guidelines

These guidelines complement the environmental, social, and occupational health and safety guidelines. The guidelines specifically address the impact of the project activities on the surrounding community. They involve the following aspects:

i. Structural Safety of Project Infrastructure – Construction works, works on borrow/quarry sites may pose a risk to the surrounding communities. As such safety measures must be considered. The Contractor will have to provide physical buffers such as cordons to prevent falls into the pits, road signage, establishment of speed limits, water spraying to ensure the safety of the community.

ii. Traffic Safety – The project road will still be under use during construction. As such the Contractor will have to provide a traffic management plan to ensure safety of motorists and other road users. The traffic management plan will include alternative diversion routes and a traffic controller to divert traffic and road signage.

iii. Emergency Preparedness and Response – These are designed to deal with events and acts that are unplanned when a project operation loses control, or could lose control, of a situation that may result in risks to human health, property, or the environment, either within the facility or in the local community. Emergencies do not normally include safe work practices for frequent upsets or events that are covered by occupational health and safety. The Contractor will prepare an emergency preparedness and response plan, including training of staff, drills to gauge responses to preparedness, and communication with the local community in case of rinse.

iv. Disease Prevention – Some workers will be coming in from different parts of the County. There is potential that communicable diseases may be spread among the workers and community members. Communicable diseases of most concern during the construction phase due to labour mobility are sexually transmitted diseases (STDs), such as HIV/AIDS. Contractor is to undertake health awareness and education initiatives. Promoting individual protection, and protecting others from infection, by encouraging condom use.

5.5.4 Construction and Decommissioning Guidelines.

These guidelines govern the project components that require decommissioning including the material sites and camp. The Contractor will prepare a decommissioning plan for all these features considering the EHS guidelines as mentioned above.

5.6 Applicability of World Operational Safeguards

Table 5-1 shows the applicability of World Operational Safeguards to the proposed improvement works in Salama informal settlement.

Table 5- 1: Summary of Applicability of World Operational Safeguards

OP	Title	Comments
4.01	Environmental Assessment	Applicable. As a result of environmental and social screening, the project was identified as a Category B project due potential limited adverse environmental or social risks and/or impacts that are few, generally site-specific, largely reversible, and readily addressed through mitigation measures and other activities, as described
4.04	Natural Habitats	Not applicable.
4.09	Pest Management	Not applicable.
4.10	Indigenous Peoples	Not applicable.
4.11	Physical Cultural Resources	Not applicable. Several site visits conducted have not indicated the presence of any cultural (historical, archaeological) sites in the construction area. However, to manage "chance finds" an appropriate procedure is included in this ESIA (section 8.8). Such procedure to be followed by contractors during the construction phase.
4.12	Involuntary Resettlement	Not applicable
4.36	Forests	Not applicable.
4.37	Safety of Dams	Not applicable.
7.50	Projects on International Waterways	Not applicable.
7.60	Projects in Disputed Areas	Not applicable.

The relevant International Labour Organization (ILO) Conventions that will be applicable to the Project are listed below:

(i) ILO Convention 87 on Freedom of Association and Protection of the Right to Organize
(ii) ILO Convention 98 on the Right to Organize and Collective Bargaining

(iii) ILO Convention 29 on Forced Labour
(iv) ILO Convention 105 on the Abolition of Forced Labour
(v) ILO Convention 138 on Minimum Age (of Employment)
(vi) ILO Convention 182 on the Worst Forms of Child Labour
(vii) ILO Convention 100 on Equal Remuneration
(viii) ILO Convention 111 on Discrimination (Employment and Occupation)
(ix) UN Convention on the Rights of the Child, Article 32.1
(x) UN Convention on the Protection of the Rights of all Migrant Workers and Members of their Families

The Project Contractor shall observe the Standard as presented in the ESMMP of the project to be enforced under the Works Contract.

5.7 Meru County Government Relevant Legislations and Policies

5.7.1 Meru County Climate Change Fund Act 2020

AN ACT of the Meru County Assembly to put in place the framework and mechanisms for mobilization and facilitation of the county government, communities and other stakeholders to respond effectively to climate change through appropriate adaptation and mitigation measures and actions and for connected purposes. The objective of this Act is to enhance climate resilience through development, management, implementation, regulation and monitoring of adaptation and mitigation measures and actions.

(2) Without prejudice to subsection (1), this Act shall be applied by the county government in all sectors of the economy to— (a) mainstream climate change responses into development planning, decision making and implementation; (b) implement coordinated and integrated response to climate change and its impacts by all actors and stakeholders; (c) facilitate effective management of climate change impacts by enhancing adaptive capacity, strengthening resilience and reducing vulnerability to climate change; (d) promote, support and facilitate community-based and community initiated adaptation and mitigation activities; (e) enforce duties and provide incentives for the private sector to contribute to achievement of low carbon climate resilient development; (f) facilitate public participation in climate change response through capacity development, awareness creation, consultation, representation and access to information; (g) establish frameworks and mechanisms for mobilization and transparent and accountable management of financial and other resources for climate change response; (h) establish and implement mechanisms to promote and facilitate climate change research and development, innovations, technology development, training and capacity building; (I) integrate climate change into the exercise of power and functions of all levels of the county government, including in decentralized units and enhance cooperative climate change governance between

the county, neighbouring counties and the national government; and (j) contribute to national efforts to address the adverse impacts of climate change.

Relevance to the Project

The project will mainstream Climate Resilience in Mjini Infrastructural Projects through its designs, material used and general project activities.

5.7.2 Meru County Public Transport and Traffic Management Bill 2020

An ACT of the County Assembly of Meru to establish and provide for matters relating county roads, street lighting, traffic and parking, public road transport, and creation and competencies of public road transport and management, and county traffic marshal

(3)The objectives and purpose of this Act is to provide for all matters necessary to

- Provide for adequate, safe and efficient county transport facilities and services at a reasonable cost to the people,
- Facilitate the management, planning and development of county transport facilities and transport infrastructure,
- Give effect to, and effect a balanced transport policy and planning

33 (1) The County Government shall install street lights within the County with special attention to the following areas: major traffic routes, high crime urban areas, town centres, pedestrian crossings, residential areas foot badges and shopping centres

(2) The directorate shall be responsible for the maintenance of streetlights

Relevance to the Project

- The project shall involve the upgrading of the existing roads and installation of street lighting within the settlement. The Proponent; County Government of Meru shall be responsible for the maintenance of traffic and streetlights and the road infrastructure
- The project shall ensure existing street lighting is not affected during project implementation

5.7.3 Meru County Public Participation Act, 2012 (No. 6 of 2014)

This Act provides with respect to the public participation process in Meru County. It establishes a legislative framework to give effect to selected provisions of the Constitution and of the County Governments Act, 2012. The Act establishes the Department of Public Participation, the Public Participation Office and the Public Participation Advisory Committee. It aims, among

other things, at community empowerment and support. The Act defines various forms of public participation including stakeholder engagement petitioning to county authorities.

Relevance to the Project

The project shall adhere to the regulations and requirements stipulated in this Bill. All stakeholders shall be engaged in all project phases.

5.7.4 Meru County Youth Empowerment Act, 2020

This is an Act of the County Assembly of Meru to empower, improve and develop the youth as well as establishing a fund to provide access to capital and financing facilities through loans, grants and for connected purposes

Relevance to the Project

The project shall empower the youth within the settlement though creation of job opportunities. Income earned will contribute in improving the standards of living for the youths within the settlement.

5.7.5 Meru County Spatial Planning Bill, 2016 (No 8 of 2016)

This Act provides rules for physical planning, including Integrated Urban Areas and Town Development Planning in Meru County. County plans shall be made in accordance with provisions of Part XI of the County Governments Act, 2012. This Act prescribes content of county physical development plan (spatial plan as described in the First Schedule) and creates a County Spatial Planning Coordinating Committee and Directorate of Spatial Planning within the county government. The Act provides for the control of development and provides with respect to subdivision of land.Coordinate spatial planning and development;

a) Promote organized planning and development of physical infrastructure;
b) Enhance regulation of physical development and land use;
c) Promote effective and transparent physical planning process;
d) Promote sustainable social economic development

Relevance to the Project

The Project shall adhere to the stipulated regulations of this Act. Engagement with the County Government shall be carried out throughout the planning, implementation and operation phases to ensure project activities are in line with the Acts guidelines.

5.7.6 Meru County Policy on Sexual and Gender Based Violence, 2018

The Meru County Policy on Sexual and Gender based violence has been prepared in a background of a number of sexual and gender based violence cases facing girls, boys, women and men in Meru. The Policy addresses issues affecting gender and violence in relation to the social, political and economic costs of all forms of violence against girls, boys, women and men and suggests ways of addressing them.

5.8 Sustainable Development Goals

5.8.1 SDG 1 End poverty in all its forms everywhere

By 2030, eradicate extreme poverty for all people everywhere, currently measured as people living on less than $1.25 a day 1.2 by 2030, reduce at least by half the proportion of men, women and children of all ages living in poverty in all its dimensions according to national definitions.

Relevance

Clean water will insure households against water borne diseases. Thus, households will incur less in medical bills. The amount saved can be invested in other income generating ventures. Improved rods will also mean access to market and erase of doing business which will raise household incomes.

5.8.2 SDG 2: End hunger, achieve food security and improved nutrition and promote sustainable agriculture.

By 2030, end hunger and ensure access by all people, in particular the poor and people in vulnerable situations, including infants, to safe, nutritious and sufficient food all year round 2.2 By 2030, end all forms of malnutrition, including achieving, by 2025, the internationally agreed targets on stunting and wasting in children under 5 years of age, and address the nutritional needs of adolescent girls, pregnant and lactating women and older persons.

Relevance

Portable water is a human right. Availability of portable water consistently will allow households devote time to food production activities and therefore tackle hunger. This will in turn improve nutrition. Roads improve access to markets for both farmers and other traders who supply food items. This enhances access to food for those who do not engage in farming.

5.8.3 SDG 3: Ensure healthy lives and promote well-being for all at all ages.

By 2030, reduce the global maternal mortality ratio to less than 70 per 100,000 live births 3.2 By 2030, end preventable deaths of new-borns and children under 5 years of age, with all

countries aiming to reduce neonatal mortality to at least as low as 12 per 1,000 live births and under-5 mortality to at least as low as 25 per 1,000 live births.

Relevance

The role of accessible roads in promoting health and wellbeing cannot be overemphasised. This will result for the residents of Salama after the proposed interventions are made.

5.8.4 SDG 5: Achieve gender equality and empower all women and girls.

The goal seeks to:

- End all forms of discrimination against all women and girls everywhere.
- Eliminate all forms of violence against all women and girls in the public and private spheres, including trafficking and sexual and other types of exploitation and
- Eliminate all harmful practices, such as child, early and forced marriage and female genital mutilation.

Relevance

The burden of fetching water in households weigh heavily on women and girls. This burden denies them the opportunity to engage in other productive activities that would enable them to improve their lives. The proposed project will thus enhance the drive towards gender equality and empowerment.

5.8.5 SDG 6: Clean Water and Sanitation

This goal aims at ensuring availability, access and sustainability to water and sanitation for all.

Relevance

The project has a component on water supply and construction of an ablution block. The project will partake in achieving the goal through the development of water and sanitation infrastructures.

5.8.6 SDG 7: Affordable and clean energy

This goal aims at ensuring accessibility to affordable, reliable, sustainable and modern energy for all

Relevance

The project has a component on installation of security lighting. The project will partake in achieving the goal through incorporating solar security lighting within the settlement

5.8.7 SDG 9: Industries, Innovation, and Infrastructure

This goal seeks to build resilient infrastructure, promote sustainable and resilient industrialization and foster innovation to support economic development and human well-being, with a focus on affordable and equitable access for all.

Relevance

The project will incorporate climate resilience in the design and in the infrastructure. The community members employed will gain knowledge and skills during the construction and operation stages of the project.

5.8.8 SDG 10: Reduce inequality within and among countries.

By 2030, progressively achieve and sustain income growth of the bottom 40 per cent of the population at a rate higher than the national average 10.2 By 2030, empower and promote the social, economic, and political inclusion of all, irrespective of age, sex, disability, race, ethnicity, origin, religion or economic or other status.

Relevance

The intra-national inequality in Kenya is extreme. Currently, less than 0.1% of the population (8,300 people) own more wealth than the bottom 99.9% (more than 44 million people). The richest 10% of people in Kenya earned on average 23 times more than the poorest 10%. This inequality touches on every aspect of life including access to basic such as clean water and decent sanitation. The proposed project will address this as far as the informal settlement is concerned.

5.8.9 SDG 11: Sustainable Cities and Communities

This goal aims at making cities and human settlements inclusive, safe, resilient, and sustainable.

Relevance

The proposed development of infrastructures such as water, roads, and sanitation, will promote the economic growth of the area and investment. Availability of such infrastructures shall create wealth, improve economy, and ultimately encourage more development infrastructures such as sustainable housing within the area.

5.9 Multilateral Environmental Agreement

5.9.1 Paris Agreement.

The main aim of Paris Agreement is to limit and reduce greenhouse gases (GHG) emissions in accordance with Nationally Determined Contributions (NDCs).

Relevance

The project will adhere to the air emission limits stipulated in EMCA (Air Quality Regulations) 2014 and the treaty.

5.9.2 United Nations Framework Convention on Climate Change (UNFCCC),

The main objective to stabilize greenhouse gas concentrations "at a level that would prevent dangerous anthropogenic (human induced) interference with the climate system.

Relevance

The project will adhere to the air emission limits stipulated in EMCA (Air Quality Regulations) 2014 and the treaty.

5.9.3 World Heritage Convention.

Aims to promote cooperation among nations to protect heritage around the world that is of such outstanding universal value that its conservation is important for current and future generations.

Relevance

The project will not affect cultural, archaeological, or historical heritage within the project site.

5.9.4 The Convention on Biological Diversity.

It is the international legal instrument for "the conservation of biological diversity, the sustainable use of its components and the fair and equitable sharing of the benefits arising out of the utilization of genetic resources.

Relevance

The proposed project will ensure sustainable use of the available resources within the project area. The replacement of trees cut during construction will enhance local biodiversity.

5.9.5 Convention on Discrimination Against women (CEDAW)

The Convention provides the basis for realizing equality between women and men through ensuring women's equal access to, and equal opportunities in, political and public life -- including the right to vote and to stand for election -- as well as education, health, and employment.

Relevance

There will be equal treatment for women and men during recruitment of labour for the proposed project.

5.9.6 United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP)

The United Nations Declaration on the Rights of Indigenous Peoples provides a framework for reconciliation, healing, and peace, as well as harmonious and cooperative relations based on the principles of justice, democracy, respect for human rights, non-discrimination, and good faith. UNDRIP calls on states to create effective mechanisms to address human rights violations. This includes redress for attacks on Indigenous peoples' identity, integrity, and self-determination.

Relevance

The Nubians who occupy part of the informal settlement will be involved throughout the project lifecycle.

5.10 Institutional Structure

There are various national institutions that are important in civil and road project works related to environmental management in Kenya. These are described in the subsection below:

5.10.1 The Ministry of Lands, Public Works, Housing and Urban Development (MLPWHUD)

The MLPWHUD shall support implementation of the proposed interventions through State Department of Housing and Urban Development (SDHUD) and State Department for Public Works (SDPW) whose mandate is to provide policy direction and coordinate all matters related to construction, rehabilitation and maintenance of Public Buildings and Other Public Works.

5.10.2 Ministry of Environment, Climate Change and Forestry

The Ministry of Environment and Natural Resource is mandated to monitor, protect, conserve, and manage the environment and natural resources of the country. The Ministry is required to achieve this monumental task through sustainable exploitation of natural resources for socio-economic development geared towards eradication of poverty, improving living standards and maintaining a clean environment for present and future generations.

5.10.3 National Environment Management Authority (NEMA)

The government established the National Environmental Management Authority (NEMA) as the supreme regulatory and advisory bodies on environmental management in Kenya under EMCA 2015. NEMA is charged with the responsibility of coordinating and supervising the various environmental management activities being undertaken by other statutory organs. NEMA also ensures that environmental management is integrated into development policies, programs, plans, and projects.

5.10.4 Water Resources Authority (WRA)

The authority is responsible for sustainable management of the Nations Water Resources:

- Implementation of policies and strategies relating to management of water resources,
- Develop principles, guidelines, and procedures for the allocation of water,
- Development of catchments level management strategies including appointment of catchments area advisory committees,
- Regulate and protect water resources quality from adverse impact, and
- Classify, monitor, and allocate water resources.

5.10.5 Water Services Regulatory Board (WASREB)

The regulatory Board is responsible for the regulation of the water and sewerage services in partnership with the people of Kenya. The mandate of the regulator covers the following key areas:

- Regulating the provision of water and sewerage services including licensing, quality assurance, and issuance of guidelines for tariffs, prices, and disputes resolution,
- Overseeing the implementation of policies and strategies relating to provision of water services licensing of Water Services Boards and approving their appointed Water Services Providers,
- Monitoring the performance of the Water Services Boards and Water Services Providers,
- Establish the procedure of customer complaints,
- Inform the public on the sector performance, and
- Gives advice to the Minister in charge of water affairs.

5.10.6 Directorate of Occupational Safety and Health Services (DOSH)

DOSH plays a crucial role in promoting and maintaining safe working conditions for employees across various sectors. By enforcing International Labour Standards related to occupational safety and health, DOSH aims to protect workers from hazards and ensure their well-being on the job. During project implementation the Contractor shall have to engage DOSH to:

- Provides OSH permits for workplaces of the project including the campsite and
- Conduct inspections to ensure conformance to OSHA.

5.10.7 County Government of Meru

The County Government of Meru is the project proponent and shall support implementation of the proposed interventions through Department for Lands, Housing, Physical Planning, Public Works, and Urban Development (CO-LHPP&UP).

5.10.8 The Contractor

The contractor shall be required to establish an environmental office to continuously advise on environmental components of the project implementation. Elements in the environmental and social management plan are expected to be integrated in the project with appropriate consultations with county and National KISIP 2 team through the supervising environmental and social safeguard expert. The environmental and social expert officer of the Contractor is also expected to fully understand the engineering and management aspects of the project for effective coordination of relevant issues.

5.10.9 The Supervisor

The Consultant shall be the Contract supervisor shall ensure effective implementation of the environmental management plan. It is expected that supervisor engages the services of an environmental expert who should in return understand the details of the recommendations on environment management and especially the proposed action plans, timeframes and expected targets of the management plan. The environmental supervisor expert should also be the liaison person between the contractor, the County and KISIP 2 safeguard expert on the implementation of environmental concerns as well as issues of social nature associated with the Project.

CHAPTER 6: STAKEHOLDER CONSULTATION

6.1 Background to public consultation in ESIA

Community consultation and participation ensures that communities and stakeholders are part and parcel of the proposed developments and in so doing assures the sustainable use of resources. It has also demonstrated successfully that projects that go through this process shall acquire high level of acceptance, identify possible conflicts areas early, and accrue benefits to a wider section of the society. Public consultations form a useful component for gathering, understanding and establishing likely impacts of projects determining community and individual preferences and selecting alternatives.

Furthermore, through public participation, it is possible to enhance project designs and ensure sustainability of the projects. The proposed project has incorporated public consultations in order to understand the local impacts, needs and thoughts and eventually incorporate them into the final designs and operations of the project.

6.2 Aims and Objectives of Stakeholders Consultation and Public Participation (CPP)

The aims and objectives of public involvement and consultation include:

- Informing stakeholders and members of public
- Gaining their views, concerns and values
- Taking account of public inputs in decision making
- Influencing project design
- Obtaining local knowledge
- Increasing public confidence
- Improving transparency and accountability in decision making
- Reducing conflict

6.3 Approach of Stakeholders Consultation

The process of stakeholder engagement involved the following:

i. Stakeholder identification;
ii. Stakeholder consultation activities
   - Planning how the engagement will take place;
   - Disclosure of information;
   - Consultation with stakeholders;
   - Addressing and responding to grievances; and
   - Reporting to stakeholders.

6.3.1 Stakeholder mapping

The identification of stakeholders for this Project followed the procedures outlined in the Environmental Management and Coordination (Amendment) Act 2015, Environmental (Impact Assessment and Audit) (Amendment) Regulations, 2019 Guidelines, the Constitution of Kenya 2010, World Bank Operation Policy of Environment Assessment and Land Acquisition and Involuntary Resettlement guidelines. The guidelines require Stakeholder Engagement through consultation with the affected people and/or their community representatives and Non-Governmental Organizations (NGOs).

To meet best practice approaches, the following principles were applied for stakeholder engagement:

- **Openness and life-cycle approach:** public consultations for the project were carried out in an open manner, free of external manipulation, interference, coercion or intimidation;
- **Informed participation and feedback:** information was provided to and widely distributed among all stakeholders in an appropriate format; opportunities were provided for communicating stakeholders' feedback, for analysing and addressing comments and concerns;
- **Inclusiveness and sensitivity:** stakeholder identification was undertaken to support better communications and build effective relationships. The participation process for the projects was inclusive. Equal access to information was provided to all stakeholders.
- **Cultural appropriateness**. The format, timing and venue respected local customs and norms.
- **Gender sensitivity.** Consultations was organized to ensure that both women and men had equal access to them.

The key stakeholder groups identified, consulted and informed about the project are presented in **Table 6-1**.

Table 6- 1: Stakeholder Inventory

No	Name	Category
1.	Assistant County Commissioner /Deputy County Commissioner	National Government
2.	Physical planning – Urban Planner	County Government
3.	Surveyors	
4.	KISIP SEC and GRC officials	Settlement level
5.	Town administrator	County Government
6.	Chief	National Government Administration

No	Name	Category
7.	Religious leader	Resident
8.	Residents	Community members

6.3.2 Stakeholder Consultation Activities

Public consultation is useful for gathering environmental data, understanding likely impacts, determining community and individual preferences, selecting project alternatives, and designing viable and sustainable mitigation and compensation plans.

The consultations will take place throughout the planning phase and continue during the construction and operational phases of the project.

Table 6-2 presents an overview of the stakeholder activities that were /will be undertaken during the stakeholder engagement

Table 6- 2: Stakeholder Consultation Activities

Phase	Activities
Phase 1: Stakeholder identification and preliminary consultation/scoping	• Stakeholder identification and categorization during the Project inception exercise • Preliminary consultation: liaison with National, County, and Local Institutions • Identification of key Project constraints
Phase 2: Information distribution and introductory Meetings	• Distribution of specialists and technical Information to the County Government of Meru, County administration, and other relevant stakeholders • Introductory meetings with local administration, Sub-Counties administrators and ward administrators, and relevant authorities.
Phase 3: Impact Identification and Development of Mitigation Measures	• Meetings with Local Administration in affected locations • Meetings and conducting Key Informant Interviews with members of sub-county and Ward administrators within the settlement • Conducting interviews and household interviews with the community members • Dialogue and meetings with the above-identified stakeholders
Phase 4: Disclosure of the draft EIA	• Submission of ESIA Project Report to National Environment and Management Authority (NEMA) and world bank • Circulation of Project Report by NEMA to relevant Lead Agencies • Review and Incorporation of Lead Agencies' comments and revisions to ESIA • Collection and incorporation of comments and feedback. • Issuance of license

Phase 6: consultation during construction and operation	• Throughout the Project

6.4 Stakeholder Consultation

The main key informants targeted in the consultations were both Government and private institutions operating within the project area. Listening to stakeholder concerns and feedback is a valuable source of information that can improve project design and outcomes and help in identifying any impacts.

A consultation meeting was held in the month of September 27, 2023 at Muslim Primary Playground (photographs taken shown in Figure 6-1) where the following stakeholders were present.

- Area chief Area residents and villager elders
- Ward administrator
- Businessmen/women
- Window/widower
- Landowner's representatives
- Landlords/land ladies
- Tenants' representatives
- People living with disabilities.
- KISIP 2 National team
- KISIP 2 County team

Table 6- 3: Number of participants

Meeting Date- September 27,2023 **Venue-Muslim Primary School**	
List of participants	**Number**
Male	13
Female	12
Total participants	25

Figure 6- 1: Stakeholders during the meeting

Gathering the residents to the meeting venue was undertaken through the close coordination of the KISIP county coordinator together with the local administrator (chief and ward administrator). Communication on the date, venue and purpose of the meeting was done a week prior to the actual date of the meeting

The discussion including project information was discussed in Kiswahili and Meru languages to ensure the community understood the project scope, objectives and anticipated impacts in all project phases. The key outcomes of the consultations were:

- Project information was disclosed to the communities by the KISIP project coordination and County teams;
- The project team was introduced to the community;
- The Settlement Executive Committee (SEC) and Grievance Redress Committee (GRC) were selected; and
- Priority projects for the informal settlement were selected.

In addition, a structured questionnaire was also administered to the members of public and key stakeholders in the month of November 21, 2023 to solicit views regarding the project as well as its design.

The questionnaire initially gave introduction and created awareness to the respondents regarding the project. Afterwards, questionnaire enquired on acceptance of the project and rating of the current status of the roads and anticipated negative impacts and suggested mitigation measures as well as any suggestions and recommendations. The analysis of the output from the stakeholder's questionnaires is discussed below:

Table 6- 4: Outcome of household questionnaire survey

Comment		Response
Status of Infrastructure	The respondents indicated that the infrastructure which include; Water infrastructure, Sanitation, Solid Waste Management, Road Conditions, Security and Green Spaces where poor within the project area	The main aim of the proposed project is to improve access to basic services for residents in participating urban informal settlements and strengthen institutional capacity for slum upgrading in Kenya.
Security concerns	The residents hughlighted they faced insecurity issues within the settlement.they highlighted: • Pickpocketing; • Burglary; and • Crime with violence amongst others They stressed the importance of improving security within the settlement	One of the project's component is implementation of security lighting by the County Government. This will play a major role in improving security within the settlement
Positive impacts.	The positive impacts that will be associated with the project as highlighted by the residents will include but not limited to • Improved infrastructure both transport and lighting. • Improved water supply • Creation of employment • Improved drainages leading to a clean and healthy environment • Development of skills for the workers • Improved social development between the community	The project will ensure the community positively benefits from the project positive benefits

Comment		Response
	members and project team • Innovation promotion within the community	
Project Support and Awareness	Every respondent acknowledged their awareness of the water and sanitation project and expressed their commitment to supporting the project throughout its implementation phase. They emphasized the need to ensure continuous community engagement through all project phases	
Recommendation	The project should put in place safety measures during project implementation	

6.5 Key Informants Interviews

The main key informants targeted in the consultations were both Government and private institutions operating within the project area. Listening to stakeholder concerns and feedback is a valuable source of information that can improve project design and outcomes and help in identifying any impacts.

A structured questionnaire was also administered on November 20, 2023-November 25, 2023 to solicit views regarding the project as well as its design. The interview was conducted face to face with the key stakeholders and in their respective offices. The Key stakeholders consulted are presented in the table 6-5 below:

Table 6- 5: KII Comments and Suggestions

Name	Designation	Comments	Response
Nephat Mwangi	Public Health Officer	The majority of infrastructures (water, roads, security, sanitation and solid waste) within the settlement are in	• The primary development goal of the project is to improve living conditions in the informal settlement through the development

Name	Designation	Comments	Response
		poor conditions	and upgrading of infrastructures
		The project team may delay in implementation of the project	• The project team will ensure implementation of the project is carried out within the stipulated time frame
		The project team should consider intensifying securing, monitoring and management of the upgraded and improved infrastructures during the operation phase of the project to prevent vandalism	• The County government will be in charge of the operation and monitoring of the infrastructures • Qualified personnel will be employed during the operation phase to safeguard the infrastructures
		The project will result in positive impacts that include but not limited to: • Improved sanitation • Improved hygiene • Creation of job opportunities	
National Planning and Economics	Economist	The majority of infrastructures (water, roads, security, sanitation and solid waste) within the settlement are in poor conditions	• The aim of the project is to improve the existing infrastructures and upgrade additional infrastructures within the settlement.
		The project may result in environmental hazards. The project team should conduct environmental assessment before project implementation	• An ESIA will be carried out before project implementation. Views and opinions obtain from the interviews will be incorporated into the report.

Name	Designation	Comments	Response
		Stakeholder engagement should be paramount throughout all phases of the project	• All stakeholders will be engaged throughout all phases of the project. Communications regarding the project will be communicated through the local administration office and the county government
		The project will result in positive impacts that include but not limited to: • Economic benefits to the project area • Boost the socio-economic welfare of the society • Creation of job opportunities	
Ezra Mwenda	County Government Electrical Engineer	The majority of infrastructures (water, roads, security, sanitation and solid waste) within the settlement are in poor conditions	• The primary development goal of the project is to improve living conditions in the informal settlement through the development and upgrading of infrastructures
		Stakeholder engagement should be paramount throughout all phases of the project	• All stakeholders will be engaged throughout all phases of the project. Communications regarding the project will be communicated through the local administration office and the county government

Name	Designation	Comments	Response
		The project will result in positive impacts that include but not limited to: • Improved security • Creation of job opportunities	
Joyce Mwangi	Assistant County Commissioner (ACC)	The majority of infrastructures (water, roads, security, sanitation and solid waste) within the settlement are in poor conditions	• The primary development goal of the project is to improve living conditions in the informal settlement through the development and upgrading of infrastructures
		The project activities will result in air pollution	• The Contractor shall comply the provisions of EMCA (Air Quality Regulations) 2014, to be enforced by the Supervising Engineer. • Dust suppression will be carried out during the construction period
		The project may result in labour influx and contribute to conflicts during project implementation	• Effective community engagement and strong grievance mechanisms on matters related to labour will be implemented during the construction period. • First priority during labour recruitment will be given to the local communities
		There is likelihood of complaints and resistance from community members if stakeholder	• Stakeholder engagement will be carried out throughout all phases of project implementation

Name	Designation	Comments	Response
		and community engagement is not carried out	• Communications regarding the project will be done through the local administration office and county government
		After project implementation, the county government may offer minimum support in the management of the upgraded infrastructure	• The county government will be in charge of operating and maintaining of the upgraded infrastructures.
		The project will result in positive impacts that include but not limited to: • Improved security • Creation of job opportunities • Improved road infrastructures • Improved sanitation and hygiene • Improved standards of living for the residents	

CHAPTER 7: IMPACTS IDENTIFICATION AND MITIGATION MEASURES

7.1 Introduction

This ESIA assessment has been systematically conducted to determine whether the proposed Project shall have a diverse impact on the environment. The Environmental Management and Co-Ordination Act (EMCA) No 8 of 2015 provide the legal and statutory guideline for the Environment and Social Impact Assessment process in Kenya.

The impacts in this Chapter have been generated based on the analysis of the proposed environment in relation to the proposed project. The impacts have been segregated in four main phases: Pre-Construction Phase, Construction Phase, Operation Phase and Decommissioning Phase. Impacts can be categorized into:

- Impacts on biophysical environment;
- Health and safety impacts
- Social-economic impacts

7.2 Definition and Classification of Environment Impact

An environmental impact is any change to the existing condition of the environment caused by human activity or an external influence. Impacts may be:

- Positive (beneficial) or negative (adverse);
- Direct or indirect, long-term or short-term in duration, and wide-spread or local in the extent of their effect.

Impacts are termed cumulative when they add incrementally to existing impacts. In the case of the project, potential environmental impacts would arise during the construction and the operations phases of the Project and at both stages, positive and negative impacts would occur.

7.2.1 Impact Assessment and Scoring

The impact analysis were done using the Leopold matrix which is a grid that is used to identify the interaction between project activities, which are displayed along one axis, and environmental characteristics, which are displayed along the other axis. For the identification of impacts, a breakdown of the environment into elements or factors that may be affected and a breakdown of the various actions or activities of the project under study were done.

Precautionary principle was used to establish the significance of impacts and their management and mitigation i.e., information, the environmentalist erred on the side of caution.

Table 7- 1: Impact Rating Criteria for Environment and Social Risks

Extent		Duration		Intensity		Probability		Weighting Factor (WF)		Significance Rating (SR)		Mitigation efficiency		Significance following Mitigation (SFM)	
Foot print	1	Short term	1	Low	1	Probable	1	Low	1	Low	0-19	High	0,2	High	0-19
Site (1 km radius)	2	Short to medium	2			Possible	2	Low to Medium	2	Low to Medium	20-30	Medium to High	0,4	Medium to High	20-30
Location	3	Medium term	3	Medium	3	Likely	3	medium	3	medium	40-59	medium	0,6	medium	40-59
Sub County	4	Long term	4			Highly likely	4	Medium to high	4	Medium to high	60-79	Low to medium	0,8	Low to medium	60-79
County	5	Permanent	5	High	5	High	5	High	5	High	80-100	low	1,0	low	80-100

Definition of Terms

- **Extent:** An area of influence covered by the impact. In this sense, if the action produces a much localized effect within the space, it is considered that the impact is low (1). If, however, the effect does not support a precise location within the project environment, having a pervasive influence beyond the project footprint, the impact will be at location level (3) or could be County (5)
- **Timing:** Refers to the moment of occurrence, the time lag between the onset of action and effect on the appearance of the corresponding factor. We consider five categories according to this time period is zero, up to 1 year (short term), or more than two years, which are called respectively medium term (3), long-term (4), and permanent (5).
- **Intensity:** refers to the degree of impact on the factor, in the specific area in which it operates, ranked from low (1) to high (5).
- **Probability:** Refers to the likelihood of the impact occurring during the project implementation, this is also ranked as Probable (1) to highly probable

7.3 Potential Positive Impacts

7.4 Pre-construction phase Positive Impacts for Road Project

7.4.1 Documentation and publicity

The project area shall benefit significantly in terms of the intensive information gathering during the pre-project feasibility study and the pre-project ESIA which shall generate useful reports that shall create important reference points for the area both for scientific research and planning activities.

7.4.2 Employment

Employment opportunities shall be created in the construction of camp sites by the Contractor as well as employment of enumerators during data collection before construction works.

7.5 Construction Phase Positive Impacts Roads for Road Project

The following are the positive impacts during the construction phase of the proposed project:

7.5.1 Employment opportunities

Construction activities for this project road will have employment opportunities for workers at the national and the local community levels. The contractor will require skilled, semi-skilled and unskilled labour force to undertake various activities. Skilled labour will be required especially in the final design interpretation and supervision of construction works. Manual work will be required during enabling works (clearing the right-of-way, material loading and delivery, moulding works among others). Some of the equipment likely to be deployed on site include excavators, wheel loaders, graders, rollers, tippers, and water bowsers. Truck drivers, machine operators, site agent, foreman, security personnel among others form part of the skilled manpower that may be hired. During the public meetings, the community members requested that all the community members who are qualified, willing, and able be considered for the available job opportunities and that they should not be discriminated against on the basis of their age or gender. These include jobs as night guards, casual Labourers, cleaners, sweepers, etc. The women requested to be considered for cleaning, sweeping, cooking, etc. from the barazas. The Contractor shall be highly encouraged to hire staff locally during the construction period. Site clearance, traffic management and diversions, earthworks, concrete works as well as road furniture installation and marking will require both skilled and semi-skilled labour.

Enhancement Measures

- Require the contractor have an employment policy that covers local communities as an affirmative action that ensures marginalized communities, disability groups and gender sensitive groups are not side-lined. The policy should also have security screening measures to confirm originality and conduct of potential employees during recruitment.

- Mixed communication strategies and instruments should be used to effectively relay information on employment opportunities to the community such as local public administration officers' desks, public notice boards as well as public address platforms and gatherings in churches and mosques.
- Furnish relevant authorities (police and other security organs) with details and number individuals working and living at the camp especially immigrant workers if any; and
- As part of induction, immigrant workers should be encouraged to adhere to the code of conduct, as well as respecting traditions and managing relations with host communities.

7.5.2 Business Opportunities for Local Suppliers and Services

The road construction activities involve a capital expenditure that requires a range of inputs comprising of machinery/plant and spares for plant and machinery, tires for plant and machinery, gabions, concrete additives, reinforcement bars, posts, and other consumables (wood formwork, bricks, cement, sand, aggregate, oils, and lubricants) among others. The contractor will have to procure locally or regionally from credible suppliers creating business opportunities for dealers. Most of the potential borrow and quarry materials have been identified in proximity of the project road. Some transport services may also be leased from local service providers.

Enhancement Measures

- Local sources of supplies and services should be prioritized, as far as feasible, as a way of boosting local economy and building capacity of local businesses.

7.5.3 Knowledge and skill transfer

Majority of rural residents in the project area will be witnessing construction of bitumen road for the first time in the region. Through staff interaction, the locals employed in the project will have an opportunity to learn from some of the specialized skilled and semi-skilled personnel that will be involved during the project construction. This may enhance their knowledge in construction of bitumen standard roads and associated facilities and their ability to access similar opportunities in future even beyond the counties. The works will also invoke interest in youngsters to participate in such project in future and their career goals.

Enhancement Measures

- KISIP 2 project team should make deliberate requirements on both appointed contractors and construction supervising consultants to employ and accommodate local people during construction works.

- Training of local people (including women and persons with disability) should be designed as part of the project for technology and knowledge/skills transfer. Local institutions such as TVETs and Polytechnics located within Meru should be used for training local workers to be integrated into the project activities.

7.5.4 Increased local incomes.

The local community may get extra income from the sale of construction materials from their firms and renting spaces for camp sites.

Enhancement Measures

- Local employment to be encouraged.

7.5.5 Economic growth

Through the use of locally available materials during the construction phase for example cement and others; the project shall contribute towards growth of the country's economy by contributing to the gross domestic product. The consumption of these materials, oil, fuel and others shall attract taxes.

Enhancement Measures

- Encourage use of locally available materials
- Tax exemption to be considered for local materials.

7.5.6 Injection of money into the local economy

A large sum of the project money shall be released into the local economy due to the construction activities. It is envisaged that during construction a large number of activities shall take place including but not limited to the following listed below.

- Payments for skilled and unskilled labour.
- Purchases of construction materials; and
- Payments for local provisions including fuel, foods, and accommodation.

7.6 Decommissioning Phase Positive impact for Roads Project

While the project road is not anticipated to be decommissioned soon but periodically maintained for extended service, temporary contractor's facilities will be decommissioned by the end of road construction works' defects liability period.

The contractor is expected to prepare a detailed decommissioning plan for all his temporary facilities including camps, borrow sites and quarries. The plans detailing environmental

restoration measures and associated safety and health protection should be submitted to NEMA for approval at least three months before the actual decommission works begin. The following presents anticipated decommission impacts of the contractor's facilities.

7.6.1 Employment opportunities

Temporary employment opportunities shall be created for the demolition the campsite during the decommissioning works.

7.6.2 Environmental rehabilitation

Rehabilitation of site to ensure the site is left as natural as possible close or better than before.

7.7 Preconstruction phase positive impacts for Security lighting Project

7.7.1 Documentation and publicity

The project area shall benefit significantly in terms of the intensive information gathering during the pre-project feasibility study and the pre-project ESIA which shall generate useful reports that shall create important reference points for the area both for scientific research and planning activities.

7.7.2 Employment

Employment opportunities shall be created in the construction of camp sites by the Contractor as well as employment of enumerators during data collection before construction works.

7.8 Construction Phase Positive Impacts for Security Lighting

The following are the positive impacts during the construction phase of the proposed project:

7.8.1 Employment opportunities

Construction activities for this project road will have employment opportunities for workers at the national and the local community levels. The contractor will require skilled, semi-skilled and unskilled labour force to undertake various activities. Skilled labour will be required especially in the final design interpretation and supervision of construction works. Manual work will be required during enabling works (clearing the right-of-way, material loading and delivery, moulding works among others). Some of the equipment likely to be deployed on site include excavators, wheel loaders, graders, rollers, tippers, and water bowsers. Truck drivers, machine operators, site agent, foreman, security personnel among others form part of the skilled manpower that may be hired. During the public meetings, the community members requested that all the community members who are qualified, willing, and able be considered for the available job opportunities

and that they should not be discriminated against on the basis of their age or gender. These include jobs as night guards, casual Labourers, cleaners, sweepers, etc. The women requested to be considered for cleaning, sweeping, cooking, etc. from the barazas. The Contractor shall be highly encouraged to hire staff locally during the construction period. Site clearance, traffic management and diversions, earthworks, concrete works as well as road furniture installation and marking will require both skilled and semi-skilled labour.

Enhancement Measures

- Require the contractor have an employment policy that covers local communities as an affirmative action that ensures marginalized communities, disability groups and gender sensitive groups are not side-lined. The policy should also have security screening measures to confirm originality and conduct of potential employees during recruitment.
- Mixed communication strategies and instruments should be used to effectively relay information on employment opportunities to the community such as local public administration officers' desks, public notice boards as well as public address platforms and gatherings in churches and mosques.
- Furnish relevant authorities (police and other security organs) with details and number individuals working and living at the camp especially immigrant workers if any; and
- As part of induction, immigrant workers should be encouraged to adhere to the code of conduct, as well as respecting traditions and managing relations with host communities.

7.8.2 Business Opportunities for Local Suppliers and Services

The road construction activities involve a capital expenditure that requires a range of inputs comprising of machinery/plant and spares for plant and machinery, tires for plant and machinery, gabions, concrete additives, reinforcement bars, posts, and other consumables (wood formwork, bricks, cement, sand, aggregate, oils and lubricants) among others. The contractor will have to procure locally or regionally from credible suppliers creating business opportunities for dealers. Most of the potential borrow and quarry materials have been identified in proximity of the project road. Some transport services may also be leased from local service providers.

Enhancement Measures

- Local sources of supplies and services should be prioritized, as far as feasible, as a way of boosting local economy and building capacity of local businesses.

7.8.3 Knowledge and skill transfer

Majority of rural residents in the project area will be witnessing construction of bitumen road for the first time in the region. Through staff interaction, the locals employed in the project will have an opportunity to learn from some of the specialized skilled and semi-skilled personnel that will be involved during the project construction. This may enhance their knowledge in construction of bitumen standard roads and associated facilities and their ability to access similar opportunities in future even beyond the counties. The works will also invoke interest in youngsters to participate in such project in future and their career goals.

Enhancement Measures

- KISIP 2 project team should make deliberate requirements on both appointed contractors and construction supervising consultants to employ and accommodate local people during construction works.
- Training of local people (including women and persons with disability) should be designed as part of the project for technology and knowledge/skills transfer. Local institutions such as TVETs and Polytechnics located within Meru should be used for training local workers to be integrated into the project activities.

7.8.4 Increased local incomes.

The local community may get extra income from the sale of construction materials from their firms and also renting spaces for camp sites.

Enhancement Measures

- Local employment to be encouraged.

7.8.5 Economic growth

Using locally available materials during the construction phase for example cement and others; the project shall contribute towards growth of the country‘s economy by contributing to the gross domestic product. The consumption of these materials, oil, fuel and others shall attract taxes.

Enhancement Measures

- Encourage use of locally available materials
- Tax exemption to be considered for local materials.

7.8.6 Injection of money into the local economy

A large sum of the project money shall be released into the local economy due to the construction activities. It is envisaged that during construction many activities shall take place including but not limited to the following listed below.

- Payments for skilled and unskilled labour.
- Purchases of construction materials; and
- Payments for local provisions including fuel, foods and accommodation.

7.9 Operation phases Positive Impacts Security Lighting

7.9.1 Increased security

There will be enhanced security in the Salama arising from well-lit social, commercial, and individual premises. With the implementation of the project, the level of security will increase across Salama. This is because of more security lights which helps keep off opportunistic crimes and gender-based violence.

7.9.2 Creation of employment

During operational phase, there shall be employment opportunities especially for those who shall be employed to manage, the road networks. This shall improve their living standards.

7.9.3 Creation of Wealth

The proposed project shall ultimately provide revenues to the beneficiaries and expand the wealth base for the nation. It shall pump both liquefied and tied up wealth hence making the nation gain. It shall also go a long way in uplifting Meru County and its neighbourhood. Once the people shall be empowered in the project area, some shall invest and develop the nearby towns.

7.10 Decommissioning Phase Positive Impact Security Lighting

Temporary contractor's facilities will be decommissioned by the end of construction works' defects liability period.

The contractor is expected to prepare a detailed decommissioning plan for all his temporary facilities including camps, borrow sites and quarries. The plans detailing environmental restoration measures and associated safety and health protection should be submitted to NEMA for approval at least three months before the actual decommission works begin. The following presents anticipated decommission impacts of the contractor's facilities.

7.10.1 Employment opportunities

Temporary employment opportunities shall be created for the demolition the campsite during the decommissioning works.

7.10.2 Environmental rehabilitation

Rehabilitation of site to ensure the site is left as natural as possible close or better than before.

7.11 Preconstruction phase positive impacts for Water Project

7.11.1 Documentation and publicity

The project area shall benefit significantly in terms of the intensive information gathering during the pre-project feasibility study and the pre-project ESIA which shall generate useful reports that shall create important reference points for the area both for scientific research and planning activities.

7.11.2 Employment

Employment opportunities shall be created in the construction of camp sites by the Contractor as well as employment of enumerators during data collection before construction works.

7.12 Construction Phase Positive Impacts

The following are the positive impacts during the construction phase of the proposed project:

7.12.1 Employment Opportunities

With the construction of the proposed project, there will be employment opportunities for both professionals and unskilled workers; earnings from the wages will improve their living standards. In addition, there will be opportunities for establishing shops / kiosks and other small-scale businesses to provide some of the immediate needs of project staff. Skilled labour will be sourced nationwide based on education and work experience.

The contractor should as much as possible employ local labour especially within the project area for the various skilled and unskilled work opportunities. Through staff interaction, the locals employed in the project will have an opportunity to learn from some of the specialised skilled personnel that will be involved during the project construction.

7.12.2 Increased market and investment opportunities-

Increased business opportunities for small and medium -scale traders such as hotel and shop owners, food vendors, etc. especially during construction phase. A lot more employment opportunities will arise from investment and economic opportunities attributable to improved water supply.

Construction of the water pipelines will be an opportunity for suppliers of construction materials and utilities to create market and sell their goods such as cement, steel, ballast, and sand hardware shops around the project. Also, retailers and wholesalers of office consumables around the project area will equally benefit from increased sales.

7.12.3 Promote social inclusion and equity-

The project will promote social inclusion and equity by ensuring that water supply benefits all members of the community.

7.12.4 Community sensitization

Effective community engagement and sensitization will create a sense of ownership for the project and the community members will better understand their role in the success of the proposed interventions.

7.12.5 Accessibility to water

Improved water supply will reduce the travel time to fetch water hence this time will be used in other productive activities.

7.12.6 Gains in the Local and National Economy

Through the provision of employment to the locals, income from the salaries and wages will improve the economy of Salama informal settlement and the county at large. The Contractor is also expected to purchase most of his materials from the project area as such contribute positively to the local and national economy. The materials for construction will also be sourced out from other areas within the nation hence positively affecting the national economy.

7.13 Operation phases Positive Impacts for Water Supply Project

7.13.1 Creation of employment

During operational phase, there shall be employment opportunities especially for those who shall be employed to manage water pipelines. This shall improve their living standards.

7.13.2 Creation of Wealth

The proposed project shall ultimately provide revenues to the beneficiaries and expand the wealth base for the nation as a whole. It shall pump both liquefied and tied up wealth hence making the nation gain. It shall also go a long way in uplifting Meru County and its neighbourhood as a whole. Once the people shall be empowered in the project area, some shall invest and develop the nearby towns.

7.13.3 Improved Well-being of Women and Children

Water accessibility at homesteads would translate to time saving by the women. Time saved thus would be invested in other engagements that could bring financial benefits to the family. Children also bear the brunt of water borne diseases while women are tied down to provide nursing care to the sick family members

7.13.4 Improved Accessibility to Clean and Reliable Water Supply

The proposed project is intended to improve the water supply to area residents of Salama informal settlement.

7.13.5 Improved revenue for MEWASS

Improved revenue to Meru Water and Sewerage Companies from increased customer base as the proposed project shall increase the number of residents being served by the water companies. It shall also make the supply reliable thus increasing the revenue base. Further, this shall improve sustainability of the company.

7.13.6 Reduced exposure to health risks and improved nutrition

Improved water and sanitation services will lead to reduced cases of water borne diseases associated with pollution of water resources and drinking water, this will also cause improved water, Health and Sanitation status.

7.14 Decommissioning Phase Positive Water Project

Temporary contractor's facilities will be decommissioned by the end of construction works' defects liability period.

The contractor is expected to prepare a detailed decommissioning plan for all his temporary facilities including the campsite. The plans detailing environmental restoration measures and associated safety and health protection should be submitted to NEMA for approval at least three months before the actual decommission works begin. The following presents anticipated decommission impacts of the contractor's facilities.

7.14.1 Employment opportunities

Temporary employment opportunities shall be created for the demolition the campsite during the decommissioning works.

7.14.2 Environmental rehabilitation

Rehabilitation of site to ensure the site is left as natural as possible close or better than before.

7.15 Potential Negative Impacts

The magnitude of each impact is described in terms of being significant, minor, or negligible, temporary, or permanent, long term or short term, specific (localized) or widespread and reversible or irreversible. These parameters are indicated in the assessment table below. Generally, low impacts have no obvious long-term consequences and are regarded as being minor. But those with long-term repercussions are classified as major. A summary of the potential negative impacts for the three (3) proposed interventions are as represented in Tables 7.1-7-4 based on perceived environmental impact levels and mitigations.

Table 7- 1: Impact analysis for Roads Project

Associated Impacts	Impact Levels	Management Actions
Construction Phase		
• Air pollution and dust generation	Medium	• Unnecessary vegetation clearance to be avoided through clear demarcation of construction areas. • Where practicable, re-vegetate disturbed areas to minimize ground exposure. • Sprinkling water (at least twice a day) on the accesses and excavated surfaces during the construction period to suppress dust generation within settled areas. • Limit the speed of construction vehicles (maximum speed limit 40 kph/25 mph) on earth road. • Provision of appropriate protective personal equipment (PPEs) including respirators and dustcoats to exposed workers. • Ensuring the location of material stockpiles are away from human settlements and business premises. • Covering loaded trucks during the transportation of material. • Maintenance of vehicles and machinery in accordance with the equipment specifications and manufacturer's standards. • Sensitize workers on best practice on management of air pollution from vehicles and machinery. • All records on dust-related complaints should be submitted to Resident Engineer for appropriate action. • Undertake regular air quality (dust level) monitoring and conduct corrective adjustments where necessary based on the baseline data collected before project commencement.

Associated Impacts	Impact Levels	Management Actions
		• Noise quality samples to be used as baseline data will be collected before commencement of the civil works for regular monitoring during the construction period at various sensitive areas to be agreed upon with the RE. • The contractor to comply the provisions of EMCA (Air Quality Regulations) 2014, to be enforced by the Supervising Engineer. • Ensure dust suppression by regularly spraying water on the roads and work sites. • Wetting or covering stockpiles. • Haul trucks should be covered to avoid spills. • Ensure proper location of material stockpiles away from habitation, business premises and wetlands. • Maintenance of vehicles and machinery in accordance with the equipment specifications and manufacturer's standards. • Workers shall be sensitized on management of air pollution from vehicles and machinery. • Activities generating dust (excavation, handling, and transport of soils) to be carried out in calm weather where possible. The resident engineer shall suspend earthworks operations wherever visible dust is affecting properties adjoining the work sites. • Any removal of vegetation shall be avoided until such time as clearance is required and exposed surfaces shall be re-vegetated or stabilized as soon as practically possible. • The contractor to comply the provisions of EMCA (Air Quality Regulations) 2014, to be enforced by the Supervising Engineer;

Associated Impacts	Impact Levels	Management Actions
• Noise and excessive vibrations	Medium	• Workers shall use earmuffs/plugs when performing operations producing over 85 dB of continuous noise. • Post appropriate notices to warn drivers against unnecessary hooting of vehicles. • Switch off engines or reduce idling time when not in use. • Keep machinery covers and panels closed and well fitted. Bolts/fasteners done up tightly avoid rattles. • Equipment should be maintained regularly to reduce noise resulting from friction. • Unnecessary hooting should be avoided. • Noise levels at the construction site boundary should be kept within acceptable limits of 60 dB (A) during the day and 35 dB (A) during the night as stipulated within the Environmental Management and Coordination (Noise and Excessive Vibration Pollution) (Control) Regulations, 2009. • Limit idling time of pickup trucks and other small equipment and observe a common-sense approach to vehicle use and encourage workers to shut off vehicle engines whenever possible. • When working closer to noise sensitive areas such as schools and hospitals, the contractor shall notify the concerned party at least 5 days before commencement of construction within their vicinity. • Noisy operation can be scheduled outside learning hours to limit nuisance caused. • Any complaints received by the Contractor regarding noise will be recorded and communicated to the Resident Engineer for further remedial action. • Monitor environmental and occupational noise levels as per the NEMA Environmental Management and Coordination Act (Noise and Excessive Vibration Pollution) (Control) Regulations, 2009 & OSHA, 2007 requirements respectively.

Associated Impacts	Impact Levels	Management Actions
		• The noise emission characteristics should be considered during selection and mobilization of construction equipment. • Where feasible, fit equipment with mufflers, sound insulations, silencers to lower the levels of noise emission. • Sensitize construction workers to switch off machinery and vehicles when not in use. • Staff on active project sites with continuous exposure should be provided and encouraged to fit in their Personal Protective Equipment (PPEs). • Locate noisy operations like batching plant away from the densely settled areas. • Where noisy activities must be undertaken near sensitive receptors, the neighbouring occupants must be informed in advance and works limited to daytime only. • ▪Noise quality samples to be used as baseline data will be collected before commencement of the civil works for regular monitoring during the construction period at various sensitive areas to be agreed upon with the RE. • Any complaints received by the Contractor regarding noise shall be recorded and communicated to the Supervising Engineer for appropriate action
• Generation of Solid waste	Medium	• Contractor shall provide suitable, segregated and well labelled solid waste containers to proper disposal of the wastes. • Proper segregation of solid waste prior to disposal. • Reduce generation of solid waste at the source through planning. • Separation and reuse of topsoil for landscaping of the site. • Empty packaging materials like cartons and cement bags shall be piled in a safe place and sold to waste paper recyclers. • Other solid waste to be disposed at designated sites or collected and transported to

Associated Impacts	Impact Levels	Management Actions
		the approved disposal sites by NEMA registered waste transporters. • Ensure solid waste does not accumulate and further block the existing storm water drains. • Provision of appropriate sanitation facilities for use by workers. The facilities should be established in compliance with OSHA and Public Health requirements
• Disturbance of traffic and difficulty of access	Medium	• The Contractor should provide temporary road signs or notices to indicate ongoing works. • The Contractor together with the Resident Engineer should Plan itineraries for site traffic daily and avoid peak traffic periods. • Warn road users about traffic diversion by using signs, as well as use of traffic marshals. • Diversion routes should accommodate two-way traffic, and that they should be all weather. • Plan short diversion routes. • Adhere to road reserve if possible. • Obtain permission from inhabitants if diversion routes go beyond the Right of Way. • Reinstate diversion routes (and old tracks) to original condition. • Institute a traffic management plan. • Trained traffic marshals on site

Associated Impacts	Impact Levels	Management Actions
• Accidental Oil and fuel Spills and Leaks	Low	• Checking and regular servicing of Equipment. • Re-fuelling at safe locations, • Use of spill kits and applications of emergency spill procedures. • Provision of a 20cm layer of sand and ballast at the machinery storage area and diesel tank section, this layer act as sink to potential oil spills and shall be replaced when saturated. • Vehicle maintenance to be done in impervious concrete platforms and grease and oil traps to be used.
• Vegetation Cover destruction	Low	• Restrict vegetation clearing to project sites by clear demarcation of areas to be used. • Thickets and bush shrubs should be preserved wherever possible through selective clearing, especially along the seasonal riverine areas. • Siting of camp sites should be done away from densely vegetated areas. • Consultations with the local people should be done to ensure that trees with historical, cultural, or ornamental values, endangered species are preserved. • Beautification using trees that will not damage the infrastructure to maintain the beauty of the trees to be done as part of the project,
• Removal of vegetation	Low	• Excavated material should be properly piled, sprinkled with water, and covered (where possible) to prevent possible wash-out into seasonal watercourses. Stock piling areas should have levelled ground and away from sensitive areas like slopes. • Material excavation should be minimized and restricted to designated locations. • The contractor should ensure that construction related impacts like erosion and cut slope destabilization should be addressed through rock pitching. • Re-vegetation should be done in tandem with construction activities to avoid exposure of bare ground to agents of erosion.

Associated Impacts	Impact Levels	Management Actions
		• Enforce landscaping and restoration of the construction site prior to decommissioning of the construction site. • • As part of enhancing environmental protection in the region, the contractor should start a tree planting campaign for reforestation by incubating a tree nursery programs along the road. The types of trees to plant shall be through the guidance of the local KFS or through involvement of the Ministry of Agriculture • Any polluted soil should be handled with care for proper disposal. • Concrete mixing shall be done on concrete slabs or a large metal sheet or mortar boards. • Maintenance of vehicles to be done strictly at designated place/Drip trays to be used to avoid oil spills.
• Servicing of machinery • Removal of vegetation leading to erosion • Utilization of water for construction activities and for domestic purposes	Low	• Grey water to be contained and properly channelled. • Onsite treatment of grey water by the facility approved by the resident engineer. • Water containing pollutants should be kept in a conservancy tank for removal to prevent pollution of the surface water and surface water bodies. • Prompt action to be taken by the Contractor in case of any pollution incident. • Ensure prompt reinstatement of drainage channels following trenching and backfilling and providing for temporary drains. • The contractor will need to develop independent construction water sources, with potential to abstract water from groundwater resources. Drilling of shallow wells is ideal as it will also support the locals after the road construction works are complete. • The Contractor must adhere to the Water Act, 2016 and associated rules and regulations as administered by WRA and NEMA. Relevant water abstraction permits must be obtained from these authorities to minimize competition or conflict with

Associated Impacts	Impact Levels	Management Actions
		existing water rights/ resource uses. • Contractor shall employ water efficient and conserving technologies to minimize on water usage;
• Loss of temporary assets and sources of livelihood	Low	• Although the survey and social screening studies undertaken during the ESIA encountered no likelihood of loss of livelihood or displacement of people
• Disruption of public utilities	Medium	• Contractor to undertake inventory of existing utilities in the project area before beginning construction. • Liaise with relevant service providers to identify and map affected sections of alignment of the services and provide cost to cover the relocation of the existing infrastructure. • Relocation plans shall include adequate notification of affected customers and residents whose access foot paths might get disrupted
• Risk of accidents at work site	Medium	• Provision and maintenance of alternative routes in areas where accesses have been disrupted. Such diversion routes should consider road safety in case of flash floods depending on the locations. • Dust suppression measures to enhance visibility at construction sites for oncoming traffic and road users. • Plans for short diversion routes which should be well maintained by regular sprinkling to reduce dust. Adhere to road reserve if possible. • Provision and maintenance of clear traffic signage's of ongoing construction works, regulate speed limits and diversion signage to notify approaching traffic. • Project vehicle should have and only use designated parking areas. • Sensitize workers and area residents on the importance of exercising care in the

Associated Impacts	Impact Levels	Management Actions
		project area in as far as traffic movement and other safety issues are concerned. • Ensuring that trained traffic marshals are posted around settlement areas and around public institutions. • Ensure that all haulage trucks drivers are assigned an assistant (turn boy) and well prepped banks men are posted on all active sections • Reinstatement of diversion routes (and old tracks) to original condition. • Adequate temporary signages and flagmen as necessary. • Traffic signs should be largely pictorial and easy to understand as the literacy level in the region is very low. • Strictly ensuring that mobile equipment and vehicles are only operated by duly qualified personnel. • Ensuring vehicles and other mobile equipment allowed on the roads are roadworthy through undertaking regular machinery and equipment inspection. • The supervising consultant should retain a traffic safety engineer to oversee the implementation of traffic management plan. • Maintaining a fleet control and management system to ensure that utilization of project vehicles is not abused. • Transportation of workers to and from site should be via NTSA approved buses/ minivans and not at the back of dump trucks, pickups, or other light/ heavy commercial project vehicles. • Provide and maintain serviceable and appropriate fire fighting equipment at the work sites, including fuel storage areas, garages, and offices. Workers shall also be drilled on emergency fire response in line with the OSHA 2007 requirements. • Maintain incident register and undertake investigations on any major incidents and

Associated Impacts	Impact Levels	Management Actions
		accidents to inform further preventive actions as necessary
• Labour influx and sexual offences to minors	Medium	• Effective community engagement and strong grievance mechanisms on matters related to labour. • Effective contractual obligations for the contractor to adhere to the mitigation of risks against labour influx. • Proper records of labour force on site while avoiding child and forced labour. • Fair treatment, non-discrimination, and equal opportunity of workers.
• Spread of Communicable diseases	Low	✓ Apply dust suppression measures - sprinkling water on the accesses and excavated surfaces – this shall be determined by the RE depending on the prevailing weather conditions. • Regular maintenance of contractors' equipment • Maintain a grievance register to log any complaints from local community. • Active construction sites should have controlled access and repulse by standers likely to be exposed to emissions. • Hold inductions for staff and people visiting the construction sites on the health and safety aspects. • Provide proper PPEs (dust masks, clothes, etc.) for all staff and visitors to active construction areas. • The Contractor should plan work program's activities and timing to avoid emission impact on sensitive receptors, especially urbanized areas. • Install screens and scrubbers on crusher sites to minimize dust emissions. • Locate ancillary facilities away from residential/institutional to minimize dust or other emissions to the residents. • Conduct regular check-ups for workers and offer local community free monthly

Associated Impacts	Impact Levels	Management Actions
		medical camps for testing and treatment through cooperation of local medical health facilities and county government.
• Workers welfare	Low- medium	✓ The contractor shall comply with the required Law of Kenya under DOSHS and Labour requirements. ✓ Have stocked clinic with a fulltime nurse on the campsite. ✓ In collaboration with local health facilities, ensure that the workers have access to health facilities in the area. ✓ Contractor to ensure that first aid facilities are always available at the work sites, and arrangement to access to ambulance service. ✓ The contractor shall provide mobile toilets for the workers at all worksites along the road (for women and men separately); ✓ The contractor must also ensure that for any accommodation for personnel, suitable arrangements are made for welfare and hygiene requirements and prevention of epidemics, taking into consideration issues like harsh weather conditions in the region, sanitation, etc.
• Conflict between construction workers and local communities	Low- Medium	• Contractor to formulate a labour management plan for his workforce. • Establishment of a formal grievance and redress mechanism by the supervising consultant/Engineer. • Contractor will be required to have a transparent external communication plan covering among others, how available opportunities will be advertised. • The Contractor should prioritize employing locals as casuals to reduce the need for labour influx. • ▪Consultations with the settlement executive committee to ensure that available

Associated Impacts	Impact Levels	Management Actions
		opportunities are fairly distributed across different clan members. • Maintain a grievance register to log any complaints from local community
• Alcohol and drug abuse	Low	• The Contractor shall require his employees, sub-Contractors, sub-Consultants, and any personnel thereof engaged in construction works to individually sign and comply the Code of Conduct. • ▪Removing any employee who persists in any misconduct or lack of care, carries out duties incompetently or negligently, fails to conform to any provisions of the contract, or persists in any conduct which is prejudicial to safety, health, or the protection of the environment. • Taking all reasonable precautions to prevent unlawful, riotous, or disorderly conduct by or amongst the Contractor's personnel, and to preserve peace and protection of persons and property on and near the site. • Prohibiting alcohol, drugs, arms, and ammunition on the worksite among personnel. • Liaise with the administration units (National and County governments,) to provide regular surveillance and patrols to protect workers and unacceptable behavioural interaction of local communities and workers
• Increased Transmission of HIV/AIDS	Medium	• Sensitize workers and the surrounding communities on awareness, prevention and management of HIV/AIDS and sexual health and rights through staff training, awareness campaigns, multimedia, and workshops or during community Barazas. • Use existing clinics to provide VCT services to construction crew and provision of ARVs for vulnerable community members. • Ensure safety of women and girls in provision of VCT services.

Associated Impacts	Impact Levels	Management Actions
• Human Rights Principles and Gender Inclusivity	Low	• Mainstream Gender Inclusivity in hiring of workers and entire Project Management as required by Gender Policy 2011 and 2/3 gender rule. • Comply with provisions of guidelines on incorporating Human Rights Standards and Principles, including Gender.
• Increase in the price of good and services in the community	Low	• The contractor will develop and implement project labour and influx management plan. • The contractor should ensure his workers appropriately mix the use of locally and non-locally procured goods to allow local project benefits to balance the local economy while reducing risk of crowding out of and price hikes for local consumers. • The contractor should source for alternative sources of goods and services that are in high demand to cushion local consumers from price hikes.
• Increased crime and insecurity	Medium	• The Contractor and Supervision Consultant should report all activities of a criminal nature on the worksite or by the Contractor's employees (whether on or off the worksite) to the police and undertake the necessary follow-up. • Provision for fencing along the contractor's camp boundary designed to control entry and exit points. • Crime reports should include nature of the offense, location, date, time, and all other pertinent details. • Sensitize the construction workers, locals, and security to be on the lookout on suspicious activities near the site. • The contractor and Supervision Consultant should register in a log all events of a criminal nature that occur at the worksite or are associated with the civil works

Associated Impacts	Impact Levels	Management Actions
		activities. • Enforce the crime related clauses in the Code of conduct signed by all workers. • Liaise with the administration units (County and sub county governments, Police, DO, chiefs, etc.) to provide regular surveillance and patrols to protect workers and visitors
• Increased GBV	Medium	• The Contractor shall require his employees, sub-contractors, sub-consultants, and any personnel thereof engaged in construction works to individually sign and comply with a Code of Conduct with specific provisions on protection from sexual exploitation and abuse. • The contractor shall implement provisions that ensure that gender-based violence at the community level is not triggered by the Project, including: - Effective and on-going community engagement and consultation, particularly with women and girls. - Review of specific project components that are known to heighten GBV risk at the community level, e.g., compensation schemes; employment schemes for women; etc. • Ensure clear human resources policy against sexual harassment that is aligned with national law. • Integrate provisions related to sexual harassment in the employee COC. • Ensure appointed human resources personnel to manage reports of sexual harassment according to policy. • The contractor shall develop specific plan for mitigating these known risks, e.g. sensitization around gender-equitable approaches to compensation and employment; etc.

Associated Impacts	Impact Levels	Management Actions
		• The contractor shall ensure adequate referral mechanisms are in place if a case of GBV at the community level
• Sexual Exploitation and Abuse by project workers against community members	Medium	• Develop and implement a SEA action plan with an Accountability and Response Framework as part of the C-ESMP. The SEA action plan shall follow guidance on the World Bank's Good Practice Note for Addressing Gender-based Violence in Investment Project Financing involving Major Civil Works (Sept 2018). • The SEA action plan shall include how the project shall ensure necessary steps are in place for: - Prevention of SEA: including COCs and ongoing sensitization of staff on responsibilities related to the COC and consequences of non-compliance; project-level IEC materials. - Response to SEA: including survivor-cantered coordinated multi-sectoral referral and assistance to complainants according to standard operating procedures; staff reporting mechanisms; written procedures related to case oversight, investigation and disciplinary procedures at the project level, including confidential data management. - Engagement with the community: including development of confidential community-based complaints mechanisms discrete from the standard GRM; mainstreaming of PSEA awareness-raising in all community engagement activities; community-level IEC materials; regular community outreach to women and girls about social risks and their PSEA-related rights. • Management and Coordination: including integration of SEA in job descriptions, employment contracts, performance appraisal systems, etc.; development of contract policies related to SEA, including whistle-blower protection and

Associated Impacts	Impact Levels	Management Actions
		investigation and disciplinary procedures; training for all project management; management of coordination mechanism for case oversight, investigations and disciplinary procedures; supervision of dedicated PSEA focal points in the project and trained community liaison officers.
• Child labour and protection	Low	• The contractor shall develop and implement a Children Protection Strategy that shall ensures minors are protected against negative impacts associated by the Project including SEA. • All staff of the contractor must sign, committing themselves towards protecting children, which clearly defines what is and is not acceptable behaviour • Children under the age of 18 years should be hired on site as provided by Child Rights Act (Amendment Bill) 2014 • Wherever possible, ensure that another adult is present when working in the proximity of children. • Not invite unaccompanied children to worker's home, unless they are at immediate risk of injury or in physical danger. • Refrain from physical punishment or discipline of children
Operation		
• Risk of encroachment and construction of structures on the roadway leave	Low	• Arrest and prosecution of encroachers as required by Meru County government
• Road maintenance risks	Low	• Incorporate recycling of road resurfacing waste where possible. • Composting of vegetation waste for reuse as a landscaping fertilizer.

Associated Impacts	Impact Levels	Management Actions
		• Manage sediment and sludge removed from storm water. • All removed paint materials suspected or confirmed as containing lead as a hazardous waste.
• flooding of homesteads	Low	• County Government authorities should ensure that the storm water drainages installed along the project roads are well maintained and functional to avoid flooding incidences
• Road accidents	Low	• After construction phase is complete, the client in liaison with relevant authorities should sensitise the public on safety measures to observe while using the road. • National Transport and Safety Authority (NTSA) should closely monitor the road usage and impose penalties on those going against safety rules. • Speed bumps should be erected in areas of high human activity such as the market centres, schools, and health centres.
• Spread of HIV/AIDS	Low	• Health officers should undertake public health education campaigns on HIV/AIDS and STIs, by specifically targeting transport operators in the project area.
Decommissioning Phase		
Solid Waste Generation	Low	All removed materials that shall not be used for other purposes must be removed and recycled/reused as far as possible;
		Where recycling/reuse of the removed materials and other demolition waste is not possible; the materials should be taken to a licensed waste disposal site, or arrangements made with the County Government;
		Donate reusable demolition waste to charitable organizations, individuals, and institutions;
Noise pollution	Low	Prepare a decommissioning plan to guide activities;

Associated Impacts	Impact Levels	Management Actions
		Monitor noise levels as per the NEMA Environmental Management and Coordination (Noise and Excessive Vibration Pollution) (Control) Regulations, 2009 & OSHA, 2007;
		The noise emission characteristics should be considered during selection and mobilization of decommissioning equipment; and Sensitize staff to switch off machinery and vehicles when not in use;
Occupational Health and Safety	Low	• Provide the correct PPE for the workers when conducting the demolition activities. • Conduct training on health and safety procedures to the workers prior to commencement of demolition. • Proper plans should be made prior to demolition so as to contain the raw sewage and other wastewater that poses as health risk to human beings and the environment, to prevent the workers and surrounding communities from getting into contact with it.

Table 7- 2: Impact analysis for Security lighting

Associated Impacts	Impact Levels &	Management Actions
Construction Phase		
• Air pollution and dust generation	Low	• Unnecessary vegetation clearance to be avoided through clear demarcation of construction areas. • Where practicable, re-vegetate disturbed areas to minimize ground exposure. • Sprinkling water (at least twice a day) on the accesses and excavated surfaces during the construction period to suppress dust generation within settled areas. • Limit the speed of construction vehicles (maximum speed limit 40 kph/25

Associated Impacts	Impact Levels &	Management Actions
		mph) on earth road. • Provision of appropriate protective personal equipment (PPEs) including respirators and dustcoats to exposed workers. • Ensuring the location of material stockpiles are away from human settlements and business premises. • Covering loaded trucks during the transportation of material. • Maintenance of vehicles and machinery in accordance with the equipment specifications and manufacturer's standards. • Sensitize workers on best practice on management of air pollution from vehicles and machinery. • All records on dust-related complaints should be submitted to Resident Engineer for appropriate action. • Undertake regular air quality (dust level) monitoring and conduct corrective adjustments where necessary based on the baseline data collected before project commencement. • Noise quality samples to be used as baseline data will be collected before commencement of the civil works for regular monitoring during the construction period at various sensitive areas to be agreed upon with the RE. • The contractor to comply the provisions of EMCA (Air Quality Regulations) 2014, to be enforced by the Supervising Engineer. • Ensure dust suppression by regularly spraying water on the roads and work sites. • Wetting or covering stockpiles.

Associated Impacts	Impact Levels &	Management Actions
		• Haul trucks should be covered to avoid spills. • Ensure proper location of material stockpiles away from habitation, business premises and wetlands. • Maintenance of vehicles and machinery in accordance with the equipment specifications and manufacturer's standards. • Workers shall be sensitized on management of air pollution from vehicles and machinery. • Activities generating dust (excavation, handling, and transport of soils) to be carried out in calm weather where possible. The resident engineer shall suspend earthworks operations wherever visible dust is affecting properties adjoining the work sites. • Any removal of vegetation shall be avoided until such time as clearance is required and exposed surfaces shall be re-vegetated or stabilized as soon as practically possible. • The contractor to comply the provisions of EMCA (Air Quality Regulations) 2014, to be enforced by the Supervising Engineer;
• Noise and excessive vibrations	Low	• Workers shall use earmuffs/plugs when performing operations producing over 85 dB of continuous noise. • Post appropriate notices to warn drivers against unnecessary hooting of vehicles. • Switch off engines or reduce idling time when not in use. • Keep machinery covers and panels closed and well fitted. Bolts/fasteners done up tightly avoid rattles.

Associated Impacts	Impact Levels &	Management Actions
		• Equipment should be maintained regularly to reduce noise resulting from friction. • Unnecessary hooting should be avoided. • Noise levels at the construction site boundary should be kept within acceptable limits of 60 dB (A) during the day and 35 dB (A) during the night as stipulated within the Environmental Management and Coordination (Noise and Excessive Vibration Pollution) (Control) Regulations, 2009. • Limit idling time of pickup trucks and other small equipment and observe a common-sense approach to vehicle use and encourage workers to shut off vehicle engines whenever possible. • When working closer to noise sensitive areas such as schools and hospitals, the contractor shall notify the concerned party at least 5 days before commencement of construction within their vicinity. • Noisy operation can be scheduled outside learning hours to limit nuisance caused. • Any complaints received by the Contractor regarding noise will be recorded and communicated to the Resident Engineer for further remedial action. • Monitor environmental and occupational noise levels as per the NEMA Environmental Management and Coordination Act (Noise and Excessive Vibration Pollution) (Control) Regulations, 2009 & OSHA, 2007 requirements respectively. • The noise emission characteristics should be considered during selection and mobilization of construction equipment.

Associated Impacts	Impact Levels &	Management Actions
		• Where feasible, fit equipment with mufflers, sound insulations, silencers to lower the levels of noise emission. • Sensitize construction workers to switch off machinery and vehicles when not in use. • Staff on active project sites with continuous exposure should be provided and encouraged to fit in their Personal Protective Equipment (PPEs). • Locate noisy operations like batching plant away from the densely settled areas. • Where noisy activities must be undertaken near sensitive receptors, the neighbouring occupants must be informed in advance and works limited to daytime only. • ▪Noise quality samples to be used as baseline data will be collected before commencement of the civil works for regular monitoring during the construction period at various sensitive areas to be agreed upon with the RE. • Any complaints received by the Contractor regarding noise shall be recorded and communicated to the Supervising Engineer for appropriate action
• Generation of Solid waste	Low	• Contractor shall provide suitable, segregated and well labelled solid waste containers to proper disposal of the wastes. • Proper segregation of solid waste prior to disposal. • Reduce generation of solid waste at the source through planning. • Separation and reuse of topsoil for landscaping of the site. • Empty packaging materials like cartons and cement bags shall be piled in a safe place and sold to waste paper recyclers.

Associated Impacts	Impact Levels &	Management Actions
		• Other solid waste to be disposed at designated sites or collected and transported to the approved disposal sites by NEMA registered waste transporters. • Ensure solid waste does not accumulate and further block the existing storm water drains. • Provision of appropriate sanitation facilities for use by workers. The facilities should be established in compliance with OSHA and Public Health requirements
• Disturbance of traffic and difficulty of access	Low	• The Contractor should provide temporary road signs or notices to indicate ongoing works. • The Contractor together with the Resident Engineer should Plan itineraries for site traffic daily and avoid peak traffic periods. • Warn road users about traffic diversion by using signs, as well as use of traffic marshals. • Diversion routes should accommodate two-way traffic, and that they should be all weather. • Plan short diversion routes. • Adhere to road reserve if possible. • Obtain permission from inhabitants if diversion routes go beyond the Right of Way. • Reinstate diversion routes (and old tracks) to original condition. • Institute a traffic management plan. • Trained traffic marshals on site

Associated Impacts	Impact Levels &	Management Actions
• Accidental Oil and fuel Spills and Leaks	Low	• Checking and regular servicing of Equipment. • Re-fuelling at safe locations, • Use of spill kits and applications of emergency spill procedures. • Provision of a 20cm layer of sand and ballast at the machinery storage area and diesel tank section, this layer act as sink to potential oil spills and shall be replaced when saturated. • Vehicle maintenance to be done in impervious concrete platforms and grease and oil traps to be used.
• Vegetation Cover destruction	Low	• Restrict vegetation clearing to project sites by clear demarcation of areas to be used. • Thickets and bush shrubs should be preserved wherever possible through selective clearing, especially along the seasonal riverine areas. • Siting of camp sites should be done away from densely vegetated areas. • Consultations with the local people should be done to ensure that trees with historical, cultural, or ornamental values, endangered species are preserved. • Beautification using trees that will not damage the infrastructure to maintain the beauty of the trees to be done as part of the project,
• Removal of vegetation	Low	• Excavated material should be properly piled, sprinkled with water, and covered (where possible) to prevent possible wash-out into seasonal watercourses. Stock piling areas should have levelled ground and away from sensitive areas like slopes. • Material excavation should be minimized and restricted to designated locations.

Associated Impacts	Impact Levels &	Management Actions
		• The contractor should ensure that construction related impacts like erosion and cut slope destabilization should be addressed through rock pitching. • Re-vegetation should be done in tandem with construction activities to avoid exposure of bare ground to agents of erosion. • Enforce landscaping and restoration of the construction site prior to decommissioning of the construction site. • • As part of enhancing environmental protection in the region, the contractor should start a tree planting campaign for reforestation by incubating a tree nursery programs along the road. The types of trees to plant shall be through the guidance of the local KFS or through involvement of the Ministry of Agriculture • Any polluted soil should be handled with care for proper disposal. • Concrete mixing shall be done on concrete slabs or a large metal sheet or mortar boards. • Maintenance of vehicles to be done strictly at designated place/Drip trays to be used to avoid oil spills.
• Servicing of machinery • Removal of vegetation leading to erosion • Utilization of water for construction activities and for domestic purposes	Low	• Grey water to be contained and properly channelled. • Onsite treatment of grey water by the facility approved by the resident engineer. • Water containing pollutants should be kept in a conservancy tank for removal to prevent pollution of the surface water and surface water bodies. • Prompt action to be taken by the Contractor in case of any pollution incident. • Ensure prompt reinstatement of drainage channels following trenching and

Associated Impacts	Impact Levels &	Management Actions
		backfilling and providing for temporary drains. • The contractor will need to develop independent construction water sources, with potential to abstract water from groundwater resources. Drilling of shallow wells is ideal as it will also support the locals after the road construction works are complete. • The Contractor must adhere to the Water Act, 2016 and associated rules and regulations as administered by WRA and NEMA. Relevant water abstraction permits must be obtained from these authorities to minimize competition or conflict with existing water rights/ resource uses. • Contractor shall employ water efficient and conserving technologies to minimize on water usage;
• Loss of temporary assets and sources of livelihood	Low	• Although the survey and social screening studies undertaken during the ESIA encountered no likelihood of loss of livelihood or displacement of people
• Disruption of public utilities	Low	• Contractor to undertake inventory of existing utilities in the project area before beginning construction. • Liaise with relevant service providers to identify and map affected sections of alignment of the services and provide cost to cover the relocation of the existing infrastructure. • Relocation plans shall include adequate notification of affected customers and residents whose access foot paths might get disrupted
• Risk of accidents at work site	Low	• Provision and maintenance of alternative routes in areas where accesses have been disrupted. Such diversion routes should consider road safety in case of

Associated Impacts	Impact Levels &	Management Actions
		flash floods depending on the locations. • Dust suppression measures to enhance visibility at construction sites for oncoming traffic and road users. • Plans for short diversion routes which should be well maintained by regular sprinkling to reduce dust. Adhere to road reserve if possible. • Provision and maintenance of clear traffic signage's of ongoing construction works, regulate speed limits and diversion signage to notify approaching traffic. • Project vehicle should have and only use designated parking areas. • Sensitize workers and area residents on the importance of exercising care in the project area in as far as traffic movement and other safety issues are concerned. • Ensuring that trained traffic marshals are posted around settlement areas and around public institutions. • Ensure that all haulage trucks drivers are assigned an assistant (turn boy) and well prepped banks men are posted on all active sections • Reinstatement of diversion routes (and old tracks) to original condition. • Adequate temporary signages and flagmen as necessary. • Traffic signs should be largely pictorial and easy to understand as the literacy level in the region is very low. • Strictly ensuring that mobile equipment and vehicles are only operated by duly qualified personnel. • Ensuring vehicles and other mobile equipment allowed on the roads are

Associated Impacts	Impact Levels &	Management Actions
		roadworthy through undertaking regular machinery and equipment inspection. • The supervising consultant should retain a traffic safety engineer to oversee the implementation of traffic management plan. • Maintaining a fleet control and management system to ensure that utilization of project vehicles is not abused. • Transportation of workers to and from site should be via NTSA approved buses/ minivans and not at the back of dump trucks, pickups, or other light/ heavy commercial project vehicles. • Provide and maintain serviceable and appropriate fire fighting equipment at the work sites, including fuel storage areas, garages, and offices. Workers shall also be drilled on emergency fire response in line with the OSHA 2007 requirements. • Maintain incident register and undertake investigations on any major incidents and accidents to inform further preventive actions as necessary
• Labour influx and sexual offences to minors	Low	• Effective community engagement and strong grievance mechanisms on matters related to labour. • Effective contractual obligations for the contractor to adhere to the mitigation of risks against labour influx. • Proper records of labour force on site while avoiding child and forced labour. • Fair treatment, non-discrimination, and equal opportunity of workers.

Associated Impacts	Impact Levels &	Management Actions
• Spread of Communicable diseases	Low	✓ Apply dust suppression measures - sprinkling water on the accesses and excavated surfaces – this shall be determined by the RE depending on the prevailing weather conditions. • Regular maintenance of contractors' equipment • Maintain a grievance register to log any complaints from local community. • Active construction sites should have controlled access and repulse by standers likely to be exposed to emissions. • Hold inductions for staff and people visiting the construction sites on the health and safety aspects. • Provide proper PPEs (dust masks, clothes, etc.) for all staff and visitors to active construction areas. • The Contractor should plan work program's activities and timing to avoid emission impact on sensitive receptors, especially urbanized areas. • Install screens and scrubbers on crusher sites to minimize dust emissions. • Locate ancillary facilities away from residential/institutional to minimize dust or other emissions to the residents. • Conduct regular check-ups for workers and offer local community free monthly medical camps for testing and treatment through cooperation of local medical health facilities and county government.
• Workers welfare	Low	• The contractor shall comply with the required Law of Kenya under DOSHS and Labour requirements. • Have stocked clinic with a fulltime nurse on the campsite. • In collaboration with local health facilities, ensure that the workers have

Associated Impacts	Impact Levels &	Management Actions
		access to health facilities in the area. • Contractor to ensure that first aid facilities are always available at the work sites, and arrangement to access to ambulance service. • The contractor shall provide mobile toilets for the workers at all worksites along the road (for women and men separately); • The contractor must also ensure that for any accommodation for personnel, suitable arrangements are made for welfare and hygiene requirements and prevention of epidemics, taking into consideration issues like harsh weather conditions in the region, sanitation, etc.
• Conflict between construction workers and local communities	Low	• Contractor to formulate a labour management plan for his workforce. • Establishment of a formal grievance and redress mechanism by the supervising consultant/Engineer. • Contractor will be required to have a transparent external communication plan covering among others, how available opportunities will be advertised. • The Contractor should prioritize employing locals as casuals to reduce the need for labour influx. • ▪Consultations with the settlement executive committee to ensure that available opportunities are fairly distributed across different clan members. • Maintain a grievance register to log any complaints from local community
• Alcohol and drug abuse	Low	• The Contractor shall require his employees, sub-Contractors, sub-Consultants, and any personnel thereof engaged in construction works to individually sign and comply the Code of Conduct. • ▪Removing any employee who persists in any misconduct or lack of care,

Associated Impacts	Impact Levels &	Management Actions
		carries out duties incompetently or negligently, fails to conform to any provisions of the contract, or persists in any conduct which is prejudicial to safety, health, or the protection of the environment. • Taking all reasonable precautions to prevent unlawful, riotous, or disorderly conduct by or amongst the Contractor's personnel, and to preserve peace and protection of persons and property on and near the site. • Prohibiting alcohol, drugs, arms, and ammunition on the worksite among personnel. • Liaise with the administration units (National and County governments,) to provide regular surveillance and patrols to protect workers and unacceptable behavioural interaction of local communities and workers
• Increased Transmission of HIV/AIDS	Medium	• Sensitize workers and the surrounding communities on awareness, prevention and management of HIV/AIDS and sexual health and rights through staff training, awareness campaigns, multimedia, and workshops or during community Barazas. • Use existing clinics to provide VCT services to construction crew and provision of ARVs for vulnerable community members. • Ensure safety of women and girls in provision of VCT services.
• Human Rights Principles and Gender Inclusivity	Low	• Mainstream Gender Inclusivity in hiring of workers and entire Project Management as required by Gender Policy 2011 and 2/3 gender rule. • Comply with provisions of guidelines on incorporating Human Rights Standards and Principles, including Gender.

Associated Impacts	Impact Levels &	Management Actions
• Increase in the price of good and services in the community	Low	• The contractor will develop and implement project labour and influx management plan. • The contractor should ensure his workers appropriately mix the use of locally and non-locally procured goods to allow local project benefits to balance the local economy while reducing risk of crowding out of and price hikes for local consumers. • The contractor should source for alternative sources of goods and services that are in high demand to cushion local consumers from price hikes.
• Increased crime and insecurity	Low	• The Contractor and Supervision Consultant should report all activities of a criminal nature on the worksite or by the Contractor's employees (whether on or off the worksite) to the police and undertake the necessary follow-up. • Provision for fencing along the contractor's camp boundary designed to control entry and exit points. • Crime reports should include nature of the offense, location, date, time, and all other pertinent details. • Sensitize the construction workers, locals, and security to be on the lookout on suspicious activities near the site. • The contractor and Supervision Consultant should register in a log all events of a criminal nature that occur at the worksite or are associated with the civil works activities. • Enforce the crime related clauses in the Code of conduct signed by all workers. • Liaise with the administration units (County and sub county governments,

Associated Impacts	Impact Levels &	Management Actions
		Police, DO, chiefs, etc.) to provide regular surveillance and patrols to protect workers and visitors
• Increased GBV	Medium	• The Contractor shall require his employees, sub-contractors, sub-consultants, and any personnel thereof engaged in construction works to individually sign and comply with a Code of Conduct with specific provisions on protection from sexual exploitation and abuse. • The contractor shall implement provisions that ensure that gender-based violence at the community level is not triggered by the Project, including: - Effective and on-going community engagement and consultation, particularly with women and girls. - Review of specific project components that are known to heighten GBV risk at the community level, e.g., compensation schemes; employment schemes for women; etc. • Ensure clear human resources policy against sexual harassment that is aligned with national law. • Integrate provisions related to sexual harassment in the employee COC. • Ensure appointed human resources personnel to manage reports of sexual harassment according to policy. • The contractor shall develop specific plan for mitigating these known risks, e.g. sensitization around gender-equitable approaches to compensation and employment; etc.

Associated Impacts	Impact Levels &	Management Actions
		• The contractor shall ensure adequate referral mechanisms are in place if a case of GBV at the community level
• Sexual Exploitation and Abuse by project workers against community members	Medium	• Develop and implement a SEA action plan with an Accountability and Response Framework as part of the C-ESMP. The SEA action plan shall follow guidance on the World Bank's Good Practice Note for Addressing Gender-based Violence in Investment Project Financing involving Major Civil Works (Sept 2018). • The SEA action plan shall include how the project shall ensure necessary steps are in place for: - Prevention of SEA: including COCs and ongoing sensitization of staff on responsibilities related to the COC and consequences of non-compliance; project-level IEC materials. - Response to SEA: including survivor-cantered coordinated multi-sectoral referral and assistance to complainants according to standard operating procedures; staff reporting mechanisms; written procedures related to case oversight, investigation and disciplinary procedures at the project level, including confidential data management. - Engagement with the community: including development of confidential community-based complaints mechanisms discrete from the standard GRM; mainstreaming of PSEA awareness-raising in all community engagement activities; community-level IEC materials; regular community outreach to women and girls about social risks and their PSEA-related rights.

Associated Impacts	Impact Levels &	Management Actions
		• Management and Coordination: including integration of SEA in job descriptions, employment contracts, performance appraisal systems, etc.; development of contract policies related to SEA, including whistle-blower protection and investigation and disciplinary procedures; training for all project management; management of coordination mechanism for case oversight, investigations and disciplinary procedures; supervision of dedicated PSEA focal points in the project and trained community liaison officers.
• Child labour and protection	Low	• The contractor shall develop and implement a Children Protection Strategy that shall ensures minors are protected against negative impacts associated by the Project including SEA. • All staff of the contractor must sign, committing themselves towards protecting children, which clearly defines what is and is not acceptable behaviour • Children under the age of 18 years should be hired on site as provided by Child Rights Act (Amendment Bill) 2014 • Wherever possible, ensure that another adult is present when working in the proximity of children. • Not invite unaccompanied children to worker's home, unless they are at immediate risk of injury or in physical danger. • Refrain from physical punishment or discipline of children
Operation		
• Risk of vandalism of the streetlights	Medium	• The count government to ensure regular monitoring of the installed high mast flood lights.

Associated Impacts	Impact Levels &	Management Actions
		• Sensitization of the community against vandalizing the installed infrastructure
• Risk of encroachment and construction of structures on the roadway leave	Low	• Arrest and prosecution of encroachers as required by Meru County government
• Spread of HIV/AIDS	Low	• Health officers should undertake public health education campaigns on HIV/AIDS and STIs, by specifically targeting transport operators in the project area.
Decommissioning Phase		
Solid Waste Generation	Low	All removed materials that shall not be used for other purposes must be removed and recycled/reused as far as possible;
		Where recycling/reuse of the removed materials and other demolition waste is not possible; the materials should be taken to a licensed waste disposal site, or arrangements made with the County Government;
		Donate reusable demolition waste to charitable organizations, individuals, and institutions;
Noise pollution	Low	Prepare a decommissioning plan to guide activities;
		Monitor noise levels as per the NEMA Environmental Management and Coordination (Noise and Excessive Vibration Pollution) (Control) Regulations, 2009 & OSHA, 2007;
		The noise emission characteristics should be considered during selection and mobilization of decommissioning equipment; and Sensitize staff to switch off machinery and vehicles when not in use;

Associated Impacts	Impact Levels &	Management Actions
Occupational Health and Safety	Low	• Provide the correct PPE for the workers when conducting the demolition activities. • Conduct training on health and safety procedures to the workers prior to commencement of demolition. • Proper plans should be made prior to demolition so as to contain the raw sewage and other wastewater that poses as health risk to human beings and the environment, to prevent the workers and surrounding communities from getting into contact with it.

Table 7- 3: Impact analysis water project

Associated Impacts	Impact Levels &	Management Actions
Construction Phase		
• Air pollution and dust generation	Medium	• Unnecessary vegetation clearance to be avoided through clear demarcation of construction areas. • Where practicable, re-vegetate disturbed areas to minimize ground exposure. • Sprinkling water (at least twice a day) on the accesses and excavated surfaces during the construction period to suppress dust generation within settled areas. • Limit the speed of construction vehicles (maximum speed limit 40 kph/25 mph) on earth road.

Associated Impacts	Impact Levels &	Management Actions
		• Provision of appropriate protective personal equipment (PPEs) including respirators and dustcoats to exposed workers. • Ensuring the location of material stockpiles are away from human settlements and business premises. • Covering loaded trucks during the transportation of material. • Maintenance of vehicles and machinery in accordance with the equipment specifications and manufacturer's standards. • Sensitize workers on best practice on management of air pollution from vehicles and machinery. • All records on dust-related complaints should be submitted to Resident Engineer for appropriate action. • Undertake regular air quality (dust level) monitoring and conduct corrective adjustments where necessary based on the baseline data collected before project commencement. • Noise quality samples to be used as baseline data will be collected before commencement of the civil works for regular monitoring during the construction period at various sensitive areas to be agreed upon with the RE. • The contractor to comply the provisions of EMCA (Air Quality Regulations) 2014, to be enforced by the Supervising Engineer. • Ensure dust suppression by regularly spraying water on the roads and work sites. • Wetting or covering stockpiles.

Associated Impacts	Impact Levels &	Management Actions
		• Haul trucks should be covered to avoid spills. • Ensure proper location of material stockpiles away from habitation, business premises and wetlands. • Maintenance of vehicles and machinery in accordance with the equipment specifications and manufacturer's standards. • Workers shall be sensitized on management of air pollution from vehicles and machinery. • Activities generating dust (excavation, handling, and transport of soils) to be carried out in calm weather where possible. The resident engineer shall suspend earthworks operations wherever visible dust is affecting properties adjoining the work sites. • Any removal of vegetation shall be avoided until such time as clearance is required and exposed surfaces shall be re-vegetated or stabilized as soon as practically possible. • The contractor to comply the provisions of EMCA (Air Quality Regulations) 2014, to be enforced by the Supervising Engineer;
• Noise and excessive vibrations	Medium	• Workers shall use earmuffs/plugs when performing operations producing over 85 dB of continuous noise. • Post appropriate notices to warn drivers against unnecessary hooting of vehicles. • Switch off engines or reduce idling time when not in use. • Keep machinery covers and panels closed and well fitted. Bolts/fasteners done up tightly avoid rattles.

Associated Impacts	Impact Levels &	Management Actions
		• Equipment should be maintained regularly to reduce noise resulting from friction. • Unnecessary hooting should be avoided. • Noise levels at the construction site boundary should be kept within acceptable limits of 60 dB (A) during the day and 35 dB (A) during the night as stipulated within the Environmental Management and Coordination (Noise and Excessive Vibration Pollution) (Control) Regulations, 2009. • Limit idling time of pickup trucks and other small equipment and observe a common-sense approach to vehicle use and encourage workers to shut off vehicle engines whenever possible. • When working closer to noise sensitive areas such as schools and hospitals, the contractor shall notify the concerned party at least 5 days before commencement of construction within their vicinity. • Noisy operation can be scheduled outside learning hours to limit nuisance caused. • Any complaints received by the Contractor regarding noise will be recorded and communicated to the Resident Engineer for further remedial action. • Monitor environmental and occupational noise levels as per the NEMA Environmental Management and Coordination Act (Noise and Excessive Vibration Pollution) (Control) Regulations, 2009 & OSHA, 2007 requirements respectively. • The noise emission characteristics should be considered during selection and mobilization of construction equipment.

Associated Impacts	Impact Levels &	Management Actions
		• Where feasible, fit equipment with mufflers, sound insulations, silencers to lower the levels of noise emission. • Sensitize construction workers to switch off machinery and vehicles when not in use. • Staff on active project sites with continuous exposure should be provided and encouraged to fit in their Personal Protective Equipment (PPEs). • Locate noisy operations like batching plant away from the densely settled areas. • Where noisy activities must be undertaken near sensitive receptors, the neighbouring occupants must be informed in advance and works limited to daytime only. • ▪Noise quality samples to be used as baseline data will be collected before commencement of the civil works for regular monitoring during the construction period at various sensitive areas to be agreed upon with the RE. • Any complaints received by the Contractor regarding noise shall be recorded and communicated to the Supervising Engineer for appropriate action

Associated Impacts	Impact Levels &	Management Actions
• Generation of Solid waste	Medium	• Contractor shall provide suitable, segregated and well labelled solid waste containers to proper disposal of the wastes. • Proper segregation of solid waste prior to disposal. • Reduce generation of solid waste at the source through planning. • Separation and reuse of topsoil for landscaping of the site. • Empty packaging materials like cartons and cement bags shall be piled in a safe place and sold to waste paper recyclers. • Other solid waste to be disposed at designated sites or collected and transported to the approved disposal sites by NEMA registered waste transporters. • Ensure solid waste does not accumulate and further block the existing storm water drains. • Provision of appropriate sanitation facilities for use by workers. The facilities should be established in compliance with OSHA and Public Health requirements
• Disturbance of traffic and difficulty of access	Medium	• The Contractor should provide temporary road signs or notices to indicate ongoing works. • The Contractor together with the Resident Engineer should Plan itineraries for site traffic daily and avoid peak traffic periods. • Warn road users about traffic diversion by using signs, as well as use of traffic marshals. • Diversion routes should accommodate two-way traffic, and that they should be all weather.

Associated Impacts	Impact Levels &	Management Actions
		• Plan short diversion routes. • Adhere to road reserve if possible. • Obtain permission from inhabitants if diversion routes go beyond the Right of Way. • Reinstate diversion routes (and old tracks) to original condition. • Institute a traffic management plan. • Trained traffic marshals on site
• Accidental Oil and fuel Spills and Leaks	Low	• Checking and regular servicing of Equipment. • Re-fuelling at safe locations, • Use of spill kits and applications of emergency spill procedures. • Provision of a 20cm layer of sand and ballast at the machinery storage area and diesel tank section, this layer act as sink to potential oil spills and shall be replaced when saturated. • Vehicle maintenance to be done in impervious concrete platforms and grease and oil traps to be used.
• Vegetation Cover destruction	Low	• Restrict vegetation clearing to project sites by clear demarcation of areas to be used. • Thickets and bush shrubs should be preserved wherever possible through selective clearing, especially along the seasonal riverine areas. • Siting of camp sites should be done away from densely vegetated areas. • Consultations with the local people should be done to ensure that trees with historical, cultural, or ornamental values, endangered species are preserved.

Associated Impacts	Impact Levels &	Management Actions
		• Beautification using trees that will not damage the infrastructure to maintain the beauty of the trees to be done as part of the project,
• Removal of vegetation	Low	• Excavated material should be properly piled, sprinkled with water, and covered (where possible) to prevent possible wash-out into seasonal watercourses. Stock piling areas should have levelled ground and away from sensitive areas like slopes. • Material excavation should be minimized and restricted to designated locations. • The contractor should ensure that construction related impacts like erosion and cut slope destabilization should be addressed through rock pitching. • Re-vegetation should be done in tandem with construction activities to avoid exposure of bare ground to agents of erosion. • Enforce landscaping and restoration of the construction site prior to decommissioning of the construction site. • • As part of enhancing environmental protection in the region, the contractor should start a tree planting campaign for reforestation by incubating a tree nursery programs along the road. The types of trees to plant shall be through the guidance of the local KFS or through involvement of the Ministry of Agriculture • Any polluted soil should be handled with care for proper disposal. • Concrete mixing shall be done on concrete slabs or a large metal sheet or mortar boards. • Maintenance of vehicles to be done strictly at designated place/Drip trays

Associated Impacts	Impact Levels &	Management Actions
		to be used to avoid oil spills.
• Servicing of machinery • Removal of vegetation leading to erosion • Utilization of water for construction activities and for domestic purposes	Low	• Grey water to be contained and properly channelled. • Onsite treatment of grey water by the facility approved by the resident engineer. • Water containing pollutants should be kept in a conservancy tank for removal to prevent pollution of the surface water and surface water bodies. • Prompt action to be taken by the Contractor in case of any pollution incident. • Ensure prompt reinstatement of drainage channels following trenching and backfilling and providing for temporary drains. • The contractor will need to develop independent construction water sources, with potential to abstract water from groundwater resources. Drilling of shallow wells is ideal as it will also support the locals after the road construction works are complete. • The Contractor must adhere to the Water Act, 2016 and associated rules and regulations as administered by WRA and NEMA. Relevant water abstraction permits must be obtained from these authorities to minimize competition or conflict with existing water rights/ resource uses. • Contractor shall employ water efficient and conserving technologies to minimize on water usage;

Associated Impacts	Impact Levels &	Management Actions
• Loss of temporary assets and sources of livelihood	Low	• Although the survey and social screening studies undertaken during the ESIA encountered no likelihood of loss of livelihood or displacement of people
• Disruption of public utilities	Medium	• Contractor to undertake inventory of existing utilities in the project area before beginning construction. • Liaise with relevant service providers to identify and map affected sections of alignment of the services and provide cost to cover the relocation of the existing infrastructure. • Relocation plans shall include adequate notification of affected customers and residents whose access foot paths might get disrupted
• Risk of accidents at work site	Medium	• Provision and maintenance of alternative routes in areas where accesses have been disrupted. Such diversion routes should consider road safety in case of flash floods depending on the locations. • Dust suppression measures to enhance visibility at construction sites for oncoming traffic and road users. • Plans for short diversion routes which should be well maintained by regular sprinkling to reduce dust. Adhere to road reserve if possible. • Provision and maintenance of clear traffic signage's of ongoing construction works, regulate speed limits and diversion signage to notify approaching traffic. • Project vehicle should have and only use designated parking areas. • Sensitize workers and area residents on the importance of exercising care in the project area in as far as traffic movement and other safety issues are

Associated Impacts	Impact Levels &	Management Actions
		concerned. • Ensuring that trained traffic marshals are posted around settlement areas and around public institutions. • Ensure that all haulage trucks drivers are assigned an assistant (turn boy) and well prepped banks men are posted on all active sections • Reinstatement of diversion routes (and old tracks) to original condition. • Adequate temporary signages and flagmen as necessary. • Traffic signs should be largely pictorial and easy to understand as the literacy level in the region is very low. • Strictly ensuring that mobile equipment and vehicles are only operated by duly qualified personnel. • Ensuring vehicles and other mobile equipment allowed on the roads are roadworthy through undertaking regular machinery and equipment inspection. • The supervising consultant should retain a traffic safety engineer to oversee the implementation of traffic management plan. • Maintaining a fleet control and management system to ensure that utilization of project vehicles is not abused. • Transportation of workers to and from site should be via NTSA approved buses/ minivans and not at the back of dump trucks, pickups, or other light/ heavy commercial project vehicles. • Provide and maintain serviceable and appropriate fire fighting equipment at the work sites, including fuel storage areas, garages, and offices.

Associated Impacts	Impact Levels &	Management Actions
		Workers shall also be drilled on emergency fire response in line with the OSHA 2007 requirements. • Maintain incident register and undertake investigations on any major incidents and accidents to inform further preventive actions as necessary
• Labour influx and sexual offences to minors	Medium	• Effective community engagement and strong grievance mechanisms on matters related to labour. • Effective contractual obligations for the contractor to adhere to the mitigation of risks against labour influx. • Proper records of labour force on site while avoiding child and forced labour. • Fair treatment, non-discrimination, and equal opportunity of workers.
• Spread of Communicable diseases	Low	✓ Apply dust suppression measures - sprinkling water on the accesses and excavated surfaces – this shall be determined by the RE depending on the prevailing weather conditions. • Regular maintenance of contractors' equipment • Maintain a grievance register to log any complaints from local community. • Active construction sites should have controlled access and repulse by standers likely to be exposed to emissions. • Hold inductions for staff and people visiting the construction sites on the health and safety aspects. • Provide proper PPEs (dust masks, clothes, etc.) for all staff and visitors to active construction areas. • The Contractor should plan work program's activities and timing to avoid

Associated Impacts	Impact Levels &	Management Actions
		emission impact on sensitive receptors, especially urbanized areas. • Install screens and scrubbers on crusher sites to minimize dust emissions. • Locate ancillary facilities away from residential/institutional to minimize dust or other emissions to the residents. • Conduct regular check-ups for workers and offer local community free monthly medical camps for testing and treatment through cooperation of local medical health facilities and county government.
• Workers welfare	Low- medium	• The contractor shall comply with the required Law of Kenya under DOSHS and Labour requirements. • Have stocked clinic with a fulltime nurse on the campsite. • In collaboration with local health facilities, ensure that the workers have access to health facilities in the area. • Contractor to ensure that first aid facilities are always available at the work sites, and arrangement to access to ambulance service. • The contractor shall provide mobile toilets for the workers at all worksites along the road (for women and men separately); • The contractor must also ensure that for any accommodation for personnel, suitable arrangements are made for welfare and hygiene requirements and prevention of epidemics, taking into consideration issues like harsh weather conditions in the region, sanitation, etc.
• Conflict between construction workers and local communities	Low- Medium	• Contractor to formulate a labour management plan for his workforce. • Establishment of a formal grievance and redress mechanism by the supervising consultant/Engineer.

Associated Impacts	Impact Levels &	Management Actions
		• Contractor will be required to have a transparent external communication plan covering among others, how available opportunities will be advertised. • The Contractor should prioritize employing locals as casuals to reduce the need for labour influx. • ▪Consultations with the settlement executive committee to ensure that available opportunities are fairly distributed across different clan members. • Maintain a grievance register to log any complaints from local community
• Alcohol and drug abuse	Low	• The Contractor shall require his employees, sub-Contractors, sub-Consultants, and any personnel thereof engaged in construction works to individually sign and comply the Code of Conduct. • ▪Removing any employee who persists in any misconduct or lack of care, carries out duties incompetently or negligently, fails to conform to any provisions of the contract, or persists in any conduct which is prejudicial to safety, health, or the protection of the environment. • Taking all reasonable precautions to prevent unlawful, riotous, or disorderly conduct by or amongst the Contractor's personnel, and to preserve peace and protection of persons and property on and near the site. • Prohibiting alcohol, drugs, arms, and ammunition on the worksite among personnel. • Liaise with the administration units (National and County governments,) to provide regular surveillance and patrols to protect workers and

Associated Impacts	Impact Levels &	Management Actions
		unacceptable behavioural interaction of local communities and workers
• Increased Transmission of HIV/AIDS	Medium	• Sensitize workers and the surrounding communities on awareness, prevention and management of HIV/AIDS and sexual health and rights through staff training, awareness campaigns, multimedia, and workshops or during community Barazas. • Use existing clinics to provide VCT services to construction crew and provision of ARVs for vulnerable community members. • Ensure safety of women and girls in provision of VCT services.
• Human Rights Principles and Gender Inclusivity	Low	• Mainstream Gender Inclusivity in hiring of workers and entire Project Management as required by Gender Policy 2011 and 2/3 gender rule. • Comply with provisions of guidelines on incorporating Human Rights Standards and Principles, including Gender.
• Increase in the price of good and services in the community	Low	• The contractor will develop and implement project labour and influx management plan. • The contractor should ensure his workers appropriately mix the use of locally and non-locally procured goods to allow local project benefits to balance the local economy while reducing risk of crowding out of and price hikes for local consumers. • The contractor should source for alternative sources of goods and services that are in high demand to cushion local consumers from price hikes.

Associated Impacts	Impact Levels &	Management Actions
• Increased crime and insecurity	Medium	• The Contractor and Supervision Consultant should report all activities of a criminal nature on the worksite or by the Contractor's employees (whether on or off the worksite) to the police and undertake the necessary follow-up. • Provision for fencing along the contractor's camp boundary designed to control entry and exit points. • Crime reports should include nature of the offense, location, date, time, and all other pertinent details. • Sensitize the construction workers, locals, and security to be on the lookout on suspicious activities near the site. • The contractor and Supervision Consultant should register in a log all events of a criminal nature that occur at the worksite or are associated with the civil works activities. • Enforce the crime related clauses in the Code of conduct signed by all workers. • Liaise with the administration units (County and sub county governments, Police, DO, chiefs, etc.) to provide regular surveillance and patrols to protect workers and visitors
• Increased GBV	Medium	• The Contractor shall require his employees, sub-contractors, sub-consultants, and any personnel thereof engaged in construction works to individually sign and comply with a Code of Conduct with specific provisions on protection from sexual exploitation and abuse. • The contractor shall implement provisions that ensure that gender-based

Associated Impacts	Impact Levels &	Management Actions
		violence at the community level is not triggered by the Project, including: - Effective and on-going community engagement and consultation, particularly with women and girls. - Review of specific project components that are known to heighten GBV risk at the community level, e.g., compensation schemes; employment schemes for women; etc. • Ensure clear human resources policy against sexual harassment that is aligned with national law. • Integrate provisions related to sexual harassment in the employee COC. • Ensure appointed human resources personnel to manage reports of sexual harassment according to policy. • The contractor shall develop specific plan for mitigating these known risks, e.g. sensitization around gender-equitable approaches to compensation and employment; etc. • The contractor shall ensure adequate referral mechanisms are in place if a case of GBV at the community level
• Sexual Exploitation and Abuse by project workers against community members	Medium	• Develop and implement a SEA action plan with an Accountability and Response Framework as part of the C-ESMP. The SEA action plan shall follow guidance on the World Bank's Good Practice Note for Addressing Gender-based Violence in Investment Project Financing involving Major Civil Works (Sept 2018). • The SEA action plan shall include how the project shall ensure necessary steps are in place for:

Associated Impacts	Impact Levels &	Management Actions
		- Prevention of SEA: including COCs and ongoing sensitization of staff on responsibilities related to the COC and consequences of non-compliance; project-level IEC materials. - Response to SEA: including survivor-cantered coordinated multi-sectoral referral and assistance to complainants according to standard operating procedures; staff reporting mechanisms; written procedures related to case oversight, investigation and disciplinary procedures at the project level, including confidential data management. - Engagement with the community: including development of confidential community-based complaints mechanisms discrete from the standard GRM; mainstreaming of PSEA awareness-raising in all community engagement activities; community-level IEC materials; regular community outreach to women and girls about social risks and their PSEA-related rights. • Management and Coordination: including integration of SEA in job descriptions, employment contracts, performance appraisal systems, etc.; development of contract policies related to SEA, including whistle-blower protection and investigation and disciplinary procedures; training for all project management; management of coordination mechanism for case oversight, investigations and disciplinary procedures; supervision of dedicated PSEA focal points in the project and trained community liaison officers.

Associated Impacts	Impact Levels &	Management Actions
• Child labour and protection	Low	• The contractor shall develop and implement a Children Protection Strategy that shall ensures minors are protected against negative impacts associated by the Project including SEA. • All staff of the contractor must sign, committing themselves towards protecting children, which clearly defines what is and is not acceptable behaviour • Children under the age of 18 years should be hired on site as provided by Child Rights Act (Amendment Bill) 2014 • Wherever possible, ensure that another adult is present when working in the proximity of children. • Not invite unaccompanied children to worker's home, unless they are at immediate risk of injury or in physical danger. • Refrain from physical punishment or discipline of children
Operation		
• Risk of vandalism of the streetlights	Medium	• The count government to ensure regular monitoring of the installed high mast flood lights. • Sensitization of the community against vandalizing the installed infrastructure
• Risk of encroachment and construction of structures on the roadway leave	Low	• Arrest and prosecution of encroachers as required by Meru County government
• flooding of homesteads	Low	• County Government authorities should ensure that the storm water drainages installed along the project roads are well maintained and

Associated Impacts	Impact Levels &	Management Actions
		functional to avoid flooding incidences
• Spread of HIV/AIDS	Low	• Health officers should undertake public health education campaigns on HIV/AIDS and STIs, by specifically targeting transport operators in the project area.
Decommissioning Phase		
Solid Waste Generation	Low	All removed materials that shall not be used for other purposes must be removed and recycled/reused as far as possible;
		Where recycling/reuse of the removed materials and other demolition waste is not possible; the materials should be taken to a licensed waste disposal site, or arrangements made with the County Government;
		Donate reusable demolition waste to charitable organizations, individuals, and institutions;
Noise pollution	Low	Prepare a decommissioning plan to guide activities;
		Monitor noise levels as per the NEMA Environmental Management and Coordination (Noise and Excessive Vibration Pollution) (Control) Regulations, 2009 & OSHA, 2007;
		The noise emission characteristics should be considered during selection and mobilization of decommissioning equipment; and Sensitize staff to switch off machinery and vehicles when not in use;
Occupational Health and Safety	Low	• Provide the correct PPE for the workers when conducting the demolition activities. • Conduct training on health and safety procedures to the workers prior to commencement of demolition.

Associated Impacts	Impact Levels &	Management Actions
		• Proper plans should be made prior to demolition so as to contain the raw sewage and other wastewater that poses as health risk to human beings and the environment, to prevent the workers and surrounding communities from getting into contact with it.

CHAPTER 8: ENVIRONMENTAL AND SOCIAL MANAGEMENT AND MONITORING PLAN (ESMMP)

8.1 Introduction

An environmental management plan has been developed to assist the Proponent in mitigating and managing environmental impacts associated with the life cycle of the project. The ESMMP has been developed to provide a basis for an Environmental Management System (EMS; ISO 14001 principles) for the project. It is noteworthy that key factors and processes may change through the life of the project and considerable provisions have been made for dynamism and flexibility of the ESMMP. As such, the ESMMP will be subject to a regular regime of periodic review.

The ESMMP identifies management actions that need to be implemented in various phases of the proposed project life cycle as follows:

8.1.1 Planning and design phase

Refers to the stage when the feasibility studies are being undertaken, the project description is being developed and the proposed project is being designed. During this phase, the ESIA is completed and the license is applied for.

8.1.2 Construction phase

This shall commence after the proposed project license has been issued and MEWASS has taken the decision to implement the project. The construction phase involves the development and construction of the project infrastructure.

8.1.3 Operations

This is the phase during which the proposed project shall be in operation and the targeted beneficiaries; Salama informal settlements shall commence benefiting from the project.

8.1.4 Decommissioning Phase

The decommissioning phase of a project includes restoring the environment to its original form once all the operational activities of the project have ceased.

The de-commissioning of the Project is not envisaged. However, some aspects of the project will require decommissioning including the Contractor's camp. Other project components including the project road will be maintained/rehabilitated over time having served their useful life.

Before decommissioning, the Contractor will prepare a decommissioning plan for the elements that will require decommissioning.

Table 8- 1: Decommissioning Flow Chart

	Action	Actor
Step 1	**Initiation** • Development of an Objective Worksheet and checklist incorporating references, legal, stakeholder engagement and policies • Undertake decommissioning audit	**Proponent**
Step 2	**Prepare Road Map for Decommissioning Design** • Conduct design review to validate elements of the design and ensure design features are incorporated in the decommissioning design. • Public consultations	**Proponent**
Step 3	**Prepare and Award Contract** • Prepare a contract that incorporates validated project information and award to a contractor as per the Procurement rules.	**Proponent**
Step 4	**Execute Decommission Works** • Implement design elements and criteria on the Project in accordance with specifications and drawings. • Inspect during decommissioning and at Project completion to ensure that all design elements are implemented according to design specifications.	**Contractor**
Step 5	**Non-Conformance, Corrective/Preventive Action** • Determine root cause • Propose corrective measures • Propose future preventive measures	**Proponent**

8.2 Objective of the ESMP

The objectives of the ESMP include:

- To monitor the implementation of mitigation measures against potential adverse impacts of construction and operation phases of the project to ensure that they conform and comply with relevant environmental and social policies, guidelines and legislation.
- To assess for emerging non-anticipated adverse environmental and social impacts and implement relevant mitigation measures to maintain them within acceptable levels.
- To maintain best practice in environmental, social health and safety during project construction and operation
- To address capacity building needs within KISIP II, Supervision Consultant, Contractor and the Ministry of Transport and Infrastructure, where necessary.

8.3 Environmental Social Management and Monitoring Plan

The necessary objectives, activities, mitigation measures, and allocation of costs and responsibilities pertaining to prevention, minimization and monitoring of significant negative impacts and maximization of positive impacts for the proposed project in Salama is provided below for the.

(i) Pre-construction Stage

(ii) Construction stage,

(iii) Operational stage, and

(iv) Decommissioning stage respectively

8.3.1 Environmental and Social Management and Monitoring Plan (ESMMP) Roads Component

Table 8- 2: Pre-construction ESMMP Roads

Associated Impacts	Management Actions	Responsibilities	Monitoring Indicator	Budget (In KES)
Labour influx	• Effective community engagement and strong grievance mechanisms on matters related to labour.	Contractor	• Number of grievances • Availability of grievance logs and records of resolved grievances	Contractor to cover in his cost

Table 8- 3: Construction ESMMP Roads

Associated Impacts	Impact Levels	Management Actions	Responsibilities	Monitoring Indicator	Budget
• Noise and excessive vibrations	Medium	• Contractor shall comply with provisions of EMCA (Noise and Excessive Vibrations) Regulations of 2009. • The Contractor shall keep noise level within acceptable limits (60dBA for sensitive locations (residential, educational, health institutions etc.) and 75 dBA for other areas during the day Decibels during the night) and construction activities shall, where	Contractor	• No of complaints received from neighbouring residents	KES 9219

		possible, be confined to normal working hours in the residential areas; • Hospitals and other noise sensitive areas such as schools and residential shall be notified by the Contractor at least 5 days before construction is due to commence in their vicinity; • Undertake Noise and Vibration Assessments;			
• Air pollution and dust generation	Medium	• The contractor to comply the provisions of EMCA (Air Quality Regulations) 2014, to be enforced by the Supervising Engineer; • Workers shall be trained on management of air pollution from vehicles and machinery. • All construction machinery shall be maintained and serviced in accordance with the manufacturers' specifications; • The removal of vegetation shall be avoided until such time as clearance is required and exposed surfaces shall be re-vegetated or stabilized as soon as practically possible • The contractor shall not carry out dust	Contractor	• Cases of respiratory complication at nearby health centre	KES 9219

		generating activities (excavation, handling and transport of soils) during times of strong winds; • Vehicles delivering construction materials and vehicles hauling excavated materials shall be covered to reduce spills and windblown dust;			
• Generation of Solid waste	Medium	• Maximum reuse of excavated material. • Implementation of Soil erosion management in the spoil locations • Construction wastes (residual earth, debris and scrap materials) to be collected at designated points and Contractor to dispose to appropriately • Contractor's Camps and Construction Sites to have designated waste collection points,	Contractor	• Number of complaints from community not happy with waste management of spoil material	KES 69144
• Servicing of machinery • Removal of vegetation leading to erosion • Utilization of water for construction activities and	Low	• Storing of fuels, oils and chemicals beneath impermeable away from surface drains • The machines to be properly serviced offsite and maintained to avoid spillage of effluents into the water bodies • Water containing pollutants should be kept in a conservancy tank for removal to prevent pollution of the surface water and surface water bodies. • Prompt action to be taken by the contractor in case of any pollution incident.	Contractor	• No of complaints received in regard to water pollution and reduced water supply	KES 184383

for domestic purposes					
• Accidental Oil and fuel Spills and Leaks	Low	• Checking and regular servicing of Equipment. • Re-fuelling at safe locations, • Use of spill kits and applications of emergency spill procedures. • Provision of a 20cm layer of sand and ballast at the machinery storage area and diesel tank section, this layer act as sink to potential oil spills and shall be replaced when saturated. • Vehicle maintenance to be done in impervious concrete platforms and grease and oil traps to be used.	• Contractor	Incidence of reported cases of water related diseases among the workforce and neighbour community	KES 184383
• Loss of temporary assets and sources of livelihood	Low	• No anticipated displacement was identified during social screening studies undertaken during the ESIA • Any displacement that may be identified during construction to be dealt with on case by case basis	• Contractor	No of complaints received in regards to loss of livelihood	• No direct cost associated
• Disruption of public utilities	Medium	• Contractor to carry out piloting to locate services such as pipes and cables along the Pipeline Route before commencing excavation works. • Length of excavation to be restricted to sections that can be reinstated within the	• Contractor	Number of complaints from community due to lack of certain services	• No direct cost associated in his rates

		shortest period possible to minimize time of disruption of services. • Consultation and liaison with the various service providers shall be undertaken throughout the project life.			
• Risk of accidents at work site	Medium	• Construction Workers and the Supervising Team to be provided with Personal Protective Equipment including gloves, gumboots, 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 for access by the local communities during the construction for their safety and health • Camps and Work Sites to be fenced off and Security Guards provided to restrict access to members of the public. • Strict use of warning signage and tapes where the trenches are open and at other active construction sites	Contractor	• Availability of incidences Occurrence book on site • No of complains from workers for lacking water or sanitation facilities	Ksh. 500,000.
• Traffic congestion	Medium	• The contractor shall develop a traffic management plan; • The Contractor should provide temporary road signs or notices to indicate ongoing works;	Contractor	• Erected traffic related signage's • No of complaints raised by road users	KES 184383

		• The Contractor together with the Resident Engineer should Plan itineraries for site traffic on a daily basis and avoid peak traffic periods;		• Availability of traffic management plan	
• Labour influx and sexual offences to minors	Medium	• Effective community engagement and strong grievance mechanisms on matters related to labour. • Effective contractual obligations for the contractor to adhere to the mitigation of risks against labour influx • Proper records of labour force on site while avoiding child and forced labour • Fair treatment, non-discrimination, and equal opportunity of workers.	• Contractor	• Available grievance mechanisms • No of locals recruited • Record of workers on site	• No direct cost associated
• Increased Transmission of HIV/AIDS	Medium	• Sensitize workers and the surrounding communities on awareness, prevention and management of HIV/AIDS and sexual health and rights through staff training, awareness campaigns, multimedia and workshops or during community Barazas. • Use existing clinics to provide VCT services to construction crew and provision of ARVs for vulnerable community members • Ensure safety of women and girls in provision of VCT services.	Contractor	• Number of cases of diseases reported • Rate of absenteeism due to diseases • No of workers trained on HIV/ AIDS • Number of gender-disaggregated toilets	Ksh 46095

				constructed	
• Human Rights Principles and Gender Inclusivity	Medium	• Mainstream Gender Inclusivity in hiring of workers and entire Project Management as required by Gender Policy 2011 and 2/3 gender rule. • Comply to provisions of guidelines on incorporating Human Rights Standards and Principles, including Gender inclusivity	Contractor	• No of women recruited	No direct cost associated
• Increased crime and insecurity	Medium	• 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	Contractor	• No of crime related incidences reported in regard to the project	No associated cost
• Increased GBV	Medium	• The Contractor shall require his employees, sub-contractors, sub-consultants, and any personnel thereof engaged in construction works to individually sign and comply with a Code of Conduct with specific provisions on protection from sexual exploitation and abuse • The contractor shall implement provisions that ensure that gender-based violence at	Contractor Local CBO Local NGOI	• Mitigation plan for GBV occurring at the community level as a result of project implementation • Number of GBV cases happening	KES 46096

		the community level is not triggered by the Project, including: - effective and on-going community engagement and consultation, particularly with women and girls; - Review of specific project components that are known to heighten GBV risk at the community level, e.g., compensation schemes; employment schemes for women; etc. • Ensure clear human resources policy against sexual harassment that is aligned with national law • Integrate provisions related to sexual harassment in the employee COC • Ensure appointed human resources personnel to manage reports of sexual harassment according to policy • The contractor shall develop specific plan for mitigating these known risks, e.g. sensitization around gender-equitable approaches to compensation and employment; etc. • The contractor shall ensure adequate referral mechanisms are in place if a case of GBV at the community level		at the community level that receive survivor-centered referral and care	

• Sexual Exploitation and Abuse by project workers against community members	Low	• Develop and implement a SEA action plan with an Accountability and Response Framework as part of the C-ESMP. The SEA action plan shall follow guidance on the World Bank's Good Practice Note for Addressing Gender-based Violence in Investment Project Financing involving Major Civil Works (Sept 2018). • The SEA action plan shall include how the project shall ensure necessary steps are in place for: - Prevention of SEA: including COCs and ongoing sensitization of staff on responsibilities related to the COC and consequences of non-compliance; project-level IEC materials; - Response to SEA: including survivor-cantered coordinated multi-sectoral referral and assistance to complainants according to standard operating procedures; staff reporting mechanisms; written procedures related to case oversight, investigation and disciplinary procedures at the project level, including confidential data management; - Engagement with the community:	Contractor Local CBO Local NGO	• SEA Action Plan • Code of Conduct • Number of staff trainings • SEA FP • Community Liaison trained in PSEA • IEC materials for worker's sites and community • Discrete SEA reporting pathway • Relevant policies, e.g. investigations and discipline and whistle-blower protection • Monthly minutes from SEA coordination meetings	Included in GBV

		including development of confidential community-based complaints mechanisms discrete from the standard GRM; mainstreaming of PSEA awareness-raising in all community engagement activities; community-level IEC materials; regular community outreach to women and girls about social risks and their PSEA-related rights; • Management and Coordination: including integration of SEA in job descriptions, employment contracts, performance appraisal systems, etc.; development of contract policies related to SEA, including whistle-blower protection and investigation and disciplinary procedures; training for all project management; management of coordination mechanism for case oversight, investigations and disciplinary procedures; supervision of dedicated PSEA focal points in the project and trained community liaison officers.			
• Child labour and protection	Low	• The contractor shall develop and implement a Children Protection Strategy that shall ensures minors are protected against negative impacts	Contractor	• Availability of child protection strategy • Signed CoC	No associated Cost

		associated by the Project including SEA. • All staff of the contractor must sign, committing themselves towards protecting children, which clearly defines what is and is not acceptable behaviour • Children under the age of 18 years should be hired on site as provided by Child Rights Act (Amendment Bill) 2014 • Wherever possible, ensure that another adult is present when working in the proximity of children. • Not invite unaccompanied children to worker's home, unless they are at immediate risk of injury or in physical danger. • Refrain from physical punishment or discipline of children			
Total Cost					Kshs.2, 845,956J

Table 8- 4: Operational ESMMP Roads

Potential Impacts	Management Actions	Target Areas& Responsibilities	Time frame	Budget

Potential Impacts	Management Actions	Target Areas& Responsibilities	Time frame	Budget
Risk of encroachment and construction of structures on the way leave	• Arrest and prosecution of encroachers as required by Meru County Bylaws on Road Reserves •	All work areas County Government	Throughout Operation period	

Table 8- 5: Decommissioning ESMMP for the Road works

Potential Impacts	Management Actions	Responsibilities	Time frame	Budget
Solid Waste Generation	• All removed materials that shall not be used for other purposes must be removed and recycled/reused as far as possible;	Contractor	One-off	To be established at decommissioning phase
	• Where recycling/reuse of the removed materials and other demolition waste is not possible; the materials should be taken to a licensed waste disposal site or arrangements made with the County Government;	Contractor	One-off	
	• Donate reusable demolition waste to charitable organizations, individuals and institutions;	Contractor	One-off	
Noise pollution	• Prepare a decommissioning plan to guide activities;	Contractor	One-off	
	• Monitor noise levels as per the NEMA Environmental Management and Coordination (Noise and Excessive Vibration Pollution) (Control) Regulations, 2009 & OSHA, 2007;	Contractor	One-off	

Potential Impacts	Management Actions	Responsibilities	Time frame	Budget
	• The noise emission characteristics should be considered during selection and mobilization of decommissioning equipment; and • Sensitize staff to switch off machinery and vehicles when not in use;	Contractor	One-off	
Occupational Health and Safety	• Provide the correct PPE for the workers when conducting the demolition activities; • Conduct training on health and safety procedures to the workers prior to commencement of demolition; • Proper plans should be made prior to demolition so as to contain the raw sewage and other waste water that poses as health risk to human beings and the environment, to prevent the workers and surrounding communities from getting into contact with it.	Contractor	One-off	
Increased GBV	• The Contractor shall require his employees, sub-contractors, sub-consultants, and any personnel thereof engaged in construction works to individually sign and comply with a Code of Conduct with specific provisions on protection from sexual exploitation and abuse • The contractor shall implement provisions that ensure that gender-based violence at the community	Contractor	One-off	

Potential Impacts	Management Actions	Responsibilities	Time frame	Budget
	level is not triggered by the Project, including: - effective and on-going community engagement and consultation, particularly with women and girls; - Review of specific project components that are known to heighten GBV risk at the community level, e.g., compensation schemes; employment schemes for women; etc. • Ensure clear human resources policy against sexual harassment that is aligned with national law • Integrate provisions related to sexual harassment in the employee COC • Ensure appointed human resources personnel to manage reports of sexual harassment according to policy • The contractor shall develop specific plan for mitigating these known risks, e.g. sensitization around gender-equitable approaches to compensation and employment; etc. • The contractor shall ensure adequate referral mechanisms are in place if a case of GBV at the community level			
Sexual Exploitation	• Develop and implement a SEA action plan with an	Contractor	One-off	

Potential Impacts	Management Actions	Responsibilities	Time frame	Budget
and Abuse by project workers against community members	Accountability and Response Framework as part of the C-ESMP. The SEA action plan shall follow guidance on the World Bank's Good Practice Note for Addressing Gender-based Violence in Investment Project Financing involving Major Civil Works (Sept 2018). • The SEA action plan shall include how the project shall ensure necessary steps are in place for: - Prevention of SEA: including COCs and ongoing sensitization of staff on responsibilities related to the COC and consequences of non-compliance; project-level IEC materials; - Response to SEA: including survivor-cantered coordinated multi-sectoral referral and assistance to complainants according to standard operating procedures; staff reporting mechanisms; written procedures related to case oversight, investigation and disciplinary procedures at the project level, including confidential data management; - Engagement with the community: including development of confidential community-based complaints mechanisms discrete from the			

Potential Impacts	Management Actions	Responsibilities	Time frame	Budget
	standard GRM; mainstreaming of PSEA awareness-raising in all community engagement activities; community-level IEC materials; regular community outreach to women and girls about social risks and their PSEA-related rights; • Management and Coordination: including integration of SEA in job descriptions, employment contracts, performance appraisal systems, etc.; development of contract policies related to SEA, including whistle-blower protection and investigation and disciplinary procedures; training for all project management; management of coordination mechanism for case oversight, investigations and disciplinary procedures; supervision of dedicated PSEA focal points in the project and trained community liaison officers.			

8.3.2 Environmental and Social Management and Monitoring Plan (ESMMP) for Security Lighting

Table 8- 6: Pre-construction ESMMP Security Lighting

Associated Impacts	Management Actions	Responsibilities	Monitoring Indicator	Budget (In KES)
Labour influx	• Effective community engagement and strong grievance mechanisms on matters related to labour.	Contractor	• Number of grievances • Availability of grievance logs and records of resolved grievances	Contractor to cover in his cost

Table 8- 7: Construction ESMMP Security Lighting

Associated Impacts	Impact Levels	Management Actions	Responsibilities	Monitoring Indicator	Budget
• Noise and excessive vibrations	Low	• Contractor shall comply with provisions of EMCA (Noise and Excessive Vibrations) Regulations of 2009. • The Contractor shall keep noise level within acceptable limits (60dBA for sensitive locations (residential, educational, health institutions etc.) and 75 dBA for other areas during the day Decibels during the night) and construction activities shall,	Contractor	• No of complaints received from neighbouring residents	KES 9219

		where possible, be confined to normal working hours in the residential areas; • Hospitals and other noise sensitive areas such as schools and residential shall be notified by the Contractor at least 5 days before construction is due to commence in their vicinity; • Undertake Noise and Vibration Assessments;			
• Air pollution and dust generation	Low	• The contractor to comply the provisions of EMCA (Air Quality Regulations) 2014, to be enforced by the Supervising Engineer; • Workers shall be trained on management of air pollution from vehicles and machinery. • All construction machinery shall be maintained and serviced in accordance with the manufacturers' specifications; • The removal of vegetation shall be avoided until such time as	Contractor	• Cases of respiratory complication at nearby health centre	KES 9219

		clearance is required and exposed surfaces shall be re-vegetated or stabilized as soon as practically possible • The contractor shall not carry out dust generating activities (excavation, handling and transport of soils) during times of strong winds; • Vehicles delivering construction materials and vehicles hauling excavated materials shall be covered to reduce spills and windblown dust;			
• Generation of Solid waste	Low	• Maximum reuse of excavated material. • Implementation of Soil erosion management in the spoil locations • Construction wastes (residual earth, debris and scrap materials) to be collected at designated points and Contractor to dispose to appropriately • Contractor's Camps and Construction Sites to have designated waste collection	Contractor	• Number of complaints from community not happy with waste management of spoil material	KES 69144

		points,			
• Servicing of machinery • Removal of vegetation leading to erosion • Utilization of water for construction activities and for domestic purposes	Low	• Storing of fuels, oils and chemicals beneath impermeable away from surface drains • The machines to be properly serviced offsite and maintained to avoid spillage of effluents into the water bodies • Water containing pollutants should be kept in a conservancy tank for removal to prevent pollution of the surface water and surface water bodies. • Prompt action to be taken by the contractor in case of any pollution incident.	Contractor	• No of complaints received in regard to water pollution and reduced water supply	KES 184383
• Accidental Oil and fuel Spills and Leaks	Low	• Checking and regular servicing of Equipment. • Re-fuelling at safe locations, • Use of spill kits and applications of emergency spill procedures. • Provision of a 20cm layer of sand and ballast at the machinery storage area and diesel tank section, this layer act as sink to potential oil spills and shall be replaced when saturated.	• Contractor	Incidence of reported cases of water related diseases among the workforce and neighbour community	KES 184383

		• Vehicle maintenance to be done in impervious concrete platforms and grease and oil traps to be used.			
• Loss of temporary assets and sources of livelihood	Low	• No anticipated displacement was identified during social screening studies undertaken during the ESIA • Any displacement that may be identified during construction to be dealt with on case by case basis	• Contractor	No of complaints received in regards to loss of livelihood	• AS per RAP report
• Disruption of public utilities	Low	• Contractor to carry out piloting to locate services such as pipes and cables along the Pipeline Route before commencing excavation works. • Length of excavation to be restricted to sections that can be reinstated within the shortest period possible to minimize time of disruption of services. • Consultation and liaison with the various service providers shall be undertaken throughout the project life.	• Contractor	Number of complaints from community due to lack of certain services	• No direct cost associated in his rates

• Risk of accidents at work site	Low	• Construction Workers and the Supervising Team to be provided with Personal Protective Equipment including gloves, gumboots, 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 for access by the local communities during the construction for their safety and health • Camps and Work Sites to be fenced off and Security Guards provided to restrict access to members of the public. • Strict use of warning signage and tapes where the trenches are open and at other active construction sites	Contractor	• Availability of incidences Occurrence book on site • No of complains from workers for lacking water or sanitation facilities	Ksh. 500,000.
• Traffic congestion	Low	• The contractor shall develop a traffic management plan; • The Contractor should provide temporary road signs or notices to indicate ongoing works;	Contractor	• Erected traffic related signage's • No of complaints	KES 184383

		• The Contractor together with the Resident Engineer should Plan itineraries for site traffic on a daily basis and avoid peak traffic periods;		raised by road users • Availability of traffic management plan	
• Labour influx and sexual offences to minors	Low	• Effective community engagement and strong grievance mechanisms on matters related to labour. • Effective contractual obligations for the contractor to adhere to the mitigation of risks against labour influx • Proper records of labour force on site while avoiding child and forced labour • Fair treatment, non-discrimination, and equal opportunity of workers.	• Contractor	• Available grievance mechanisms • No of locals recruited • Record of workers on site	• No direct cost associated in his rates
• Increased Transmission of HIV/AIDS	Medium	• Sensitize workers and the surrounding communities on awareness, prevention and management of HIV/AIDS and sexual health and rights through staff training, awareness campaigns, multimedia and workshops or	Contractor	• Number of cases of diseases reported • Rate of absenteeism due to diseases • No of workers trained on HIV/	Ksh 46095

		during community Barazas. • Use existing clinics to provide VCT services to construction crew and provision of ARVs for vulnerable community members • Ensure safety of women and girls in provision of VCT services.		AIDS • Number of gender-disaggregated toilets constructed	
• Human Rights Principles and Gender Inclusivity	Low	• Mainstream Gender Inclusivity in hiring of workers and entire Project Management as required by Gender Policy 2011 and 2/3 gender rule. • Comply to provisions of guidelines on incorporating Human Rights Standards and Principles, including Gender inclusivity	Contractor	• No of women recruited	No direct cost associated
• Increased crime and insecurity	Low	• 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	Contractor	• No of crime related incidences reported in regard to the project	No associated cost

		Supervising Team's Offices			
• Increased GBV	Low	• The Contractor shall require his employees, sub-contractors, sub-consultants, and any personnel thereof engaged in construction works to individually sign and comply with a Code of Conduct with specific provisions on protection from sexual exploitation and abuse • The contractor shall implement provisions that ensure that gender-based violence at the community level is not triggered by the Project, including: - effective and on-going community engagement and consultation, particularly with women and girls; - Review of specific project components that are known to heighten GBV risk at the community level, e.g., compensation schemes; employment schemes for women; etc.	Contractor Local CBO Local NGO	• Mitigation plan for GBV occurring at the community level as a result of project implementation • Number of GBV cases happening at the community level that receive survivor-centered referral and care	KES 46096

		• Ensure clear human resources policy against sexual harassment that is aligned with national law • Integrate provisions related to sexual harassment in the employee COC • Ensure appointed human resources personnel to manage reports of sexual harassment according to policy • The contractor shall develop specific plan for mitigating these known risks, e.g. sensitization around gender-equitable approaches to compensation and employment; etc. • The contractor shall ensure adequate referral mechanisms are in place if a case of GBV at the community level			
• Sexual Exploitation and Abuse by project workers against community	Low	• Develop and implement a SEA action plan with an Accountability and Response Framework as part of the C-ESMP. The SEA action plan shall follow guidance on the World Bank's Good Practice Note for Addressing Gender-based Violence	Contractor Local CBO Local NGO	• SEA Action Plan • Code of Conduct • Number of staff trainings • SEA FP • Community Liaison trained	Included in GBV

members		in Investment Project Financing involving Major Civil Works (Sept 2018). • The SEA action plan shall include how the project shall ensure necessary steps are in place for: - Prevention of SEA: including COCs and ongoing sensitization of staff on responsibilities related to the COC and consequences of non-compliance; project-level IEC materials; - Response to SEA: including survivor-cantered coordinated multi-sectoral referral and assistance to complainants according to standard operating procedures; staff reporting mechanisms; written procedures related to case oversight, investigation and disciplinary procedures at the project level, including confidential data management; - Engagement with the		in PSEA • IEC materials for worker's sites and community • Discrete SEA reporting pathway • Relevant policies, e.g. investigations and discipline and whistle-blower protection • Monthly minutes from SEA coordination meetings	

		community: including development of confidential community-based complaints mechanisms discrete from the standard GRM; mainstreaming of PSEA awareness-raising in all community engagement activities; community-level IEC materials; regular community outreach to women and girls about social risks and their PSEA-related rights; • Management and Coordination: including integration of SEA in job descriptions, employment contracts, performance appraisal systems, etc.; development of contract policies related to SEA, including whistle-blower protection and investigation and disciplinary procedures; training for all project management; management of coordination mechanism for case oversight, investigations and disciplinary procedures; supervision of			

		dedicated PSEA focal points in the project and trained community liaison officers.			
• Child labour and protection	Low	• The contractor shall develop and implement a Children Protection Strategy that shall ensures minors are protected against negative impacts associated by the Project including SEA. • All staff of the contractor must sign, committing themselves towards protecting children, which clearly defines what is and is not acceptable behaviour • Children under the age of 18 years should be hired on site as provided by Child Rights Act (Amendment Bill) 2014 • Wherever possible, ensure that another adult is present when working in the proximity of children. • Not invite unaccompanied children to worker's home,	Contractor	• Availability of child protection strategy • Signed CoC	No associated Cost

		unless they are at immediate risk of injury or in physical danger. • Refrain from physical punishment or discipline of children			
Total Cost					Kshs.2, 845,956J

Table 8- 8: Operation Phase ESMMP Security Lighting

Potential Impacts	Management Actions	Target Areas& Responsibilities	Monitoring Frequency	Budget
Vandalism of security lighting	• The count government to ensure regular monitoring of the installed security lights and high mast flood lights • Sensitization of the community against vandalizing the installed infrastructure	All work areas <u>Responsibility</u> County Government of Meru	Throughout Operation period	To be determined during operation phase

Table 8- 9: Decommissioning Phase ESMMP Security Lighting

Potential Impacts	Management Actions	Responsibilities	Monitoring Frequency	Budget
Solid Waste	• All removed materials that shall not be used for	Contractor	One-off	To be established

Potential Impacts	Management Actions	Responsibilities	Monitoring Frequency	Budget
Generation	other purposes must be removed and recycled/reused as far as possible;			at decommissioning phase
	• Where recycling/reuse of the removed materials and other demolition waste is not possible; the materials should be taken to a licensed waste disposal site or arrangements made with the County Government;	Contractor	One-off	
	• Donate reusable demolition waste to charitable organizations, individuals and institutions;	Contractor	One-off	
Noise pollution	• Prepare a decommissioning plan to guide activities;	Contractor	One-off	
	• Monitor noise levels as per the NEMA Environmental Management and Coordination (Noise and Excessive Vibration Pollution) (Control) Regulations, 2009 & OSHA, 2007;	Contractor	One-off	
	• The noise emission characteristics should be considered during selection and mobilization of decommissioning equipment; and • Sensitize staff to switch off machinery and vehicles when not in use;	Contractor	One-off	
Occupational Health and Safety	• Provide the correct PPE for the workers when conducting the demolition activities; • Conduct training on health and safety procedures	Contractor	One-off	

Potential Impacts	Management Actions	Responsibilities	Monitoring Frequency	Budget
	to the workers prior to commencement of demolition; • Proper plans should be made prior to demolition so as to contain the raw sewage and other waste water that poses as health risk to human beings and the environment, to prevent the workers and surrounding communities from getting into contact with it.			
Increased GBV	• The Contractor shall require his employees, sub-contractors, sub-consultants, and any personnel thereof engaged in construction works to individually sign and comply with a Code of Conduct with specific provisions on protection from sexual exploitation and abuse • The contractor shall implement provisions that ensure that gender-based violence at the community level is not triggered by the Project, including: - effective and on-going community engagement and consultation, particularly with women and girls; - Review of specific project components that are known to heighten GBV risk at the community	Contractor	Throughout decommissioning	

Potential Impacts	Management Actions	Responsibilities	Monitoring Frequency	Budget
	level, e.g., compensation schemes; employment schemes for women; etc. • Ensure clear human resources policy against sexual harassment that is aligned with national law • Integrate provisions related to sexual harassment in the employee COC • Ensure appointed human resources personnel to manage reports of sexual harassment according to policy • The contractor shall develop specific plan for mitigating these known risks, e.g. sensitization around gender-equitable approaches to compensation and employment; etc. • The contractor shall ensure adequate referral mechanisms are in place if a case of GBV at the community level			
Sexual Exploitation and Abuse by project workers against community members	• Develop and implement a SEA action plan with an Accountability and Response Framework as part of the C-ESMP. The SEA action plan shall follow guidance on the World Bank's Good Practice Note for Addressing Gender-based Violence in Investment Project Financing involving Major Civil Works (Sept 2018).	Contractor	Throughout decommissioning	

Potential Impacts	Management Actions	Responsibilities	Monitoring Frequency	Budget
	• The SEA action plan shall include how the project shall ensure necessary steps are in place for: - Prevention of SEA: including COCs and ongoing sensitization of staff on responsibilities related to the COC and consequences of non-compliance; project-level IEC materials; - Response to SEA: including survivor-cantered coordinated multi-sectoral referral and assistance to complainants according to standard operating procedures; staff reporting mechanisms; written procedures related to case oversight, investigation and disciplinary procedures at the project level, including confidential data management; - Engagement with the community: including development of confidential community-based complaints mechanisms discrete from the standard GRM; mainstreaming of PSEA awareness-raising in all community engagement activities; community-level IEC materials; regular community outreach to women and girls about social risks and their			

Potential Impacts	Management Actions	Responsibilities	Monitoring Frequency	Budget
	PSEA-related rights; • Management and Coordination: including integration of SEA in job descriptions, employment contracts, performance appraisal systems, etc.; development of contract policies related to SEA, including whistle-blower protection and investigation and disciplinary procedures; training for all project management; management of coordination mechanism for case oversight, investigations and disciplinary procedures; supervision of dedicated PSEA focal points in the project and trained community liaison officers.			

8.3.3 Environmental and Social Management and Monitoring Plan (ESMMP) Water Component

Table 8- 10: Pre-construction ESMMP Water Component

Associated Impacts	Management Actions	Responsibilities	Monitoring Indicator	Budget (In KES)
Labour influx	• Effective community engagement and strong grievance mechanisms on matters related to labour.	Contractor	• Number of grievances • Availability of grievance logs and records of resolved grievances	Contractor to cover in his cost

Table 8- 11: Construction ESMMP Water Component

Associated Impacts	Impact Levels	Management Actions	Responsibilities	Monitoring Indicator	Budget
• Noise and excessive vibrations	Medium	• Contractor shall comply with provisions of EMCA (Noise and Excessive Vibrations) Regulations of 2009. • The Contractor shall keep noise level within acceptable limits (60dBA for sensitive locations (residential, educational, health institutions etc.) and 75 dBA for other areas during the day Decibels during the night) and	Contractor	• No of complaints received from neighbouring residents	KES 9219

		construction activities shall, where possible, be confined to normal working hours in the residential areas; • Hospitals and other noise sensitive areas such as schools and residential shall be notified by the Contractor at least 5 days before construction is due to commence in their vicinity; • Undertake Noise and Vibration Assessments;			
• Air pollution and dust generation	Medium	• The contractor to comply the provisions of EMCA (Air Quality Regulations) 2014, to be enforced by the Supervising Engineer; • Workers shall be trained on management of air pollution from vehicles and machinery. • All construction machinery shall be maintained and serviced in accordance with the manufacturers' specifications; • The removal of vegetation shall	Contractor	• Cases of respiratory complication at nearby health centre	KES 9219

		be avoided until such time as clearance is required and exposed surfaces shall be re-vegetated or stabilized as soon as practically possible • The contractor shall not carry out dust generating activities (excavation, handling and transport of soils) during times of strong winds; • Vehicles delivering construction materials and vehicles hauling excavated materials shall be covered to reduce spills and windblown dust;			
• Generation of Solid waste	Medium	• Maximum reuse of excavated material. • Implementation of Soil erosion management in the spoil locations • Construction wastes (residual earth, debris and scrap materials) to be collected at designated points and Contractor to dispose to appropriately • Contractor's Camps and Construction Sites to have	Contractor	• Number of complaints from community not happy with waste management of spoil material	KES 69144

		designated waste collection points,			
• Servicing of machinery • Removal of vegetation leading to erosion • Utilization of water for construction activities and for domestic purposes	Low	• Storing of fuels, oils and chemicals beneath impermeable away from surface drains • The machines to be properly serviced offsite and maintained to avoid spillage of effluents into the water bodies • Water containing pollutants should be kept in a conservancy tank for removal to prevent pollution of the surface water and surface water bodies. • Prompt action to be taken by the contractor in case of any pollution incident.	Contractor	• No of complaints received in regard to water pollution and reduced water supply	KES 184383

• Accidental Oil and fuel Spills and Leaks	Low	• Checking and regular servicing of Equipment. • Re-fuelling at safe locations, • Use of spill kits and applications of emergency spill procedures. • Provision of a 20cm layer of sand and ballast at the machinery storage area and diesel tank section, this layer act as sink to potential oil spills and shall be replaced when saturated. • Vehicle maintenance to be done in impervious concrete platforms and grease and oil traps to be used.	• Contractor	Incidence of reported cases of water related diseases among the workforce and neighbour community	KES 184383
• Loss of temporary assets and sources of livelihood	Low	• No anticipated displacement was identified during social screening studies undertaken during the ESIA • Any displacement that may be identified during construction to be dealt with on case by case basis	• Contractor	No of complaints received in regards to loss of livelihood	• AS per RAP report

• Disruption of public utilities	Medium	• Contractor to carry out piloting to locate services such as pipes and cables along the Pipeline Route before commencing excavation works. • Length of excavation to be restricted to sections that can be reinstated within the shortest period possible to minimize time of disruption of services. • Consultation and liaison with the various service providers shall be undertaken throughout the project life.	• Contractor	Number of complaints from community due to lack of certain services	• No direct cost associated in his rates
• Risk of accidents at work site	Medium	• Construction Workers and the Supervising Team to be provided with Personal Protective Equipment including gloves, gumboots, 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 for access by the local communities during the construction for their safety and	Contractor	• Availability of incidences Occurrence book on site • No of complains from workers for lacking water or sanitation facilities	Ksh. 500,000.

		health • Camps and Work Sites to be fenced off and Security Guards provided to restrict access to members of the public. • Strict use of warning signage and tapes where the trenches are open and at other active construction sites			
• Traffic congestion	Medium	• The contractor shall develop a traffic management plan; • The Contractor should provide temporary road signs or notices to indicate ongoing works; • The Contractor together with the Resident Engineer should Plan itineraries for site traffic on a daily basis and avoid peak traffic periods;	Contractor	• Erected traffic related signage's • No of complaints raised by road users • Availability of traffic management plan	KES 184383
• Labour influx and sexual offences to minors	Medium	• Effective community engagement and strong grievance mechanisms on matters related to labour. • Effective contractual obligations for the contractor to adhere to the mitigation of risks against labour influx	• Contractor	• Available grievance mechanisms • No of locals recruited • Record of workers on site	No direct cost associated in his rates

		• Proper records of labour force on site while avoiding child and forced labour • Fair treatment, non-discrimination, and equal opportunity of workers.			
• Increased Transmission of HIV/AIDS	Medium	• Sensitize workers and the surrounding communities on awareness, prevention and management of HIV/AIDS and sexual health and rights through staff training, awareness campaigns, multimedia and workshops or during community Barazas. • Use existing clinics to provide VCT services to construction crew and provision of ARVs for vulnerable community members • Ensure safety of women and girls in provision of VCT services.	Contractor	• Number of cases of diseases reported • Rate of absenteeism due to diseases • No of workers trained on HIV/ AIDS • Number of gender-disaggregated toilets constructed	~Ksh 46095
• Human Rights Principles and Gender Inclusivity	Medium	• Mainstream Gender Inclusivity in hiring of workers and entire Project Management as required by Gender Policy 2011 and 2/3	Contractor	• No of women recruited	No direct cost associated

		gender rule. • Comply to provisions of guidelines on incorporating Human Rights Standards and Principles, including Gender inclusivity.			
• Increased crime and insecurity	Medium	• 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	Contractor	• No of crime related incidences reported in regard to the project	No associated cost
• Increased GBV	Medium	• The Contractor shall require his employees, sub-contractors, sub-consultants, and any personnel thereof engaged in construction works to individually sign and comply with a Code of Conduct with specific provisions on protection from sexual exploitation and abuse • The contractor shall implement provisions that ensure that gender-based violence at the	Contractor	• Mitigation plan for GBV occurring at the community level as a result of project implementation • Number of GBV cases happening at the community level that receive	KES 46096

		community level is not triggered by the Project, including: - effective and on-going community engagement and consultation, particularly with women and girls; - Review of specific project components that are known to heighten GBV risk at the community level, e.g., compensation schemes; employment schemes for women; etc. • Ensure clear human resources policy against sexual harassment that is aligned with national law • Integrate provisions related to sexual harassment in the employee COC • Ensure appointed human resources personnel to manage reports of sexual harassment according to policy • The contractor shall develop specific plan for mitigating these known risks, e.g. sensitization around gender-equitable approaches to compensation and		survivor-centered referral and care	

		employment; etc. • The contractor shall ensure adequate referral mechanisms are in place if a case of GBV at the community level			
• Sexual Exploitation and Abuse by project workers against community members	Low	• Develop and implement a SEA action plan with an Accountability and Response Framework as part of the C-ESMP. The SEA action plan shall follow guidance on the World Bank's Good Practice Note for Addressing Gender-based Violence in Investment Project Financing involving Major Civil Works (Sept 2018). • The SEA action plan shall include how the project shall ensure necessary steps are in place for: - Prevention of SEA: including COCs and ongoing sensitization of staff on responsibilities related to the COC and consequences of non-compliance; project-level IEC materials; - Response to SEA: including survivor-cantered coordinated multi-sectoral	Contractor	• SEA Action Plan • Code of Conduct • Number of staff trainings • SEA FP • Community Liaison trained in PSEA • IEC materials for worker's sites and community • Discrete SEA reporting pathway • Relevant policies, e.g. investigations and discipline and whistle-blower protection • Monthly	Included in GBV

		referral and assistance to complainants according to standard operating procedures; staff reporting mechanisms; written procedures related to case oversight, investigation and disciplinary procedures at the project level, including confidential data management; - Engagement with the community: including development of confidential community-based complaints mechanisms discrete from the standard GRM; mainstreaming of PSEA awareness-raising in all community engagement activities; community-level IEC materials; regular community outreach to women and girls about social risks and their PSEA-related rights; • Management and Coordination: including integration of SEA in job		minutes from SEA coordination meetings	

		descriptions, employment contracts, performance appraisal systems, etc.; development of contract policies related to SEA, including whistle-blower protection and investigation and disciplinary procedures; training for all project management; management of coordination mechanism for case oversight, investigations and disciplinary procedures; supervision of dedicated PSEA focal points in the project and trained community liaison officers.			
• Child labour and protection	Low	• The contractor shall develop and implement a Children Protection Strategy that shall ensures minors are protected against negative impacts associated by the Project including SEA. • All staff of the contractor must sign, committing themselves towards protecting children, which clearly defines what is	Contractor	• Availability of child protection strategy • Signed CoC	No associated Cost

		and is not acceptable behaviour • Children under the age of 18 years should be hired on site as provided by Child Rights Act (Amendment Bill) 2014 • Wherever possible, ensure that another adult is present when working in the proximity of children. • Not invite unaccompanied children to worker's home, unless they are at immediate risk of injury or in physical danger. • Refrain from physical punishment or discipline of children			
Total Cost					Kshs.2, 845,956J

Table 8- 12: Operational ESMMP Water Component

Potential Impacts	Management Actions	Target Areas& Responsibilities	Time frame	Budget
Risk of illegal connection and	• This shall require constant inspection by MEWASS officials and installation of leak and burst detectors	All work areas	Throughout Operation	To be established

Potential Impacts	Management Actions	Target Areas& Responsibilities	Time frame	Budget
vandalism of the water pipeline	at designated areas along the pipeline. • Conduct public sensitization programs on importance not interfering with the water pipeline and the need to seek official water connection from MEWASS	Responsibility MEWASS	period	at operation phase and included in the operation of the projects
Increased domestic wastewater generation	• The client to consider ensure all household are connected to the new reticulations.	All work areas Responsibility MEWASS		
Risk of water pipeline bursts leading to water wastage	• Regular check, repair and maintenance of the water pipeline • Activate a community watch group for information sharing on the status of the water line • Implement a leak detection and repair program (including records of past leaks and unaccounted-for water to identify potential problem areas) • The risk of pipeline bursts is low as the pipeline design, including the selection of pipe material and pipe pressure classes, has been carried out so as to minimize this risk. • This risk shall be further minimized through regular inspection, repair and maintenance of the pipeline by the Operator, MEWASS	Water pipeline routes Responsibility MEWASS	Throughout Operation period	

Potential Impacts	Management Actions	Target Areas& Responsibilities	Time frame	Budget
Risk of encroachment and construction of structures on the pipeline way leave	• Arrest and prosecution of encroachers as required by Meru • County Bylaws on Way Leaves and Road Reserves • MEWASS to undertake awareness campaigns aimed at preventing encroachment	All work areas Responsibility MEWASS	Throughout Operation period	
Visual and landscape impact management	• Elaborate landscaping and maintenance of these sites can limit the viewpoints to the facilities and thus reduce their visual impact.	All work areas Responsibility County Government of Meru	Throughout Operation period	
Pollution of water and soils	• Blockages should be detected and promptly replaced; • MEWASS to attend to burst pipes promptly to prevent excessive loss of soil; • Provide high risk areas with appropriate drainage for effective channelling of burst sewage spills; • Mark clearly the pipeline for ease of identification and protection by the adjacent landowners	All work areas Responsibility County Government of Meru	Throughout Operation period	

Table 8- 13: Decommissioning Phase ESMMP Water Component

Potential Impacts	Management Actions	Responsibilities	Monitoring Frequency	Budget
Solid Waste Generation	• All removed materials that shall not be used for other purposes must be removed and recycled/reused as far as possible;	Contractor	One-off	To be established at decommissioning phase
	• Where recycling/reuse of the removed materials and other demolition waste is not possible; the materials should be taken to a licensed waste disposal site or arrangements made with the County Government;	Contractor	One-off	
	• Donate reusable demolition waste to charitable organizations, individuals and institutions;	Contractor	One-off	
Noise pollution	• Prepare a decommissioning plan to guide activities;	Contractor	One-off	
	• Monitor noise levels as per the NEMA Environmental Management and Coordination (Noise and Excessive Vibration Pollution) (Control) Regulations, 2009 & OSHA, 2007;	Contractor	One-off	
	• The noise emission characteristics should be considered during selection and mobilization of decommissioning equipment; and • Sensitize staff to switch off machinery and vehicles when not in use;	Contractor	One-off	

Potential Impacts	Management Actions	Responsibilities	Monitoring Frequency	Budget
Occupational Health and Safety	• Provide the correct PPE for the workers when conducting the demolition activities; • Conduct training on health and safety procedures to the workers prior to commencement of demolition; • Proper plans should be made prior to demolition so as to contain the raw sewage and other waste water that poses as health risk to human beings and the environment, to prevent the workers and surrounding communities from getting into contact with it.	Contractor	One-off	
Increased GBV	• The Contractor shall require his employees, sub-contractors, sub-consultants, and any personnel thereof engaged in construction works to individually sign and comply with a Code of Conduct with specific provisions on protection from sexual exploitation and abuse • The contractor shall implement provisions that ensure that gender-based violence at the community level is not triggered by the Project, including: - effective and on-going community engagement and consultation, particularly with women and	Contractor	Throughout decommissioning	

Potential Impacts	Management Actions	Responsibilities	Monitoring Frequency	Budget
	girls; - Review of specific project components that are known to heighten GBV risk at the community level, e.g., compensation schemes; employment schemes for women; etc. • Ensure clear human resources policy against sexual harassment that is aligned with national law • Integrate provisions related to sexual harassment in the employee COC • Ensure appointed human resources personnel to manage reports of sexual harassment according to policy • The contractor shall develop specific plan for mitigating these known risks, e.g. sensitization around gender-equitable approaches to compensation and employment; etc. • The contractor shall ensure adequate referral mechanisms are in place if a case of GBV at the community level			
Sexual Exploitation and Abuse by project workers against community	• Develop and implement a SEA action plan with an Accountability and Response Framework as part of the C-ESMP. The SEA action plan shall follow guidance on the World Bank's Good Practice Note	Contractor	Throughout decommissioning	

Potential Impacts	Management Actions	Responsibilities	Monitoring Frequency	Budget
members	for Addressing Gender-based Violence in Investment Project Financing involving Major Civil Works (Sept 2018). • The SEA action plan shall include how the project shall ensure necessary steps are in place for: - Prevention of SEA: including COCs and ongoing sensitization of staff on responsibilities related to the COC and consequences of non-compliance; project-level IEC materials; - Response to SEA: including survivor-cantered coordinated multi-sectoral referral and assistance to complainants according to standard operating procedures; staff reporting mechanisms; written procedures related to case oversight, investigation and disciplinary procedures at the project level, including confidential data management; - Engagement with the community: including development of confidential community-based complaints mechanisms discrete from the standard GRM; mainstreaming of PSEA awareness-raising in all community			

Potential Impacts	Management Actions	Responsibilities	Monitoring Frequency	Budget
	engagement activities; community-level IEC materials; regular community outreach to women and girls about social risks and their PSEA-related rights; • Management and Coordination: including integration of SEA in job descriptions, employment contracts, performance appraisal systems, etc.; development of contract policies related to SEA, including whistle-blower protection and investigation and disciplinary procedures; training for all project management; management of coordination mechanism for case oversight, investigations and disciplinary procedures; supervision of dedicated PSEA focal points in the project and trained community liaison officers.			

8.4 Grievance Resolution Mechanism

A grievance is an expression of concern or complaint voiced by any person who feels they have been or will be negatively impacted by someone else's activities.

This ESIA establishes all the project proposed works are likely to encounter several grievances from different stakeholders specifically the community during the construction period. Some of the grievances likely to be encountered in the project include but not limited to:

- Grievances regarding destruction of property
- Gender Based Violence
- Poor working conditions
- Grievances related to payments (delayed and low wages)
- Labour influxes
- Discrimination against workers
- Discrimination against Vulnerable and Marginalized Groups
- Child labour
- Environmental degradation
- Disruption of amenities

This ESIA acknowledges the aforementioned grievances are likely to occur and have established Grievance Redress Mechanism (GRM). A Grievance Redress Mechanism (GRM) is a locally based, formalized way to accept, assess, and resolve community feedback or complaints.

KISIP 2 has already established a community level Grievance Redress Mechanism (GRM) by establishing Settlement Executive Committee (SEC) and Grievance Redress Committee. There is also a customized grievance redress log.

There is also a customized grievance redress log. The Grievance Redress Processes include the following:

a) ***Grievance Reception and Acceptance:*** The GRC officials will receive and register complaints/concerns from all project affected or interested parties.

b) ***Acknowledgement, Assessment and Record:*** The complainant will receive confirmation from the GRC officials that his/her complaint has been received. The complaint note should contain all relevant and personal information given by the complainant(s). The GRC official should record all grievances, maintain and update the GRM Log/Register with the following information:

   - Dates when the complaints are registered,
   - Dates when the grievances are uploaded onto the project database,
   - Information on proposed corrective actions/resolutions sent to complainant,
   - Dates when complaints are closed out, and

- Dates when responses are sent to complainant(s).

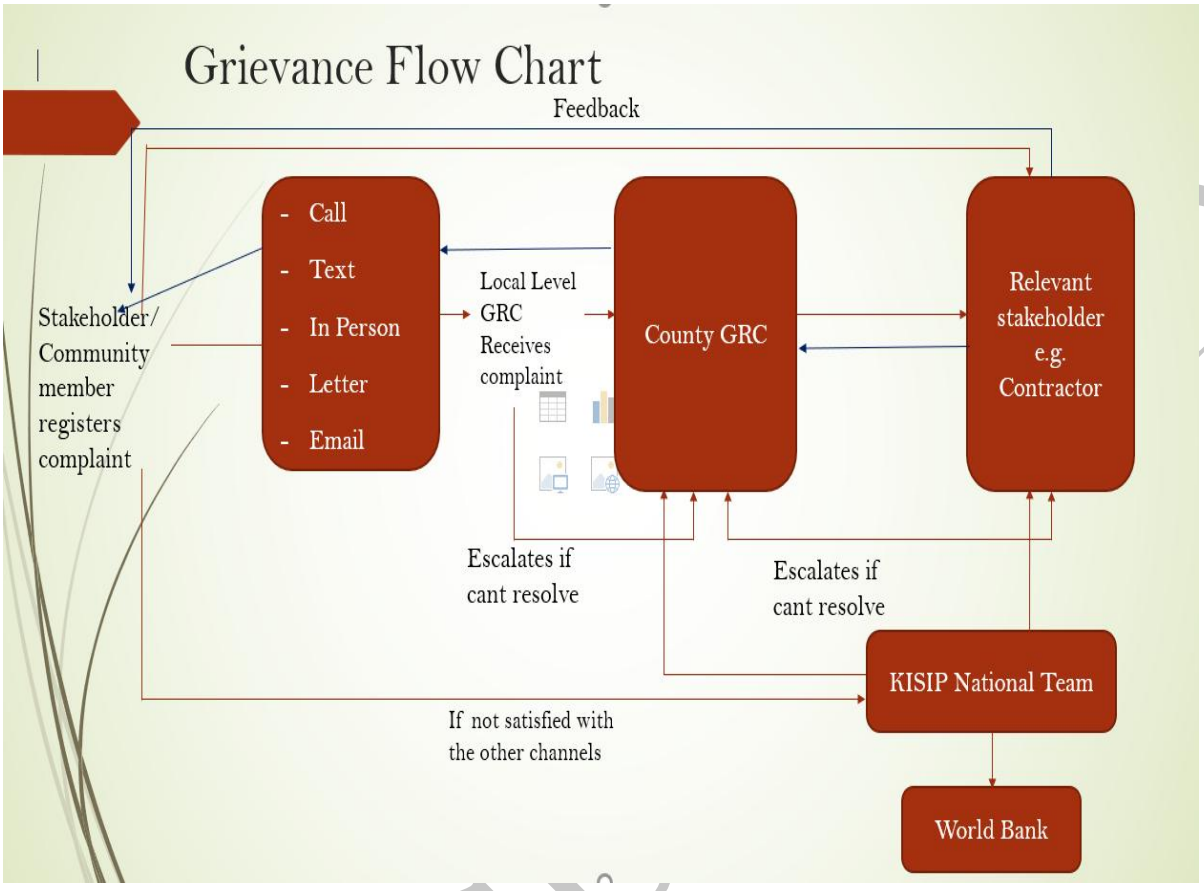
c) ***Investigation:*** Appropriate investigation will be decided at the assessment stage. If deemed necessary, the investigation can include a risk assessment. The investigation may include follow-up meetings between stakeholders and the contractor, where an impartial party is present, Minutes are recorded and added to the grievance database.

d) ***Resolution:*** Depending on the findings and their severity, a resolution will be decided within the time frames provided (See protocols 4.3). The NPCT will monitor the timelines of each resolution and ensure resolutions are made within 3 months of filing.

e) ***Complaint Satisfaction:*** **Yes:** The process concludes with a written agreement signed by the complainant(s) and management. **No:** The issue is shared with senior management. If unresolved at the settlement level, the GRC will escalate to the County. If the County is not able to resolve, the County will escalate it to the National PCT. Escalation must be done through letter or email. If it remains unresolved, or in parallel to project-level resolution, legal action may be taken. The CPCTs must inform the NPCT as soon as any court cases related to KISIP2 activities are filed, and the NPCT is responsible for informing the World Bank.

f) ***Documentation Management:*** Throughout the grievance redress process, it is important for the complaints and grievance logs to be stored in ways in which they can be easily analysed and presented. Filling of grievance forms will be done by the GRCs including resolutions and escalations. A summary grievance log will be documented in a black book or in any other manner that provides a summary of the number of grievances received, date received, the type and nature of grievances and if resolved, and or escalated. These summaries shall be collated monthly and submitted to the County GRM focal point who in turn will compile all grievance logs from within the county and submit to the National GRM focal point. A standard format for grievance logs filing and submission will be agreed and revised as necessary. This can be achieved through the use of a simple GRM database managed by the National GRM focal point with access by all the County GRM focal points.

Grievance Flow Chart



8.5 GBV GRM Protocol

KISIP II Project has a substantial GBV risk profile due to its location in the informal settlements, thus a separate avenue for GBV related GRM will be constituted to receive GBV related complaints that is tailored to be responsive to the sensitivities of reporting GBV and for vulnerable population.

The GBV GRM will have special procedures for responding to allegations of sexual exploitation and abuse (SEA) and sexual harassment (SH) that are made against a project actor. However, for any complaint that is reported to the GRM (including complaints involving other forms of GBV that are not related to the project), the GRM will also have procedures in place to refer the individual to GBV service providers.

For the purposes of the GRM, these terms are defined as follows:

- Gender-based violence. Gender-based violence, or GBV, is an umbrella term for any harmful act that is perpetrated against a person's will and that is based on socially ascribed (i.e. gender) differences between males and females. It includes acts that inflict physical, sexual, or mental harm or suffering, threats of such acts, coercion, and other deprivations of liberty. These acts can occur in public or in private. Across the globe, gender-based violence disproportionately affects women and girls. SEA/SH (defined below) is a subset of GBV.
- Sexual exploitation. Any actual or attempted abuse of position of vulnerability, differential power, or trust, for sexual purposes, including, but not limited to, profiting monetarily, socially, or politically from the sexual exploitation of another.
- Sexual Abuse. Actual or threatened physical intrusion of a sexual nature, whether by force or under unequal or coercive conditions.
- Sexual harassment. Any unwelcome sexual advance, request for sexual favours, verbal or physical conduct or gesture of a sexual nature, or any other behaviour of a sexual nature that might be reasonably expected or perceived to cause offense or humiliation to another, when such conduct interferes with work; is made a condition of employment; or creates an intimidating, hostile, or offensive work environment.
- Intimate partner violence (IPV). As defined by the World Health Organization (WHO), IPV refers to any behaviour within an intimate relationship that causes physical, psychological or sexual harm to those in the relationship. Examples of types of behaviour include:
    - ✓ Acts of physical violence, such as slapping, hitting, kicking and beating.
    - ✓ Sexual violence, including forced sexual intercourse and other forms of sexual coercion.
    - ✓ Emotional (psychological) abuse, such as insults, belittling, constant humiliation, intimidation (e.g. destroying things), threats of harm, threats to take away children.

- ✓ Controlling behaviours, including isolating a person from family and friends; monitoring their movements; and restricting access to financial resources, employment, education or medical care.

To fulfil the role of addressing GBV, all staff and volunteers at all levels of KISIP II Project should be trained (and/or have previous knowledge and experience) on the GBV Guiding Principles and the specialized procedures for receiving and referring GBV-related complaints. This set of skills will help GRM staff and volunteers to support the quality of the complaint mechanism, while at the same time ensuring the adherence to these Guiding Principles and a survivor-centered approach, including right to safety, respect, and confidentiality, of the complaint intake and management. Hotline operators in particular should receive training on the handling of GBV related complaints in line with the principles of confidentiality and the specialized procedures.

When receiving a grievance/during the intake process, the person receiving the complaint shall respect the wishes, choices, rights and dignity of the complainant. In order for the survivor/complainant to make informed decisions about whether to seek services and whether to file a complaint with the project (where the complaint involves SEA or SH), she/he needs to be provided with clear and simple information on the functioning of the system, on the possible outcomes, likely timelines, and the types of support that can be provided. The survivor/complainant must also give their consent for the sharing of basic, anonymous, non-identifiable monitoring data about the incident with the National/County KISIP 2 coordinating team and with the World Bank. If a complainant chooses not to be referred to GBV service providers or have the project take further action, then the case will be closed. The officer or volunteer must seek the survivor/complainant's consent to share basic monitoring data, and if no consent is given, no data will be recorded. For GBV cases, it is important to ensure that access to the complaints processes is as easy and as safe as possible for the complainant/survivor and that they clearly understand the referral process.

8.6 Avenues of Channelling GBV-GRM Related Cases

The avenues of channelling GBV-GRM related cases that may occur during construction phase of the project is presented in table 8-14 below.

Table 8- 14: Avenues of Channelling GBV-GRM Related Cases

GBV-GRM	The 1st level GRC at the project site/community level will designate 2 qualified persons within the committee who are most qualified to handle GBV-GRM matters (the Guidance Counsellor and the school principal/GBV focal person)
Communication	The County Coordinator to make dedicated toll-free contact numbers for the GBV focal persons at the project site for

	stakeholders' access - via posters, community consultations and awareness creation
GBV Officer	The GBV officers at the Project and County level is the focal point for the accountability, response aspects and monitoring the accountability process (e.g., determining if project-related, making sure employer, which might be the project Consultant or Contractor, is taking GBV Officer appropriate disciplinary action and investigating, etc.
GBV Service Provider	Each Project Consultant will identify existing GBV service providers in the communities and at County level to maintain a Memorandum of Understanding (MOU) for referral of GBV-GRM cases

8.7 Timeframe for processing Grievances

This section provides information on the expected timeframe for each stage of the GRM. It is expected that every responsible party will ensure they achieve the stipulated timelines. GBV/SEA/SH cases will not follow this timeframe and support must be provided to the survivor immediately due to the serious natures of SEA/SH issues.

Table 8- 15: Time Frame for Processing Complaints

Process	Description	Completion Timeframe	Responsible person
Receipt of complaint	Document date of receipt, name of complainant, location, nature of complaint etc.	1 day	Secretary to GRC at project level
Acknowledgement of grievance to the complainant	By letter, email, phone	1 day	Secretary to GRC at project level
Screen and Establish the Merit of the Grievance	Review the complaint/ Listen to the complainant and assess the merit	2 day	Project level GRC Secretary & the aggrieved PAP or his/her

Process	Description	Completion Timeframe	Responsible person
			representative
Refer unrelated project grievances	Where complaint is not related to KISIP II Project refer to appropriate authority and inform complainant	2 day	Project level GRC Secretary & the aggrieved PAP or his/her representative
Investigate the grievance	Visit the site, conduct investigations and interviews	1 – 3 days	Project level GRC members
Implement a redressal action	Discuss and agree on the grievance resolution	1 – 7 days	Project level GRC members & the aggrieved PAP or his/her representative
Escalate to county coordinator for a dissatisfied scenario	Refer the complainant to the County Coordinator GRC	3 – 10 days	Project level GRC Chairman
Receipt and record of complaint at county coordinator GRC	Document date of receipt, name of complainant, location, nature of complaint etc.	1 day	County level GRM Officer
Investigate/ Implement a redressal action	Review the previous action by the project level GRC/ conduct investigations and interviews. Recommend grievance resolution	2 – 7 days	County level GRM Officer
Escalate to National Coordinator for a dissatisfied scenario	Refer the complainant to the National Coordinator GRC	3 – 10 days	National level Coordinator
Receipt and record	Document date of receipt,	1 day	National level GRM

Process	Description	Completion Timeframe	Responsible person
of complaint at National Coordinator GRC Document date of receipt, name of c	name of complainant		Officer
Investigate/ Implement a redressal action	Review the previous action by the GRCs/ conduct investigations and interviews. Recommend grievance resolution	2 – 5 days	National GRC
Last resort - Advice complainant of option to seek judicial redress	Where resolution is not reached, complainant is free to seek judicial redress. National Coordinator to document the case including all attempts at resolution and send a report to the TTL	7days 5days	National Coordinator
Close the case	Follow up to obtain feedback and document resolution in logbook	As required	GRM officers

8.8 Chance Find Procedure

Chance find procedures are an integral part of the project ESMMP and civil works contracts. The following is proposed in this regard:

- If the Contractor discovers archaeological sites, historical sites, remains and objects during excavation or construction, the Contractor shall:
- Stop the construction activities in the chance find.
- Delineate the discovered site or area.
- Secure the site to prevent any damage or loss of removable objects. In cases of removable antiquities or sensitive remains, a night guard shall be arranged until the responsible local authorities, or the Ministry of State for National Heritage and Culture take over.

- Notify the supervisor, Project Environmental Officer, and Resident Engineer who in turn will notify the responsible local authorities and the Ministry of State for National Heritage and Culture immediately (within 24 hours or less).
- Responsible local authorities and the Ministry of State for National Heritage and Culture would then oversee protecting and preserving the site before deciding on subsequent appropriate procedures. This would require a preliminary evaluation of the findings to be performed by the archaeologists of the National Museums of Kenya. The significance and importance of the findings should be assessed according to the various criteria relevant to cultural heritage, namely the aesthetic, historic, scientific or research, social and economic values.
- Decisions on how to handle the find shall be taken by the responsible authorities and the Ministry of State for National Heritage and Culture. This could include changes in the layout (such as when finding irremovable remains of cultural or archaeological importance) conservation, preservation, restoration, and salvage.
- Implementation for the authority decision concerning the management of the finding shall be communicated in writing by relevant local authorities.
- Construction work may resume only after permission is given from the responsible local authorities or the Ministry of State for National Heritage and Culture concerning safeguard of the heritage.

CHAPTER 9: CONCLUSION AND RECOMMENDATIONS

9.1 Conclusion

The proposed project is environmentally, legally, and socially acceptable. The potential significant environmental impacts can be adequately mitigated by the proposed measures, and it is the responsibility of the proponent and all other actors to see to it that the measures are implemented. This way, the environmental threats shall be downscaled to acceptable levels.

It is based on the above, that it is recommended that the project be issued with the necessary clearance for the project to commence implementation.

The project will cost Project Cost approximately KES. 68,329,641.10 It is estimated that the project will take 1 year to complete.

9.2 Recommendation

This assessment recommends the following provisions:

- All mitigation measures need to be specified in tender and contract documents and must be included in the engineering drawings, specifications, and bills of quantities.
- The Contractor will be required to prepare a Construction Environment & Social Management Plan (CESMP) which shall be approved by the proponent before the beginning of works. Within the C-ESMP suite, the following instruments should be prepared:
    i. Health and Safety Management Plan.
    ii. Traffic Management Plan.
    iii. Labour, Influx and Local Recruitment Management Plan.
    iv. Spoil Management Plan.
    v. Stakeholder management Plan.
    vi. Emergency Response Plan.
    vii. A Gender Responsive Grievance Redress Management Plan for Internal and external grievances.
    viii. Child Protection Strategy.
    ix. Waste Management Plan.
- Diligence on the part of the contractor and proper supervision by the project engineer during construction and the initial operation phase is crucial for mitigating impacts.
- Contractor shall be required to commit to implementing the Environment, Social Health, and Safety (ESHS) Provisions by developing site-specific (ESHS) plans.
- At project implementation stage, the Contractor to report to the project management team comprising of the Consultant and the project proponent monthly on how

Environment, Social Health, and Safety (ESHS) provision detailed in this Environmental Social Impact Assessment are addressed.

- The proponent should be given all the available support to implement the project.
- Necessary permits should be issued by the licensing authority so that the work can commence such and National Environment Management Authority (NEMA) license, Directorate of Occupational Safety and Health Services (DOSHS) permit, Business permit and any other relevant that may be required.
- Periodic environmental and social monitoring is required by KISIP 2 team to ensure that mitigation measures have been implemented to prevent or avert any negative impacts of the project.
- On completion of the road and Civil Works, KISIP 2, the proponent to commission an independent Consultant to undertake an initial Environment, Social, Health and Safety Audit as required by Environmental (Impact Assessment and Audit) Regulations 2003 with 2019 amendments.
- The audit shall identify nonconformities which the Contractor together with the Client shall address through the defect's liability period of the Project. This audit shall also form basis of annual Project self-audits by the Client.
- To reduce GHG emissions, the contractor should ensure plant and equipment are properly serviced and use fuel which is free from impurities.
- Necessary permits should be issued by the licensing authority so that the work can commence such and NEMA license, DOSH permit, Business permit and any other relevant that may be required.
- Periodic environmental and social monitoring is required by KISIP 2 team to ensure that mitigation measures have been implemented to prevent or avert any negative impacts of the project.
- On completion of the road and Civil Works, KISIP 2 the proponent to commission an independent Consultant to undertake an initial Environment, Social, Health and Safety Audit as required by Environmental (Impact Assessment and Audit) Regulations 2003 with 2019 amendments.
- The audit shall identify nonconformities which the Contractor together with the Client shall address through the defect's liability period of the Project. This audit shall also form basis of annual Project self-audits by the Client.
- During implementation, the relevant World Bank policies will be fully adhered to.
- Contractor to involve a community liaison person.
- Project workers should have a transparent, open, available and anonymous GRMs.

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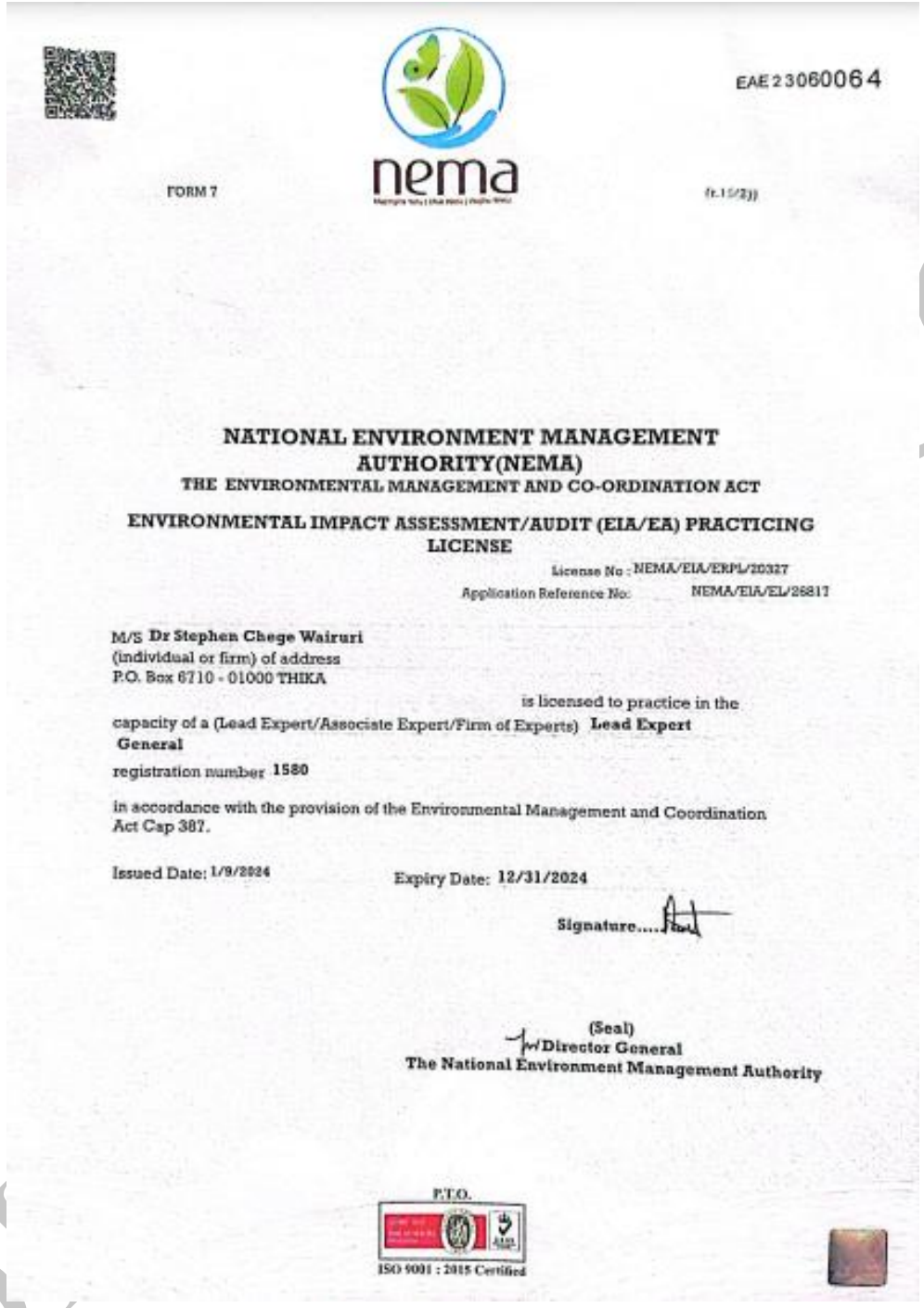
ANNEXES

Annex 1: Lead Expert NEMA License



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FORM 7 (r.15(2))

nema

NATIONAL ENVIRONMENT MANAGEMENT AUTHORITY(NEMA)

THE ENVIRONMENTAL MANAGEMENT AND CO-ORDINATION ACT

ENVIRONMENTAL IMPACT ASSESSMENT/AUDIT (EIA/EA) PRACTICING LICENSE

License No : NEMA/EIA/ERPL/20327

Application Reference No: NEMA/EIA/EL/26817

M/S **Dr Stephen Chege Wairuri**
(individual or firm) of address
P.O. Box 6710 - 01000 THIKA

is licensed to practice in the capacity of a (Lead Expert/Associate Expert/Firm of Experts) **Lead Expert General**

registration number **1580**

in accordance with the provision of the Environmental Management and Coordination Act Cap 387.

Issued Date: 1/9/2024 Expiry Date: 12/31/2024

Signature.....

(Seal)
Director General
The National Environment Management Authority

P.T.O.

ISO 9001 : 2015 Certified

Annex 2: Minutes and Attendance Sheet

CONSULTING SERVICES FOR INFRASTRUCTURE UPGRADING PLANS, DETAILED ENGINEERING DESIGNS AND PREPARATION OF PROCUREMENT DOCUMENTS AND CONSTRUCTION SUPERVISION OF INFRASTRUCTURE IMPROVEMENT WORKS IN SELECTED INFORMAL SETTLEMENTS IN THE COUNTIES OF NYERI, MERU, THARAKA-NITHI, AND WAJIR

KISIP 2

Project Program	**Second Kenya Informal Settlements Improvement Project (KISIP 2)**
Assignment Name	Consulting Services For Infrastructure Upgrading Plans, Detailed Engineering Designs and Preparation of Procurement Documents and Construction Supervision of Infrastructure Improvement Works in Selected Informal Settlements In The Counties of Nyeri, Meru, Tharaka-Nithi, and Wajir
Subject:	Minutes of Public participation Meeting for Salama Informal Settlement held on September 27, 2023
Date and Time:	September 27,2023
Venue:	Muslim Primary Playground

MEMBERS PRESENT

1. Local administration- Assistant chief
2. KISIP National Team
3. KISIP National Team
4. Consultant
5. Village Elders
6. Area resident

NB- List of attendance sheet is attached

AGENDA

1. Introduction.
2. Meeting Agenda.
3. Election of SEC and GRC members
4. Determination of the Community Priorities
5. A.O.B
6. Meeting Closure

MINUTE No.	ITEM DESCRIPTION
Min 1	**Introduction** The meeting began at 9:00 a.m. with a word of prayer from one of the members. This was followed by self-introductions by all members. The Chief welcomed the attendees and handed over the meeting to the KISIP Team to take the community members through the agenda of the day.
Min 2	**Meeting Agenda** The Team Leader of the KISIP stated the meeting Agenda was to: • Select a GRC and SEC committee. • Identify priority project interventions by the community members The County representative underscored the crucial role of community members in identifying interventions for the KISIP II Project. This approach guarantees active involvement from the community, which, being well-acquainted with existing challenges, will actively contribute to shaping the project's focus and direction
Min 3	**Election of GRC and SEC members** The KISIP Team took the community members through the roles and responsibility of SEC and GRC members and stated their roles, function and objective will be; 1. **Grievance Redress Committee (GRC):** **Objective:** The GRC will serve as a mechanism for addressing community members' grievances and concerns regarding the settlement's development projects. **Function:** • Receives and reviews grievances from community members. • Conducts impartial investigations into reported issues. • Facilitates communication between community members and relevant project stakeholders. • Recommends solutions and actions to address identified grievances.

MINUTE No.	ITEM DESCRIPTION
	2. **Settlement Executive Committee (SEC):** **Objective:** The SEC will be responsible for the overall governance and management of settlement affairs, ensuring that community interests are represented and protected. **Function:** • Oversees the implementation of development projects within the settlement. • Manages settlement resources and finances transparently. • Acts as a liaison between the community and external stakeholders. • Makes decisions on matters that impact the overall well-being of the settlement. • Promotes community engagement and participation in decision-making processes. • Representing the community members • Mobilizing the community members • Creating awareness to the other community members The community members were told the above by the Team leader and they were all in agreement. The Team Leader stated that the SEC will comprise of 11 members including; • The Chief • Four titled land owners • Two Tenants • Faith Based Organization • Community Based Organization • Chairman • Vice chairman • Person Living with Disability • Secretary • Youth • Widow The GRC will include five members with one of the five voted as Chairman. The Team Leader led the meeting in the voting process and the committee members were selected. The vote was undertaken and the members for the GRC and SEC

MINUTE No.	ITEM DESCRIPTION
	identified and roles allocated
Min 4	**Determination of the Community Priorities** KISIP Engineer underscored the pivotal role of community members in determining the priority projects to be undertaken. Providing a comprehensive list of projects within the KISIP scope, the community members were guided through the aforementioned list of selected interventions. Community members identified the following projects as the top priorities for implementation in Salama: [List of Priority Projects]. • Water • Roads • Drainage • High mast floodlight/street light • Street lights This collective consensus reaffirms the community's endorsement of the identified projects as crucial interventions for implementation.
Min 5	**Any Other Business** KISIP representative expressed gratitude to all the members for taking the time to attend the meeting. He introduced the Consultant team, highlighting that they would be entrusted with the responsibility of designing the proposals put forth by the community. The Chief thanked the attendees for taking their time to attend the meeting and assured them that during the Project implementation they will be involved through the office and the SEC and GRC officials.
Min 6	**Meeting Closure** The meeting concluded at 11:30AM. Community members and stakeholders were encouraged to reach out to the project team for any additional information or clarification. The KISIP National team, County Representatives and Consultant proceeded with the field visit to familiarize themselves with the proposed sites.

Annex 3: Sample filled questionnaires

REPUBLIC OF KENYA

IDA International Development Association WORLD BANK GROUP AFD AGENCE FRANÇAISE DE DEVELOPPEMENT

ESIA QUESTIONNAIRE

The Government of Kenya has received Credit facility from the International Development Association (IDA) and AFD towards the cost of the Second Kenya Informal Settlements Improvement Project (KISIP 2) and intends to apply part of the credit to procure Consultancy Services for 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 Marginalized Groups Plan (VMGP) where applicable, and Supervision of Construction of Infrastructure Works in Selected Informal Settlements in the Counties of Nyeri, Meru, Tharaka-Nithi, and Wajir.

You have been selected to participate in this exercise and we would highly appreciate your assistance for responding to all questions in this questionnaire adequately and appropriately as possible. Please fill in the following questionnaire giving in your comments where necessary.

This questionnaire is intended to ensure there is adequate Consultations & Public Participation (CPP) before implementation of the said project. It is proposed this questionnaire is filled and signed by members of the surrounding community and institutions in the area of the said project, as required by the National Environment Management Authority, NEMA and World Bank.

Your response will be treated with confidentiality and will only be used for the purpose of this project.

Respondents' Details

Name (Optional) Jina (Kwa hiari)	
ID Number (Optional): Namba ya Kitambulisho (Kwa hiari)	
Telephone (Optional):Namba ya Simu (Kwa hiari)	0727397551
Project area: Eneo la mradi	Salama

1. How long have you lived in this area *(umeisha katika eneo hili kwa muda mgani)*

Time	Tick appropriately
Months (indicate the number)	
1-2 Years	
3-5 Years	✓
6-10 Years	
More than 10 Years	

2. What is your occupation (Unafanya *kazi/biashara gani?*)

Occupation	Tick appropriately
Fisherman*(Mvuvi)*	
Farmer (*Mkulima)*	
Civil servant (*Mfanyikazi wa Umma*)	
Casual labour (*Kibarua)*	
Self-employed (*Umejiajiri)*	✓
House wife (*Mke nyumbani*)	
Trader (*Mchuuzi)*	
Student *(Mwanafunzi)*	
Unemployed (*Hana Ajira)*	
Others (Please specify) (*Nyinginezo, taja)*	

3. What is your education level (*Kiwango chako cha elimu ni kipi?)*

Education level	Tick appropriately
None (Sijasoma)	
Preprimary (Chekechea)	
Primary (Shule ya Msingi)	
Secondary (Shule ya Upili)	
Vocational/Technical *training (Masomo ya miundo msingi)*	
University *(Chuo Kikuu)*	✓

4. What your views on the following infrastructures in this area? *Una maoni gani kuhusu miundombinu katika eneo hili*

2 |

Infrastructures *(miundombinu)*	Rate (Tick appropriately) *(Weka tiki ipasavyo)*		
	Poor (mbaya)	Fair (haki)	Good (nzuri)
Water *(maji)*	✓		
Sanitation *(usafi wa mazingira)*	✓		
Solid waste Management *(usimamizi wa taka ngumu)*	✓		
Road conditions *(hali ya barabara)*	✓		
Security *(Usalama)*			
Green Spaces (		✓	

5. What are your sources of water (you can tick more than one source) *(Unatoa maji wapi?)*

Source *(unapatoa)*	Tick appropriately *(Weka tiki ipasavyo)*
Water Services Company (*Kampuni ya maji*)	✓
Rainwater (Maji *ya mvua*)	
Boreholes (*Visima*)	
Vendors (*Mikokoteni, Vibanda vya maji*)	
Othes (please specify) (*Nyinginezo*)	

6. Is the source of water mentioned above reliable? Yes/ No. (Please tick one) *Unakotoa maji ni mahali pa kutegemea?*

Yes (ndio) ☑ No (apana) ☐

7. What are the main uses of water? (*Ni matumizi gani makuu ya maji?*)

Activity *(matumizi)*	Tick appropriately *(Weka tiki ipasavyo)*
Domestic use *(Matumizi ya nyumbani)*	✓
Kitchen gardening *(Bustani ya jikoni)*	
Irrigation *Ukulima wa kunyunyuzia)*	
Others (please specify) *(Nyinginezo)*	

8. Do you face any challenges with the sources of water mentioned in 5 above (Kuna *changamoto zozote unazopata mahali unapochota maji?)*

Yes *(ndio)* ☑ No *(apana)* ☐

9. If yes in 8 above briefly name the challenges*(Kama ndio taja changamoto hizo)*

Shortage;

10. Do you have access to a sanitation facility within your household premises / Compound? *(Je, unapahali pa kujisaidia ndani ya majengo yako?)*

Yes *(ndio)* ☑ No *(apana)* ☐

11. If "No" in 10 above, where do you go to answer a call of nature? *(Kama hauna, Je unajisaidia wapi?)*

- ☐ The neighbor (Kwa Jirani)
- ☐ Public Toilet (Choo cha Umma)
- ☐ Open space (Kichakani)
- ☐ Other (specify) (Nyinginezo)

12. If "Yes" in 10 above, what is the sanitation facility? *(Kama ndio choo chako ni cha aina ngani?)*

- ☐ In general, Pit latrines (*Choo cha shimo)*
- ☐ Open space (*Kichakani)*
- ☑ Flush toilets (*Choo cha flush*)
- ☐ Other (specify)_____ *(Nyingineza)*

13. a) Are there security issues in your area? *(Kuna masuala kuu ya usalama katika eneo hili?)*

☑

4 | Page

Yes *(ndio)* ☑ No *(apana)* ☐

b) If yes in (a) what are the main security issues in this area? *(taja masuala kuu ya usalama katika eneo hili)*

Lack of street Light

14. a) Are there challenges of the roads in the area? *(Kuna changamoto zozote za baabara katika eneo hili)* Yes *(ndio)* ☑ No *(apana)* ☐

b) If yes in (a), what are the challenges of the roads in this area? *(taja changamoto hizo)*

No proper road, rough roads, flooding of water on road Sometimes

15. How do you dispose off your solid waste? *(Unatupaje taka ngumu yako)*

Collection Method	Tick appropriately *(Weka tiki ipasavyo)*
Collection by county garbage collection *(Ukusanyaji na ukusanyaji wa taka za kaunti)*	
Collection by community garbage collection initiative *(Ukusanyaji kwa ukusanyaji wa taka za jamii)*	✓
Collection by private companies *(Ukusanyaji na kampuni binafsi)*	
Dumping in open spaces *(Kutupa katika nafasi wazi)*	
Burning *(Kuchoma)*	
Throwing in the river and other water sources *(Kutupa kwenye mto na vyanzo vingine vya maji)*	
Throwing in the toilet/latrine *(Kutupa chooni/choo)*	

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16. Are you aware of the proposed interventions in this area under the Second Kenya Informal Settlements Improvement Project (KISIP 2) (Water, roads, sanitation, solid waste management, high mast flood lights, street lights and green spaces) and project location

(Unajua kuhusu hatua zinazopendekezwa za (maji, usafi wa mazingira, usiamamizi wa taka ngumu, hali ya barabara na taa za barabarani) katika eneo hili chini ya Second Kenya Informal Settlements Improvement Project (KISIP 2) na mahali zitakapofanywa?)

Yes / Ndiyo ☐ No / Hapana ☑

17. Do you think this project will affect the normal land use in the area and if so in what way?

(Unaona kama huu mradi utabadirisha matumizi ya kiuchumi ama ya ardhi na kwa njia ipi?)

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18. Are there historical or cultural heritage that would be affected by this project? If so, state them. *(Kuna mambo za kale ama za kitamaduni ambazo zitadhuriwa ama ziharibiwe ama zihamasishwe na huu mradi? Kama ndiyo, zitaje.)*

Nil

19. Are there hydro-geological (ground-water) or surface water resources condition that will be affected by this project? If so, state them. *(Kuna mambo za maji ya chini ama juu kwa ardhi ambayo itaharibiwa, ama idhuriwe ama ihamasishwe na huu mradi? Kama ndiyo, fafanua.)*

Nil

20. Do you think there will be any wastes generated during this project and how do you propose that is handled? *(Unafikiria kuna takataka ambazo zitatokana na huu mradi na ungetaka zifanywe nini?)*

Nil

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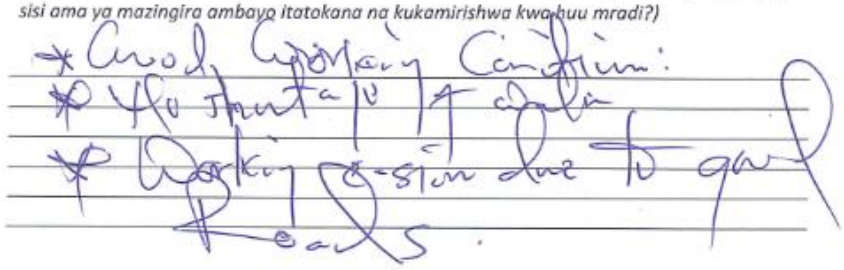
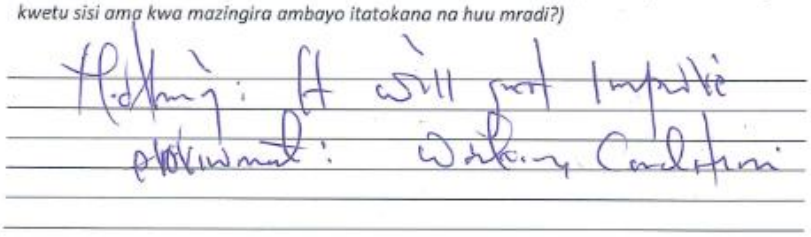
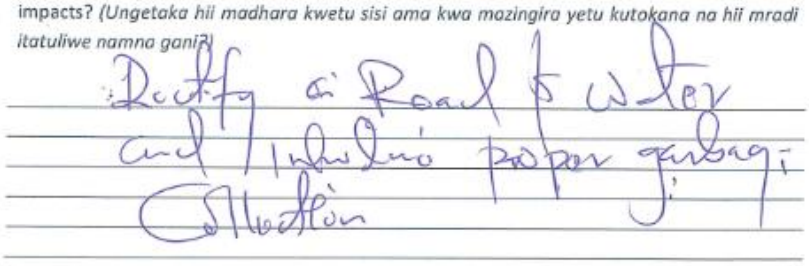
21. What are the expected POSITIVE environmental and social impacts? *(Ni manufaa gani yetu sisi ama ya mazingira ambayo itatokana na kukamirishwa kwa huu mradi?)*



22. What are the expected NEGATIVE environmental and social impacts? *(Ni madhara gani kwetu sisi ama kwa mazingira ambayo itatokana na huu mradi?)*



23. What suggestions would you make to mitigate any adverse environmental and social impacts? *(Ungetaka hii madhara kwetu sisi ama kwa mazingira yetu kutokana na hii mradi itatuliwe namna gani?)*



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24. Give any relevant observations, recommendations or comments on this project.
(Toa maoni yako yoyote kuhusu huu mradi ambayo ungetaka iangaliwe ama isuluhishwe kwa makini.)

Good and encouraging work.

25. In your conclusion, do you welcome the project in the said area, and why? (*Kwa tamati, unakaribisha huu mradi kwa eneo hili, na kwa nini?*)

Yes (Ndiyo) ☒ No (apana) ☐

Road + Rough Road
Water bitehole + water shortage

Signature..

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