REPUBLIC OF KENYA

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

ENVIRONMENTAL SOCIAL IMPACT ASSESSMENT COMPREHENSIVE REPORT FOR THE PROPOSED INFRASTRUCTURE IMPROVEMENT WORKS IN CHORONGI INFORMAL SETTLEMENTS NYERI COUNTY

Consultant

gath CONSULTING ENGINEERS

In jv with

Losai Management Limited

MAY, 2024

"DOCUMENT CONTROL"

PROPOSED IMPROVEMENT WORKS IN CHORONGI NFORMAL SETTLEMENTS IN NYERI COUNTY

ESIA COMPREHENSIVE PROJECT REPORT

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	May, 2024	ESIA CPR (May 2024)	GATH in Jv with LOSAI	Dr. S.C	L.W.M

SUBMISSION DETAILS

Certificate of Declaration and Document Authentication

This document has been prepared in accordance with the Environmental Management and Coordination Act 2015 and Environmental Impact Assessment and Audit Regulations, 2019

This report is prepared for and on behalf of:

LEAD EXPERT/FIRM OF EXPERT-11481	PROPONENT
LOSAI MANAGEMENT LTD P.O BOX 30337-00100 Nairobi Kenya FAX : +254.20.263.2996 TEL : +254.788.352.533, + 254.20.263.2996, +254.718.875.310 Email : info@losaimanagement.com **Name : ……..** **Designation: ……..** **Date: ……..** **Signed ……..**	Chief Officer, Department for Lands, Housing, Physical Planning, Public Works and Urban Development (CO-LHPP&UP) Office: County Government of Nyeri KISIP 2 Office (Land and Spatial Planning) Address: P.O Box 1112-10100, Nyeri Tel No: +254-(721/722)-019019/ +254-774-050050 **Email:*directorphysicalplanningnyeri@gmail.com*** **Name: ……..** **Designation: ……..** **Signed ……..** **Date: ……..**

DISCLAIMER:

This Environmental Impact Assessment Comprehensive Project Report is based on literature review and findings from field assessment. It is however, subject to conditions in the Environmental Management and Coordination Act 2015 Environmental Impact Assessment and Audit Regulations, 2019 and World Bank Environmental and Social Safeguards

FACT SHEET

Program Name	**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 Nyeri
ESIA Report	Environmental & Social Impact Assessment Comprehensive Project Report for the Proposed Infrastructure Improvement Works in Chorongi Informal Settlement, Nyeri County
Client	Nyeri County Government
Financier	World Bank
Project Scope	The scope of works shall involve improvement works and upgrading of the following infrastructure. **1. Roads** The works will constitute upgrading to bitumen standards of 930m tarmac road and street lighting that will serve residential areas and social amenities within the informal settlements. **2. Water** The proposed water supply interventions for Chorongi informal settlement include: ➢ Laying of: • 597m- OD 63mm PN12.5 HDPE Pipeline • 350- OD 90mm PN12.5 HDPE Pipeline ➢ 33No. consumer connections **3. Sanitation** The proposed sanitation works involve: • Provision of 2No. Modern Waste Collection System by Using 7.5 m^3 Dumpsters for Collection of Municipal Solid Waste **4. High Mast Flood Lights** • Installation of 1no. 30m Monopole Flood Lighting

Project Location	The project is in Chorongi informal settlement is in Ruring'u ward, Nyeri town constituency, Nyeri Central sub-county in Nyeri County
Project Cost	**KES 109,863,225.70**,
Target beneficiaries	Chorongi Informal Settlement area
Lead Expert	Dr. Stephen Reg. Nr. 1580
Associate Experts	Lydiah Mbogo – 6007 Sarah Karanja

ABBREVIATIONS & ACRONYMS

AFD	Agence Française de Développement
AIDS	Acquired Immunodeficiency Syndrome
ARVs	Antiretroviral drugs
BoQ	Bill of Quantity
CBO	Community Based Organization
CESMP	Construction Environmental and Social Management Plan
CIDP	County Integrated Development Plan
COC	Code of Conduct
CPP	Consultation and Public participation
CPR	Comprehensive Project Report
CPCT	County Project Coordination Team
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
IDeP	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
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
NYEWASCO	Nyeri Water and Sanitation Company
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
WWTP	Waste Water Treatment Plant

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ANNEXES

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

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

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

S/N	Intervention	Components
	Roads	
1.	Chorongi Road A	i. 930mm tarmac road with solar street lighting – in situ upgrading ii. 5.5m carriageway width iii. 930m of 1.0m footpath/walkway **iv.** Pipe culverts, side drains and outfall drain.
2.	Water	i. Distribution main 1 - 350- OD 90mm PN12.5 HDPE Pipeline ii. Distribution main 2 - 597m- OD 63mm PN12.5 HDPE Pipeline iii. 33No. consumer connections
3.	Solid Waste Management	i. 2No. Modern Waste Collection System by Using 7.5 m3 Dumpsters for Collection of Municipal Solid Waste
4.	High mast flood Light	i. 1no. 30m Monopole Flood Lighting

E.3: The Project Cost

The total cost for the project is approximately **KES 109,863,225.70**, inclusive of 10% contingency and 16% VAT as shown below. The project is estimated to take 1 year.

Table E3.1: Project Cost

No	Chorongi	Detailed Description	Cost (KES)
1.	Preliminary and general items		4,617,235.13
2.	Water supply	• 350- OD 90mm PN12.5 HDPE Pipeline • 597m- OD 63mm PN12.5 HDPE Pipeline • 33No. consumer connections	3,173,003.87
3.	Solid Waste Management	2No. Modern Waste Collection System by Using 7.5 m3 Dumpsters for Collection of Municipal Solid Waste	400,000.00
4.	Roads	0.93km of Roads	68,992,187.66
5.	High mast floodlight	1no. 30m Monopole Flood Lighting	3,349,850.00
6.	Day works	Day works	1,467,430.00
7.	Environmental	Environmental and social safeguards	4,100,000.00
BILL TOTAL EXCLUSIVE OF VAT			**86,099,706.66**
ADD 10% CONTINGENCY			8,609,970.67
BILL TOTAL INCLUSIVE OF CONTINGENCY			**94,709,677.33**
ADD 16% VAT TAX			15,153,548.37
BILL TOTAL INCLUSIVE OF VAT AND CONTINGENCY			**109,863,225.70**

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.

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 the selected Chorongi Informal Settlements in Nyeri County.

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 Chorongi 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 Nyeri 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, and Convention on Elimination of All Forms of Discrimination against Women

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 Chorongi social Hall in September 19, 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.

A consultation meeting was held September 19, 2023, at Chorongi social Hall 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 - September 19,2023 **Venue- Chorongi Social Hall**	
List of participants	**Number**
Male	15
Female	10
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 Kikuyu 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 22, 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 also administered to the key stakeholders on November 20, 2023-November 24, 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 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.

- **Increased market and investment opportunitie**s- Increased business opportunities for small and medium -scale traders such as hotel and shop owners, food vendors, etc. especially during construction phase.
- **Improved access to clean reliable water**-. The community of Chorongi area and institution will benefit from the improved water supply in the area.
- **Promote social inclusion and equity**- The project will promote social inclusion and equity by ensuring that the water supply and lighting benefits all members of the community.
- **Reduced exposure to health risks and Improved hygiene**: Improved water quality for domestic consumption reduces the risk to health of the consumers and dependents of water resources that could translate into financial savings through less related expenditures. Construction of the project will improve access of services to the residents of the target areas. Proper drainage areas will ensure stagnant water does not accumulate hence reducing exposure to water borne diseases and malaria.
- **Community 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.
- **Accessibility to social services and infrastructure-** Improved roads will reduce the travel time hence improving the transportation of goods and services as well as transportation of people within the area. People will be able to access social services and infrastructure with ease.
- **Environmental benefit:** proper disposal of waste shall result in positive environmental impact through reducing illegal dumping of waste by households and reducing the difficulty the county must separately treat the waste according to its nature. In addition, management of waste through provision of bins will lead to reduced composition of waste within the settlement, which contributes to GHG emission which otherwise would emit CH4 to pollute the air.
- **Increased security** -There will be enhanced security in the Chorongi arising from well-lit social, commercial, and individual premises. With the implementation of the project, the level of security will increase across Chorongi. This is because of more security lights which helps keep off opportunistic crimes and gender-based violence.
- **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 the town centres 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.

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 leaves
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. • 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 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.

Potential Impacts	Management Actions
	• 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 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

Potential Impacts	Management Actions
	• 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	
• 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.

Potential Impacts	Management Actions
• 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 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	• 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

Potential Impacts	Management Actions
project workers against community members	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; 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.

Potential Impacts	Management Actions
	• 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	
• 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 daily 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 vandalism of the streetlights	• This shall require constant inspection by Nyeri County Government Officials. • Conduct public sensitization programs on importance not interfering with the security lighting
Risk of encroachment and construction of structures on the road reserves way leave	• Arrest and prosecution of encroachers as required by Nyeri County Bylaws on Way Leaves and Road Reserves
Risk of illegal water connection	• Regular inspection to be carried out in the project areas to identify and remove illegal connections to water pipelines. • Prosecution of offenders as required by Nyeri County By laws
Risk of bursts	• The risk of pipeline bursts is low as the pipeline design, including the selection of pipe material with appropriate pressure rating. • This risk will be further minimized through regular inspection, repair, and maintenance of the pipeline by the Operator, NYEWASCO • Activate a community watch group for prompt information sharing on the status of the pipeline
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.
Health and Safety Impacts	
Health and Safety Risks	• Provision of appropriate PPEs for workers operating and maintaining the road and security lighting infrastructures. • 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

Potential Impacts	Management Actions
	to 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

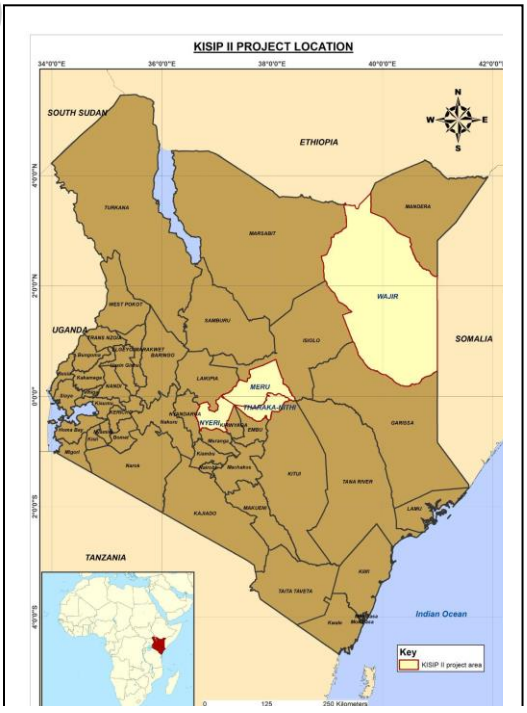


Figure 1-1: KISIP 2 Project Areas Locations

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 Chorongi 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 Chorongi Informal settlement in Nyeri County.

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

1. Roads

- In situ upgrading of 930mm tarmac road with solar street lighting
- 5.5m carriageway width
- 930m of 1.0m footpath/walkway
- Pipe culverts, side drains and outfall drain.

2. Water

- Laying of:
  - 597m- OD 63mm PN12.5 HDPE Pipeline
  - 350- OD 90mm PN12.5 HDPE Pipeline
- 33No. consumer connections

3. Sanitation

The proposed sanitation works involve:

- Installation of 2No. Modern Waste Collection System by Using 7.5 m^3 Dumpsters for Collection of Municipal Solid Waste

4. High mast flood light

- Installation of 1no. 30m Monopole Flood Lighting

1.2. Project Justification and Benefit

To build on the accomplishments made under KISIP I, KISIP 2 was initiated by the Government of Kenya in collaboration with the World Bank through International Development Association (IDA) and AFD with the objective of extending the benefits of the programme to more informal settlements.

The main objective of this 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. This will be achieved by investing in infrastructure based on plans developed in

consultation with the community, by supporting planning and by strengthening capacity of county administrations to deliver on their mandates.

1.3. Objectives of the ESIA

1.3.1 General Objective

The purpose of an environmental assessment (EA) is to improve decision-making and to ensure that the project under consideration is environmentally and socially sound and sustainable.

This ESIA assessment has been conducted in compliance with the Environmental Impact Assessment Regulation as outlined under the Gazette Notice No. 32 of 2003 amended in 2009 established under the Environmental Management and Coordination Act (EMCA), 2015 of Kenya, and the World Bank Operational Policies.

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 to ensure sustainability of the proposed projects.
vii. To recommend cost effective measures to be implemented to mitigate against the expected environmental and social impacts.

1.4. Project scope of works

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

Environmental and social screening is the first stage of the environmental assessment process. It determines whether an EIA study is required for a particular development activity. This depends on the significance of the project's environmental impacts. The significance itself depends on such factors as: the sensitivity of the area likely to be affected; public health and safety; the possibility of uncertain, unique, or unknown risks; the possibility of having individually insignificant but cumulatively significant impacts; whether the proposed activity affects protected areas, endangered or threatened species and habitats; size, working methods, project activities including their duration and proposals for waste disposal etc. A hybrid of approaches involving lists and thresholds, amongst others, are used to establish which activities should be assessed for environmental impacts.

Environmental and social screening is done through identifying the potential positive and negative impacts of the project.

Screening process was undertaken to decide whether the Proposed improvement works on the following infrastructure: roads, sanitation, streetlights and high mast flood lights at Chorongi Informal Settlement will be subjected to an ESIA study or not. The Environmental Management and Coordination Act (EMCA) 1999 as amended in 2015 specifies the projects which should be subjected to an Environmental Impact Assessment (EIA) before commencement of project

activities. In this schedule the proposed improvement works are classified under medium risk projects. The project will require assessment of the likely environmental impacts and suggesting mitigation measures before implementation.

Based on this classification, the proposed project was therefore subjected to an Environmental and social impact Assessment. State Department of Housing and Urban Development, Ministry of Lands, Public Works, Housing and Urban Development, herewith referred to as the proponent, appointed Losai/GATH JV to undertake the ESIA assessment and prepare an ESIA report in fulfilment of the EMCA and Environmental Impact Assessment and Audit Regulations, 2003 as amended in 2019. An Environmental and social screening report has been prepared separately, there is no need of conducting RAP since no displacement is anticipated.

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 was collected on the proposed project site and the area residents. Data collection was conducted throughout the ESIA process.

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 ground water 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 Impact 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 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 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 stakeholder consultations at Chorongi social hall were held on November 22, 2023, and September 19, 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 for use in ESIA preparation and finalizing the design report.

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

Table 1-1: KII Comments and suggestions

Name	Designation
Sammy M. Nyaga	Assistant County Commissioner
Anne Wandiri	Officer Commanding Officer
Eng. Joseph Mwangi	County Structural Engineer (Principal Superintending Engineer)
Kennedy Kanoga Mundiu	Environmental Officer

Table 1-2: List of participants

Meeting - September 19,2023 **Venue- Chorongi social hall**	
List of participants	**Number**
Male	15
Female	10
Total participants	25

CHAPTER 2: PROJECT DESCRIPTION AND DESIGN

2.1 Introduction

The proposed projects intend to cover five informal settlements in Nyeri County namely Kiamwathi, Ihwagi, Chorongi, Mweiga and Kiawara. The Consultant conducted topographical survey and conditional assessment of the each of the proposed informal settlement in the month of September 2023.

This section presents the proposed interventions in, water roads, and lighting projects, which are the proposed projects being considered for intervention in Chorongi Informal Settlement Nyeri County.

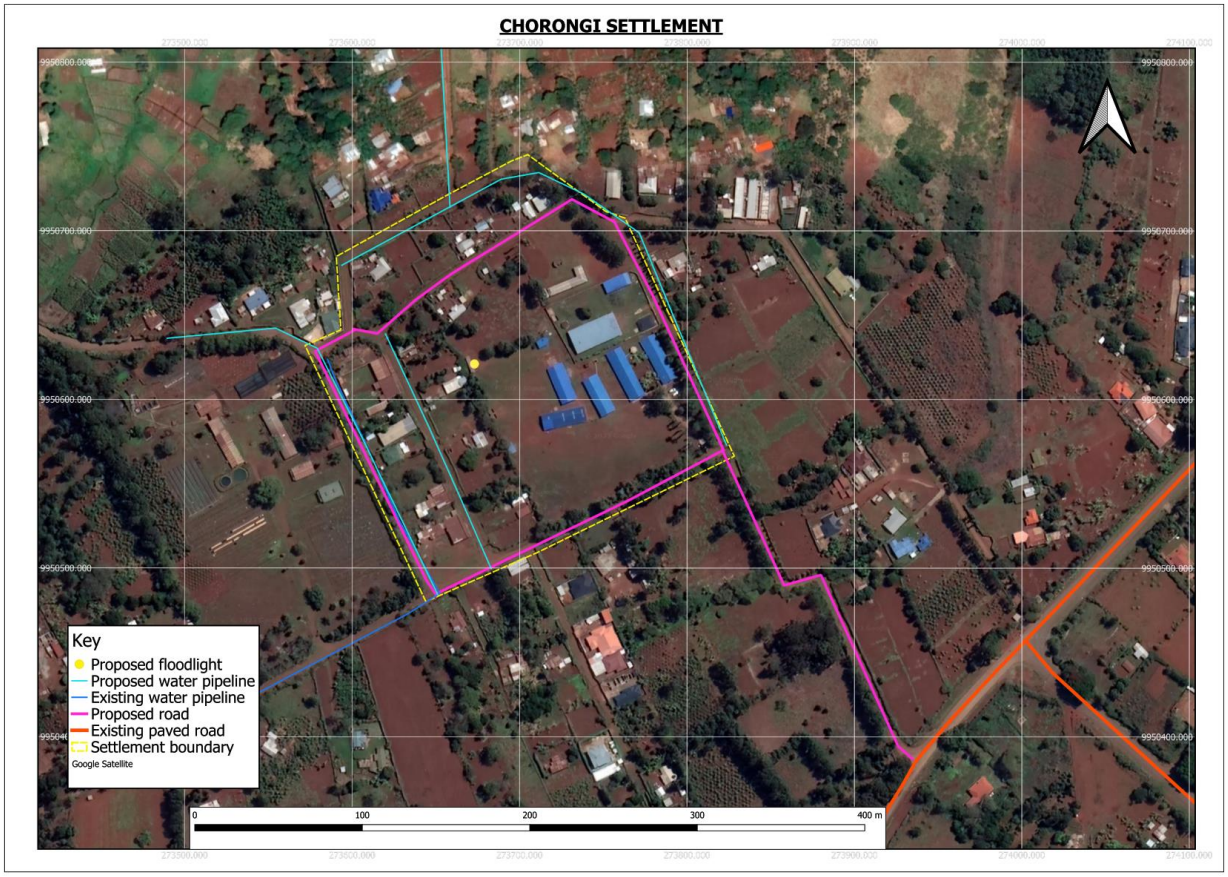


Figure 2-1: Proposed Interventions
(Source: Consultant Design Report)

2.2 Existing Road Infrastructure

Existing geometry: The existing roads were gravel roads with 6 metre widths and no side drains. They traversed a flat terrain. The roads serve the homes in the settlement, Chorongi primary

school, the cattle dip and social amenities (Chorongi Catholic Church). The road reserve width in the settlement plan was 9 meters. The road horizontal alignments were mainly straight. A few power poles were identified in the road corridor, which will require relocation during construction phase. The other existing services which may require relocation are the water pipes which are on the road corridor. The settlement has roads of approximately 1.4kms.

Existing drainage and structures: The roads in the settlement did not have side drains and there is no storm water drainage. A waterway leave was identified, which can serve as the outfall for the road and storm water drainage system.

Existing Gravel earth road in the area

Existing drainage in the area

Figure 2-2: Road conditions.

2.2.1 Road Alignment

The proposed road alignments pass through an existing and un-engineered earth and gravel road that traverses flat, rolling, and mountainous terrain in the different informal settlements.

2.2.2 Challenges of the Existing Road Infrastructure

- the roads lack storm water drainage,

2.3 Existing Water Infrastructure

The settlement sources its water from the NYEWASCO distribution network. 16 out of 26 households are connected to water. The water is distributed via DN 110- 50 mm HDPE pipes.

There are no existing storage facilities provided by the county government or the water service provider. Following the land tenure activity there is need to re-align the water reticulation network to follow the road reserve.

2.4 Solid Waste

The settlement has no solid waste disposal means and rely on burning and household compost bins.

Figure 2-3: Solid waste in the household compost bin.

2.5 Existing High Mast Flood Lights and Security Lights

The settlement had high mast flood lights but most of them were vandalised and not in working condition.

Figure 2-4: High mast flood lights.

2.5.1 Challenges of the Existing Lighting Infrastructure

- Vandalized and not in good working conditions.

2.6 Proposed Water Works

2.6.1 Water Pipelines

In the existing situation, the Chorongi settlement relies on the NYEWASCO distribution network for its water supply. The distribution infrastructure consists of DN 110-50 mm HDPE pipes, with no existing storage facilities provided by the county government or the water service provider. Also, there is a need to re-align the water reticulation network to follow the road reserve, necessitating improvements to ensure efficient water distribution and accessibility.

The planned water works include laying 597m of OD 63mm PN12.5 HDPE pipeline and 350m of OD 90mm PN12.5 HDPE pipeline, expanding the distribution network to reach more households. The pipes will be butt fused and pressure tested to inspect for leaks.

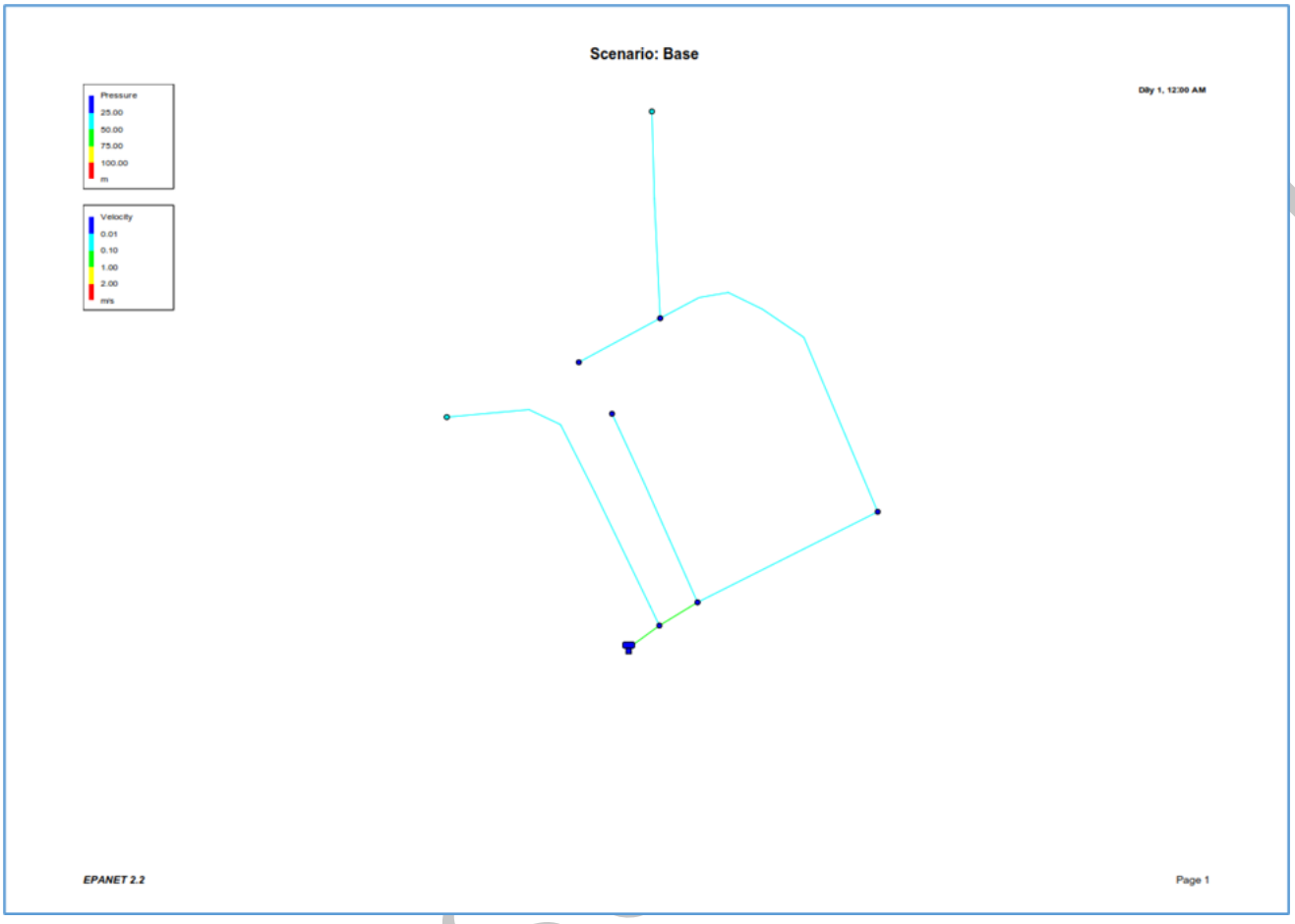


Figure 2-5 EPANET model of the proposed Chorongi water distribution network.

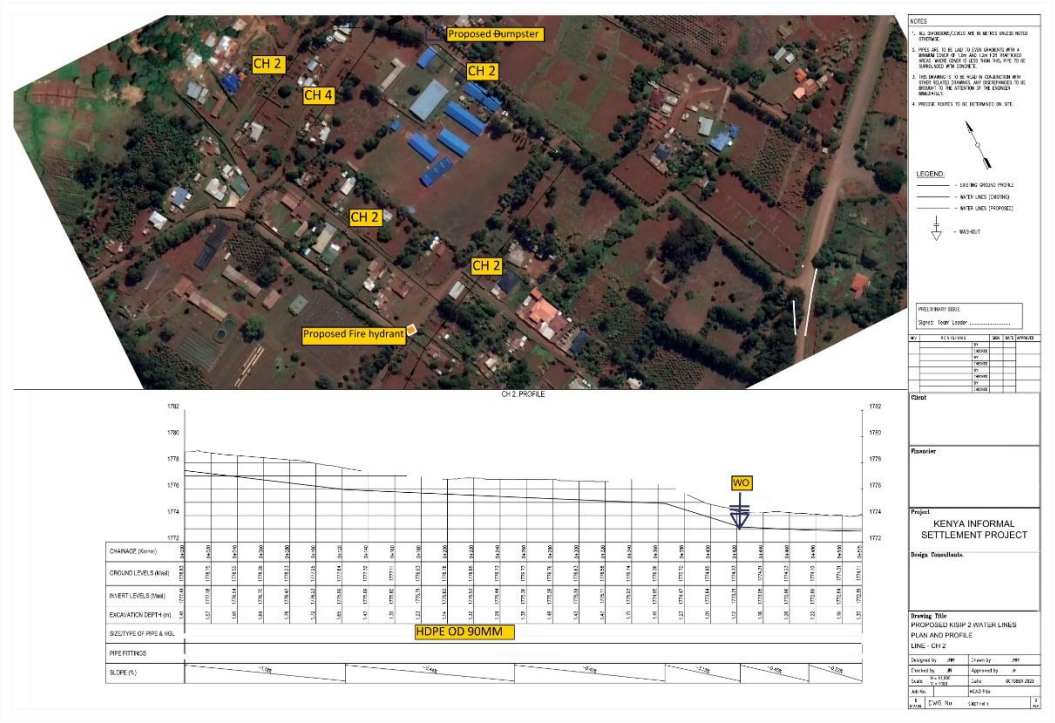


Figure 2-6: plan and profile for line CH 2

Figure 2-7: Plan and profile for line CH 3

2.6.2 Individual Connections

Currently, only 16 households in Chorongi are currently connected, highlighting limited access to clean water within the community. 33No consumer connections will be established, increasing the number of households benefiting from the improved water infrastructure.

2.6.3 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, 1 No fire hydrants has been proposed within the settlement.

2.7 Proposed Solid Waste Management Works

The proposed solid waste management works will involve the installation of 2No. Modern Waste Collection System by Using 7.5 m^3 Dumpsters for Collection of Municipal Solid Waste

2.8 Proposed Road Works

The works will constitute upgrading to bitumen standards of 1291m with Lot 1 consisting of 930m tarmac road that will 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 neat thick 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.

The primary beneficiaries of these roads are residential houses, schools, markets, and small shopping centres. Error! Reference source not found. below shows the proposed road network and alignment.

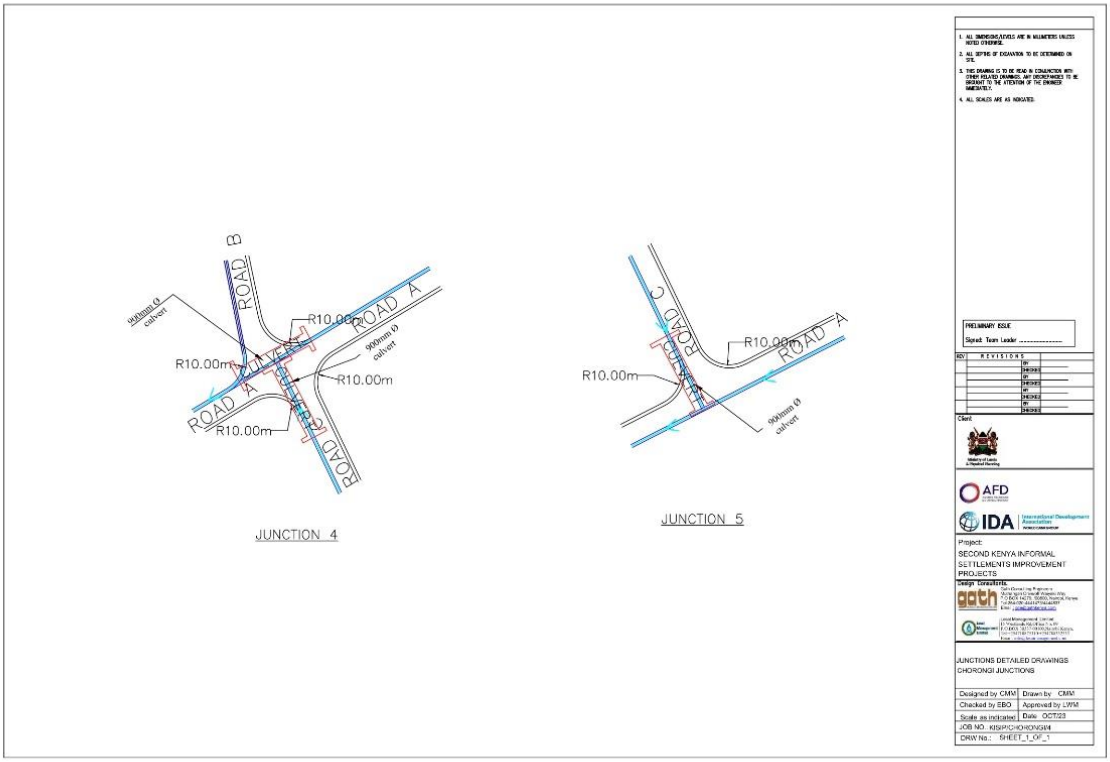


Figure 2-8: Junctions drawings.

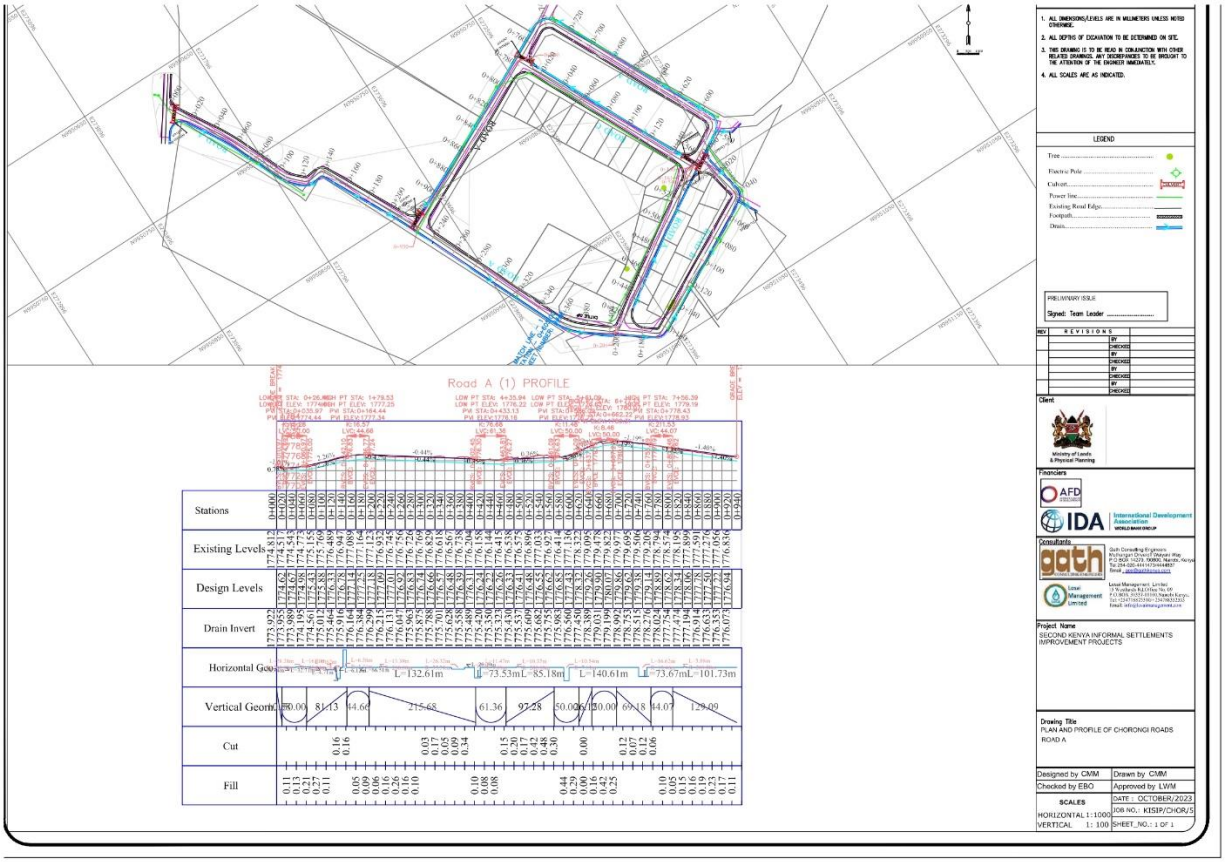


Figure 2-9: Plan and profile for Chorongi Road A

2.9 Proposed High Mast Flood Lights and Street Lights

The proposed intervention entails the installation of an advanced high mast flood lights to enhance illumination and safety within the area. A 30-meter Monopole Flood Lighting structure, strategically positioned to optimize coverage and visibility.

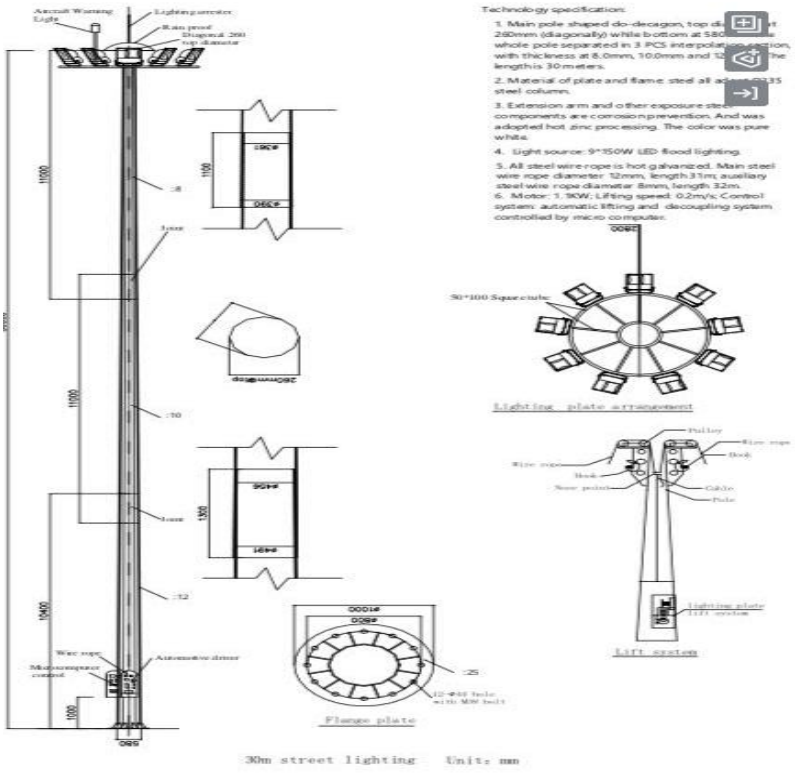


Figure 2-10: Proposed design for high mast

2.10 Proposed Project Activities

2.10.1 Project Mobilization & Construction Phase

The mobilization and construction phase will take place subsequently to the issuing of Environmental Impact Assessment Certificate, building/construction permits and once a construction contract with a suitable contractor is signed. The mobilization and construction phase will involve different activities as summarized below:

- Site clearance, earthworks, pipe laying works, construction of the road and installation of security lighting.
- Acquisition of materials from a reliable source and storage.
- Testing of the construction materials.
- Acquisition of other permits such as water use permits.
- Confirmation of data and accuracy of topographical survey.
- Mobilization of labour force, equipment and plant for construction works.
- Transportation of equipment, workers, materials, and storage.
- Abstraction and transportation of water to the construction site.
- Collection, storage, transportation, and disposal of waste

- Movement of heavy equipment and machines
- Occupational health and safety management.

2.10.2 Campsite and Mobilization of Workers

The Contractors' campsite will be temporary in nature (for the duration of the construction phase) and will include site offices, laboratory, and other temporary facility for the contractor. It will be located within project site area. Once the location of the campsite is determined, the contractor will have to comply with ESMF requirements including developing site specific environmental and social management plan (ESMP) for prevention, minimizing, and mitigating likely impacts including gender-based violence. The campsite area will thereafter be rehabilitated (i.e. returned to its preconstruction condition) at the end of the construction phase. All efforts will be made to ensure that all construction work will be undertaken in compliance with local and national legislation, local and international best practice, as well as the Environmental and Social Management Plan (ESMP), which is included in this ESIA Report. During the construction phase, both skilled and unskilled temporary employment opportunities will be created. It is difficult to specify the actual number of employment opportunities that will be created at this stage; however approximately over 100 direct and indirect employment opportunities are expected to be created during the construction phase at each site. It should however be noted that employment during the construction phase will be temporary, whilst being long-term during the operational phase.

2.10.2.1 Equipment and Machinery Requirements

Use of heavy construction equipment is expected for this project. At construction phase the project will employ various types of construction equipment and machineries for successful implantation of project activities.

2.10.2.2 Delivery of Equipment and Machineries

All construction equipment and machineries will be delivered by specialized trucks. They will use the existing Road network in Chorongi. It will be the responsibility of the contractor to take necessary measures to ensure safety for the community and workers this includes proper scheduling delivery and obtain appropriate transportation and safety permits.

2.10.2.3 Storage at Campsites

Sites will have specific storage area for materials that are sensitive to weather. The Contractor shall have a material data sheet to show all the records of material on or leaving the site. Materials such as cement and oil will be stored in the campsite. Other materials, such as sand, stones, aggregates etc., will be stockpiled at the site. Hazardous materials such as explosive and inflammable will not be stored at the campsite unless special measures are taken, and permit

issued by the authority. Refuelling for some equipment such as compactors and generators will be done on site whereas for vehicles and trucks will be done outside the project area in existing fuel stations in Chorongi.

2.11 Mainstreaming Climate Resilience in Nyeri County Infrastructural Projects

Climate change resilience has been incorporated into the design of proposed interventions in Nyeri County in order to enhance the sustainability and longevity of infrastructure projects while mitigating the impacts of climate change on communities and the environment. These parameters are engineered to enhance the low carbon footprint while addressing the unique environmental, economic, and social challenges of the region.

A. Water Infrastructure Resilience

The design of water supply interventions has been based on Ministry of Water and Irrigation (MWI) Practice Manual for Water Supply Services in Kenya, 2005 edition. The strategies applied are:

a. **Pipeline Material and Depth:** Given the varying terrain and potential for soil erosion during flash floods, high-density polyethylene (HDPE) pipes have been recommended due to their durability and resistance to corrosion. Additionally, 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. **Storage Capacity:** Considering the prolonged drought periods, storage facilities have been proposed for water supply systems. Elevated steel tanks have been proposed at strategic locations to ensure reliable access to water during periods of low flows.

c. **Control Valves:** The pipeline has been designed incorporating strategic location of control valves to enhance water rationing during the dry periods/periods of low flows.

d. **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.

e. **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.

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

f. **Climate-Informed Design:** Climate-informed design principles from the Ministry of Water and Irrigation (MWI) Practice Manual have been implemented to ensure that water infrastructure is resilient to changing climate conditions, such as altered rainfall patterns and increased temperatures.

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. 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.

D. 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.

E. Roads

The road design has aligned with required road design manuals and standards incorporating climate projections. 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 carriageway width of 5.5m is designed to cater to 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) **Pedestrian Footpaths:** The road cross-section in all the settlements has a minimum of 1m footpath on one side which is aimed at providing walkable neighbourhoods. By dedicating

pedestrian paths, our roads will not only encourage active modes of transportation but also reduce reliance on motorized vehicles, consequently lowering emissions. These strategic interventions not only promote sustainable mobility but also contribute to the overall resilience of our infrastructure in the face of evolving climate challenges.

(iv) **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. The drainage systems in all 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.

(v) **Urban Greening Initiatives:** Our designs have provided for urban greening initiatives where there is adequate space on road corridors, such as the strategic planting of trees and grass, to create natural buffers that absorb excess water runoff and mitigate the urban heat island effect. These green spaces not only beautify the urban landscape but also play a crucial role in improving air quality, providing shade, and fostering biodiversity. By integrating nature-based solutions into our infrastructure design, we have not only enhanced flood resilience but also created more sustainable and liveable environments for the communities we serve.

(vi) **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.

(vii) **Pavement Structure:** The engineered multi-layer pavement structure is composed of a 50mm Type II asphalt concrete, a 125mm layer of cement-improved gravel, a 175mm subbase, 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 them with superior materials as required, the design ensures a longer lifecycle for the road. Project roads all five settlements settlement have sections of subgrade class S1 and S2 that need to be improved to achieve a new bearing strength of S3. The improved subgrade for the project roads is guided by the 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.

(viii) **Locally Sourced Materials:** The commitment to using materials sourced from the local quarries like Honi and Nyaribo 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.

(ix) **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.

(x) **Geometric design:** The geometric design elements emphasize preserving the innate beauty and functionality of the landscape by minimizing any disturbances to its natural contours. By meticulously aligning our infrastructure with the existing topography, we aimed to maintain the ecological integrity of the area while also enhancing the resilience of our projects to climate change impacts.

(xi) **Slope Stabilization:** In our efforts to mitigate the risks of landslides and erosion, we implemented slope stabilization measures designed to enhance the stability of vulnerable

areas due to the rolling terrain in the settlements in Nyeri. These measures included the construction of retaining walls and gabions to support slopes and prevent soil movement, as well as the establishment of vegetative cover to strengthen the soil structure and reduce surface runoff. By implementing these measures, we aimed to safeguard against the potential hazards of landslides and erosion, thereby enhancing the resilience of the affected areas to natural disasters and environmental challenges.

2.12 Project Cost

The total cost for the proposed upgrading works is **KES 109,863,225.70.** The cost estimates for the works proposed have been derived using the current prices from manufacturers, construction cost handbook and priced bills of quantities of recently contracted works of similar nature. The project is estimated to take one year.

Table 2-1: Project Cost

No	Chorongi	Detailed Description	Cost (KES)
1.	Preliminary and general items		4,617,235.13
2.	Water supply	• 350- OD 90mm PN12.5 HDPE Pipeline • 597m- OD 63mm PN12.5 HDPE Pipeline • 33No. consumer connections	3,173,003.87
3.	Solid Waste Management	2No. Modern Waste Collection System by Using 7.5 m3 Dumpsters for Collection of Municipal Solid Waste	400,000.00
4.	Roads	0.93km of Roads	68,992,187.66
5.	High mast floodlight	1no. 30m Monopole Flood Lighting	3,349,850.00
6.	Day works	Day works	1,467,430.00
7.	Environmental	Environmental and social safeguards	4,100,000.00
BILL TOTAL EXCLUSIVE OF VAT			**86,099,706.66**
ADD 10% CONTINGENCY			8,609,970.67
BILL TOTAL INCLUSIVE OF CONTINGENCY			**94,709,677.33**
ADD 16% VAT TAX			15,153,548.37
BILL TOTAL INCLUSIVE OF VAT AND CONTINGENCY			**109,863,225.70**

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.

3.2 Roads Project

3.2.1 Preferred Alternative

Upgrading to bitumen from a gravel road presents a substantial improvement in road quality, enhancing durability, safety, and accessibility for residents and commuters. This preferred alternative aligns with community needs for better infrastructure and supports economic development by facilitating smoother transportation of goods and people. Challenges may include initial investment costs for construction and maintenance, as well as potential disruptions during the upgrading process.

3.2.2 Alternative Site

In selecting the best routes, factors such as traffic flow, community preferences, connection to existing tarmac were considered. Thorough site evaluations and consultations with stakeholders ensured the chosen routes will maximize benefits.

3.2.3 Alternative Technology

The alternative of using paving blocks instead of traditional bitumen roads was considered. Paving blocks provide sustainability benefits through the use of recycled materials and innovative storm water management solutions, albeit with potentially higher upfront costs and longer construction timelines. Additionally, paving blocks may require more frequent maintenance compared to asphalt or concrete pavements. Over time, individual blocks may shift, settle, or become dislodged, necessitating repairs or replacements to maintain the integrity of the pavement surface.

3.2.4 No Project Alternative/Status Quo

Maintaining the status quo of gravel roads entails continued challenges such as dust pollution, erosion, and limited accessibility, hindering socio-economic development. Without upgrading, the community will face ongoing expenses for road maintenance and repair, without reaping the benefits of improved connectivity and safety. Moreover, neglecting infrastructure upgrades can exacerbate disparities in access to essential services and impede overall progress.

3.3 Water Project

3.3.1 Preferred Alternative: Upgrade and Expansion of Existing Reticulation Network

This alternative involves upgrading the existing water reticulation network to improve water access and distribution efficiency. The key features include extension of 0.947km of OD 90-63 mm HDPE pipes and 33No. Household connections. The proposed lines will involve re-alignment of the water reticulation network to follow the road reserve as required by the land tenure activity, ensuring proper infrastructure integration.

The advantages of this alternative are that it builds upon existing infrastructure, reducing overall project costs and construction time, minimizes disruption to the community by utilizing familiar technology and distribution routes and enhances water accessibility and reliability for the majority of households.

3.3.2 Alternative Site

The recent land tenure activities in the settlement have designated the road reserves as the optimal location for waterlines. There were no alternative sites since the preferred route minimizes disruptions to the community and involves less displacement and land acquisition.

3.3.3 Alternative Technology

Chorongi settlement sources its water from the NYEWASCO distribution network. 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.

Alternative technologies could entail utilizing different water supply equipment, such as sinking boreholes, implementing steel pipes for transmission, or employing water bowsers. However, the associated costs would likely be prohibitive, rendering such solutions unsustainable. Other technologies such as rainwater harvesting and storage systems can be implemented at the household level through community sensitization.

3.3.4 No Project Alternative/Status Quo

This alternative involves maintaining the current situation without implementing any intervention projects. It involves no changes to the existing water distribution system or infrastructure, lack of improvement in water accessibility for unconnected households.

Despite the advantages of no upfront cost and disruptions to the community, this alternative perpetuates disparities in water access and distribution within the settlement and fails to address future population growth or changing water demand patterns.

3.4 Solid Waste Management

3.4.1 Preferred Alternative

The preferred alternative involves implementing a comprehensive solid waste management system within the Chorongi informal settlement. Key features include establishing collection points and introducing waste segregation initiatives. By engaging the community in waste management practices, these alternative aims to reduce reliance on burning and household compost bins, thereby mitigating environmental pollution and health hazards associated with improper waste disposal. Challenges may include initial investment costs for infrastructure and equipment, as well as community education and behaviour change efforts to ensure compliance with waste management protocols.

3.4.2 Alternative Site

The proposed site for the waste collection bins is deemed the best due to its strategic location, ensuring high accessibility for residents and garbage collection trucks alike. Placing the bins in a central location within the settlement minimizes transportation distances for residents to dispose of recyclables, encouraging participation and compliance. Additionally, its accessibility to garbage collection trucks streamlines the logistics of waste collection and transportation, facilitating efficient operations and reducing associated costs.

3.4.3 Alternative Technology

An alternative involves introducing biogas digesters for the management of organic waste within the settlement. This alternative offers a sustainable and renewable energy solution while addressing waste management challenges.

Another alternative solution involves establishing a community recycling centre within the settlement. This centre would serve as a focal point for collecting, sorting, and processing recyclable materials, such as plastics, paper, and glass. By diverting recyclable materials from landfills and promoting resource recovery, this alternative contributes to waste reduction and environmental sustainability.

The cost for undertaking these alternative technologies is prohibitive and therefore unsustainable for the current populations. Operation and maintenance of the centres also poses a significant challenge in the long run.

3.4.4 No Project Alternative/Status Quo

The status quo involves maintaining the current practice of burning waste and using household compost bins for organic waste management. While this approach may provide short-term waste disposal solutions, it poses environmental and health risks due to air pollution from burning and inadequate management of organic waste.

3.5 Street Lighting

3.5.1 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.

3.5.2 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 are 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. 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 main back up so that the power is less affected by both mains supply outages and rainy days.

3.5.3 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 SOCIO - ECONOMIC BASELINE CONDITION

4.1 Introduction

Baseline conditions entail the sum-total of all biophysical, socio-economic, cultural and geo-physical conditions 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.
- Socio-economic changes/impacts and assess the effectiveness of mitigation measures.

4.2 Environmental Characteristic of the Project Area

4.2.1 Description of Nyeri County

Nyeri County is one of the 47 counties in Kenya and is in the central region of the country. It covers an area of 3,337.2 Km2 and is situated between longitudes 360 38" east and 370 20" east and between the equator and latitude 00 380 south. It borders Laikipia County to the north, Kirinyaga County to the east, Murang'a County to the south, Nyandarua County to the west and Meru County to the northeast.

Nyeri County is divided into 8no administrative units namely: Kieni East, Kieni West, Mathira East and west, Nyeri Central, Mukurweini, Tetu, and Othaya. The county is further subdivided into 22 divisions, 82 locations and 252 sub-locations. Figure 4-1 and figure 4-2 shows map of the administrative units:

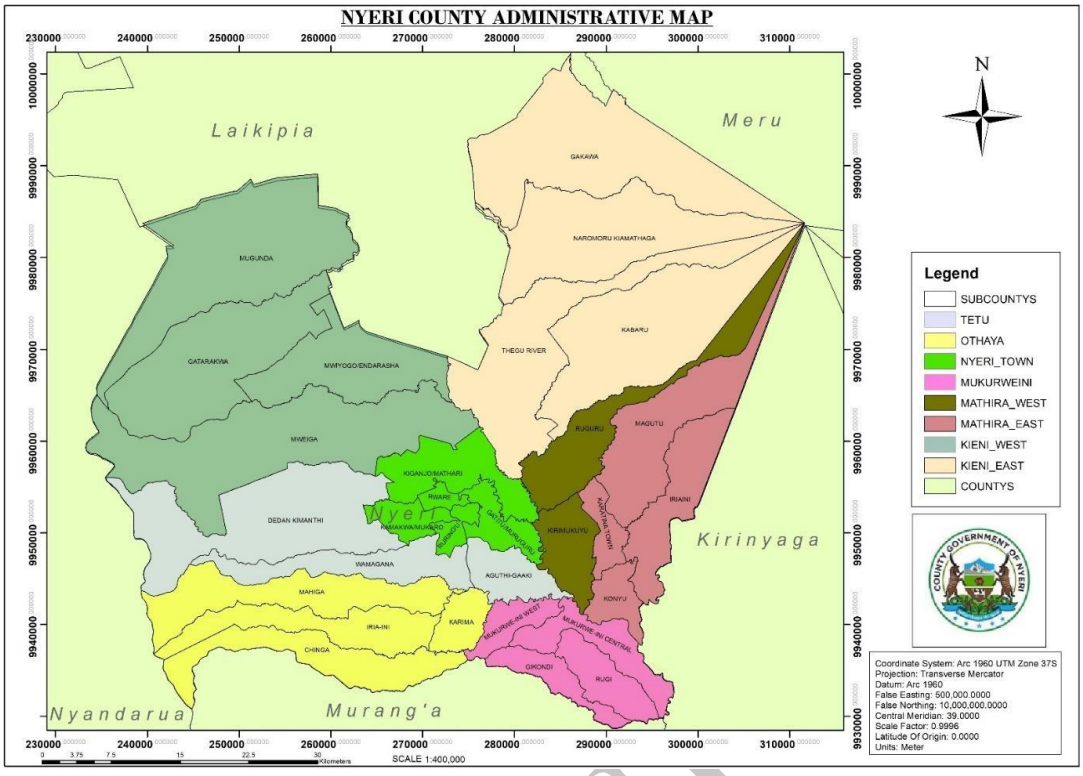


Figure 4-1: Map showing the administrative units within Nyeri County

(Source Nyeri County CIDP)

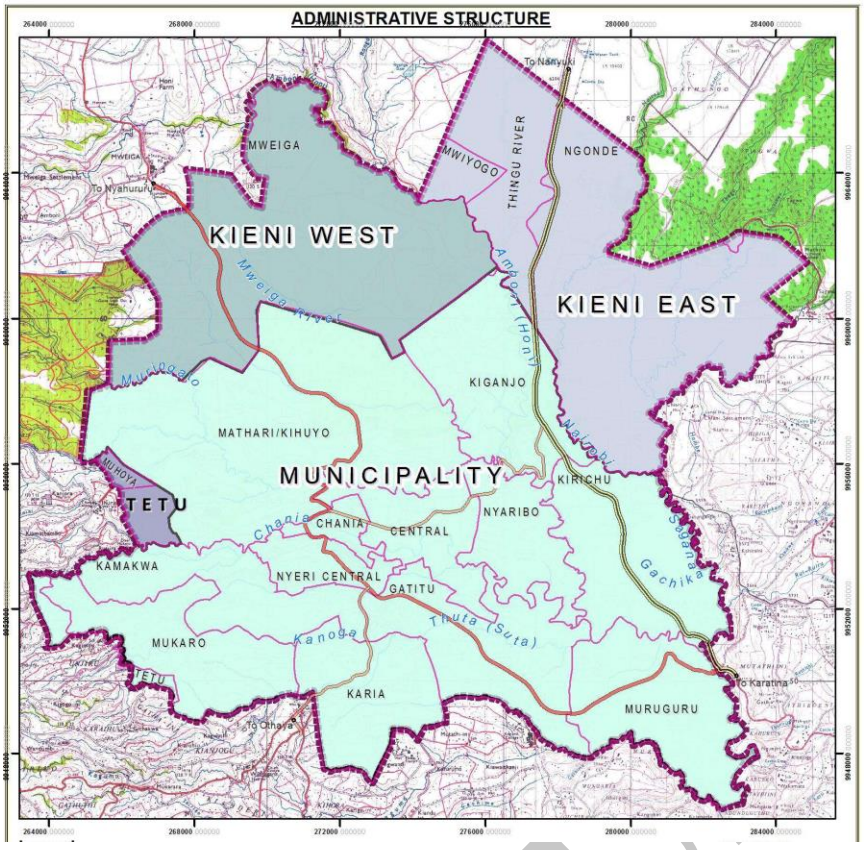


Figure 4-2: Map showing administrative units in Nyeri Town constituency. (Source Nyeri Municipality IDeP)

4.2.2 Project Location

Chorongi informal settlement is in Ruring'u ward, Nyeri town constituency, Nyeri Central sub-county in Nyeri County. The settlement measures approximately 10.2 acres. The settlement plan contains 33 plots comprising 2 churches, 1 public dispensary, 1 public primary school, 1 cattle dip area, 1 commercial area, 1 community centre and 26 individually owned plots. Figure 4-3 shows map of the project area:

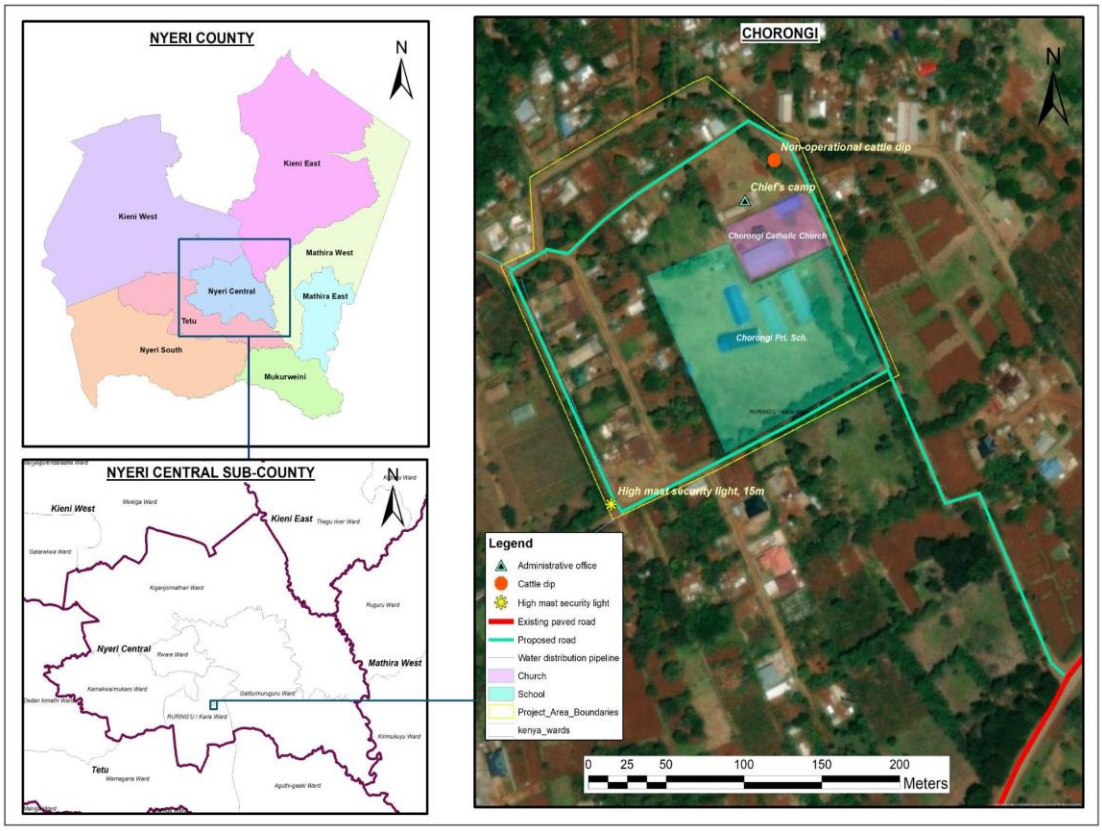


Figure 4-3: Project location.

4.2.3 Topography

The project area is characterized by steep ridges and valleys with several rivers and streams traversing the landscape with an average slope area of 8.8%. The project area lies within the central highlands of Kenya and is divided into two main topographic regions which are plains and highlands. It lies in the semi-humid zones of the central region of the Country.

4.2.4 Soil and Geology

Red soils (Ferric Acrisols) are the most predominant soils within the project area. They are well drained and suitable for agriculture. The main food crops grown in the project area are maize, beans, Irish potatoes, and vegetables whereas the major cash crops are coffee, tea and horticulture. Cultivation on fragile areas such as steep slopes, wetlands, riparian reserves, and quarrying activities has led to landslides and soil erosion hence reduced productivity.

Much of the area surrounding the project area is underlain by basement complex rocks. These rocks are some of the oldest on earth and include gneisses, granites, and schists. They often form rugged and hilly terrain. Due to significant volcanic activity in the region, volcanic rocks including

basalts, andesites, and rhyolites are found both in the form of exposed lava flows and as part of the landscapes subsurface.

4.2.5 Climatic Conditions

The area experiences modified tropical climate of Kenya highlands caused by the high varied relief. The resulting climate is therefore generally cool temperate for the greater part of the year.

The amount of rainfall received depends on the position of the place in relation to the rain-bearing winds. The area being located within the highland zone of Kenya, receives equatorial rainfall in most of its parts. The area experiences a bi-modal rainfall with long rains occurring from March to May while the short rains are experienced from October to December. This pattern however has been adversely affected by the recent climatic changes being experienced globally. The annual rainfall ranges between 1,200mm-1,600mm during the long rains and 500mm-1,500mm during the short rains. The area lies between 3,076m and 5,199m above sea level. Precipitation is highest in the month of April and lowest from June to September.

The monthly mean temperature ranges from 12.9^{o}C to 20.8^{o}C with February and March being the hottest months while July is the coldest month of the year. Areas around Mount Kenya experience low temperatures throughout the year. The area has a mean annual temperature of 16^{0}C -18^{0}C. The mean maximum temperatures range from 22^{0}C- 24^{0}C while the mean minimum temperature ranges from 12^{0}C-14^{0}C.

4.2.6 Nyeri Climate Change Profile

Nyeri County is in the central highlands of Kenya, about 160 km north of Nairobi city. The county can be accessed from Nairobi via A2 Kenol-Marua-Nanyuki-Isiolo highway. It lies between the eastern base of Aberdare Ranges and western slopes of Mt Kenya. It is between Longitudes 36°37'52" East and 37°18'77" East and between Latitudes 0°39'76" South and 0°00'55" North. It covers an area of 167km^2, with five wards namely, Kiganjo/Mathari, Kamakwa/Mukaro, Rware, Ruring'u/Karia and Gatitu/Muruguru.

The area experiences modified tropical climate of Kenya highlands caused by the high varied relief. The resulting climate is therefore generally cool temperate for the greater part of the year. The amount of rainfall received depends on the position of the place in relation to the rain-bearing winds. The area being located within the highland zone of Kenya, receives equatorial rainfall in most of its parts. The area experiences a bi-modal rainfall with long rains occurring from March to May while the short rains are experienced from October to December. This pattern however has been adversely affected by the recent climatic changes being experienced globally. The annual rainfall ranges between 1,200mm-1,600mm during the long rains and

500mm-1,500mm during the short rains. The area lies between 3,076m and 5,199m above sea level. Precipitation is highest in the month of April and lowest from June to September.

The monthly mean temperature ranges from 12.9°C to 20.8°C with February and March being the hottest months while July is the coldest month of the year. Areas around Mount Kenya experience low temperatures throughout the year. The area has a mean annual temperature of 16^0C -18^0C. The mean maximum temperatures range from 22^0C- 24^0C while the mean minimum temperature ranges from 12^0C-14^0C.

Nyeri County exhibits a dual vulnerability to droughts and floods due to its geographic diversity. Semi-arid areas on the leeward side of Mt. Kenya, are prone to drought, while other regions experience excessive rainfall, leading to flooding. Research conducted by Karienye et al. in 2012 indicates a trend of decreasing rainfall amounts occurring approximately every 3 to 4 years in Nyeri County. This shift in precipitation patterns poses significant challenges to the local ecosystem and communities. Other problematic climatic challenges in the county are extreme temperatures and frost.

Source: https://hdl.handle.net/10568/80459- Climate Risk Profile Nyeri County

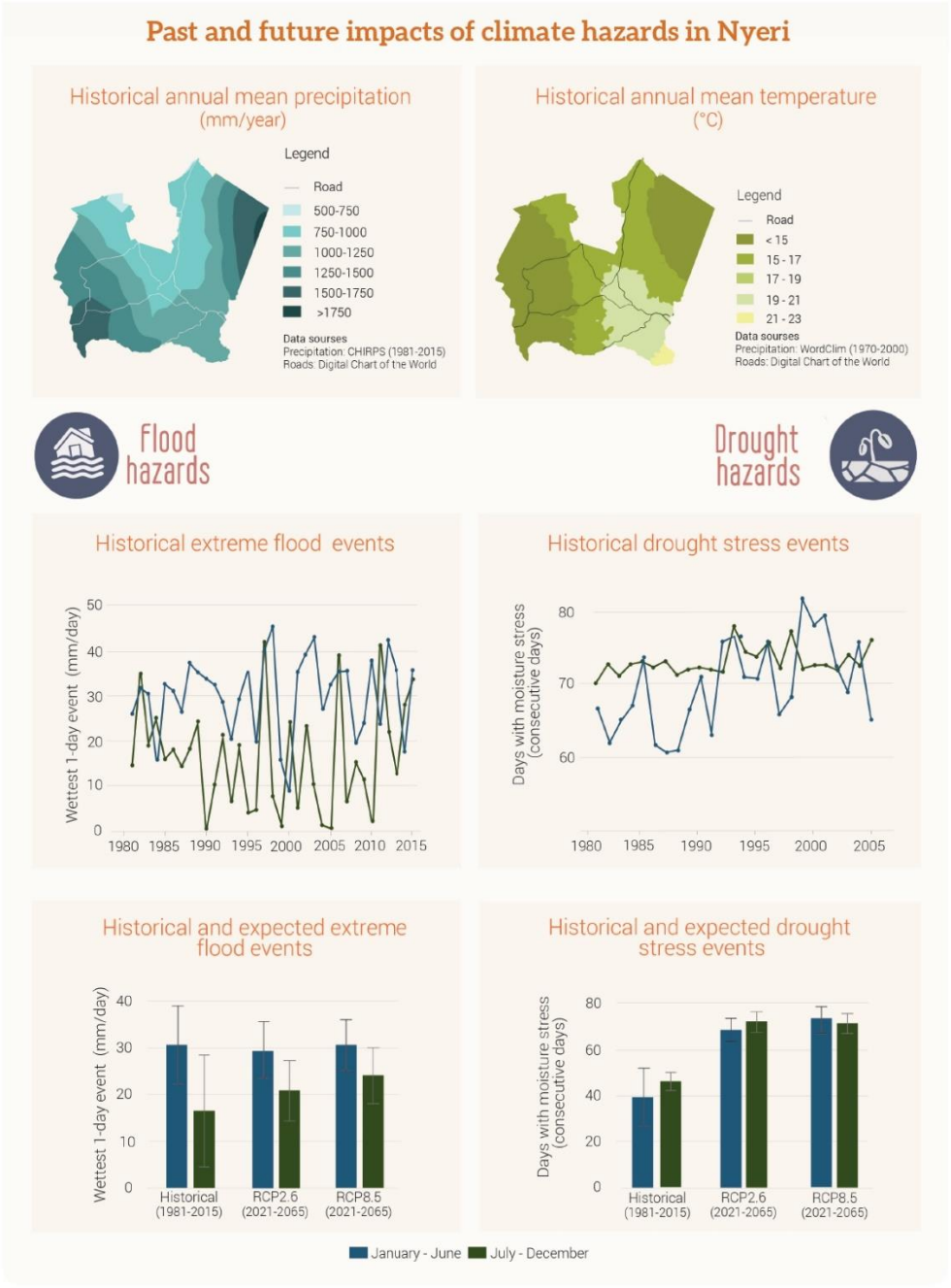


Figure 4-4: Past and future climate trends Nyeri County

4.2.7 Road Infrastructure

The existing roads in Chorongi are gravel roads with 6 metre widths and no side drains. They traversed a flat terrain. The roads serve the homes in the settlement, Chorongi primary school, the cattle dip and social amenities (Chorongi Catholic Church). The road reserve width in the

settlement plan was 9 meters. The road horizontal alignments were mainly straight. A few power poles were identified in the road corridor, which will require relocation during construction phase. The other existing services which may require relocation are the water pipes which are on the road corridor. The settlement has roads of approximately 1.4kms.

Figure 4-5: Road Infrastructure

4.2.8 Water and Sanitation Services

Water

The municipality's water resource comprises of both ground and surface water. Other sources include roof catchment, Shallow wells, and springs.
The quality of the water is good and suitable for domestic, livestock and irrigation purposes. The major water service provider in the area is Nyeri Water and Sewerage Company (NYEWASCO).

Sanitation

The area is served by Nyeri Water and Sewerage Company (NYEWASCO). The major challenge is inadequate funding for construction of treatment plants. This has led to the release of effluents into the environment causing pollution of water bodies.

4.2.9 Land Tenure and Ownership

Most of the land in the project area is owned by individuals as freehold and mainly where subsistence farming is practiced. The county and national governments own few tracks of land where offices and social facilities and infrastructure are located.

The larger part of the arable land is used for food crop while the rest is used for cash crop farming, and livestock rearing. The project will be implemented on public land.

4.2.10 Sources of Energy

The highest electricity connection is in the trading centres, learning institutions, health facilities, government institutions as well as individual homes. The project has planned to increase

installation of street lights and high mast flood lights to ensure increased hours of doing business as well as improve the security of citizens within the settlement.

Figure 4-6: High mast within the settlement.

4.2.11 Biological Environment

The project area does not have sensitive ecological environments that will be affected by the project.

The project area mainly consists of domesticated livestock, birds, and insects. The proposed project will not affect wildlife in the area.

4.2.12 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 4-1 and 4-2.

Table 4-1: 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 4-2: 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

4.2.13 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 4-3:

Table 4-3: Air quality Tolerance Limits

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

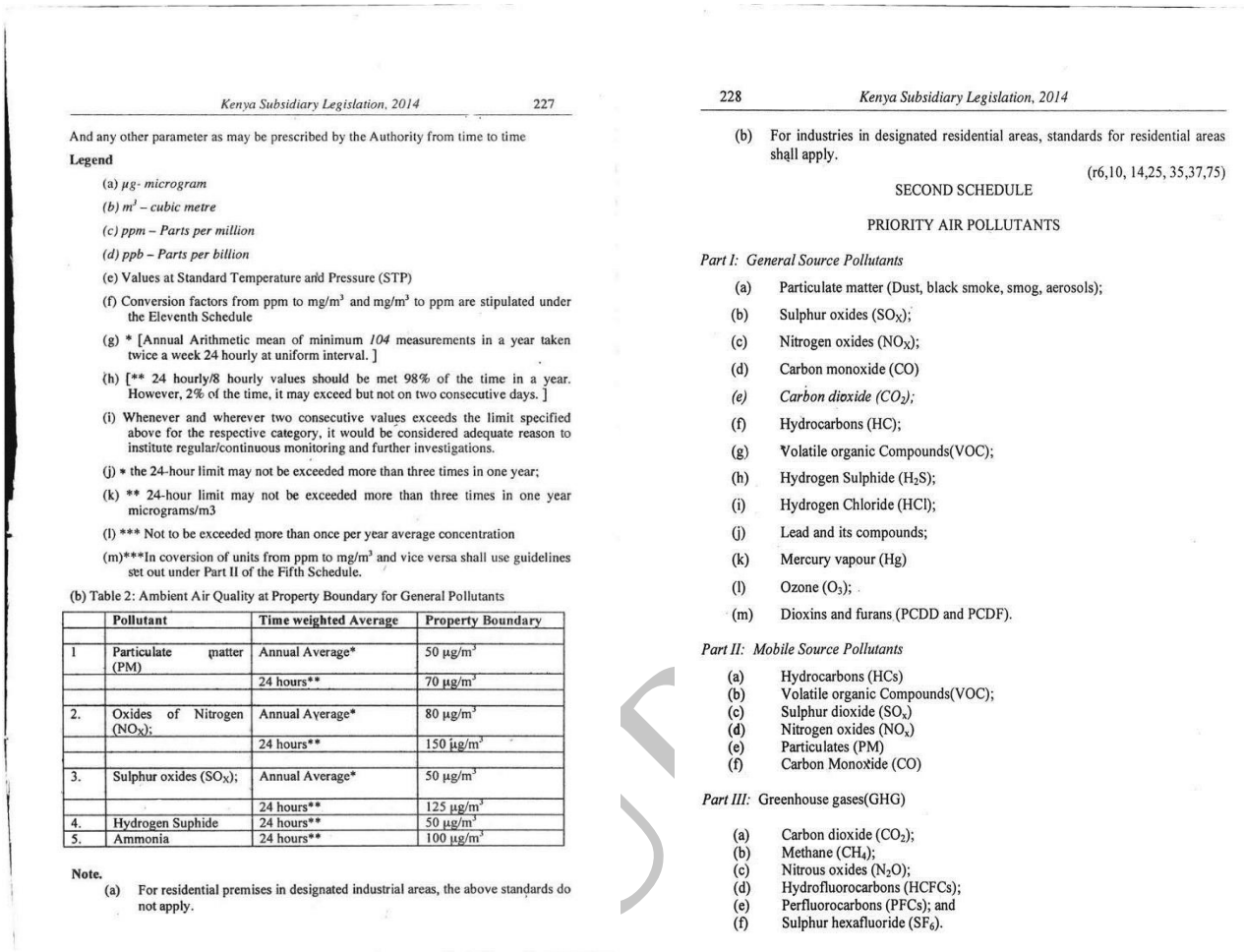
FIRST SCHEDULE

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

	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	



Kenya Subsidiary Legislation, 2014 227

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 $\mu g/m^3$
		24 hours**	70 $\mu g/m^3$
2.	Oxides of Nitrogen (NO_X);	Annual Average*	80 $\mu g/m^3$
		24 hours**	150 $\mu g/m^3$
3.	Sulphur oxides (SO_X);	Annual Average*	50 $\mu g/m^3$
		24 hours**	125 $\mu g/m^3$
4.	Hydrogen Suphide	24 hours**	50 $\mu g/m^3$
5.	Ammonia	24 hours**	100 $\mu g/m^3$

Note.

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

228 Kenya Subsidiary Legislation, 2014

(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

4.2.14 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 4-4.

Table 4-4: 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
1,3-dichloropropene (mg/l)	0.02

Parameter	Max Allowable (Limits)
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

Parameter	Max Allowable (Limits)
Polychlorinated biphenyls, PCBs (mg/l)	0.003
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
Color 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 Socio Economic Information of the Project Area

4.3.1 Demographic Features of Nyeri 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 4-5 gives a summary of the population of the county by sex and sub-county

Table 4-5: population projection (by sub-county and sex)

Sub-county	Census (2019)				2022 (Projection)				Projection (2025)				Projection (2027)			
	M	F	Inter-sex	T	M	F	Inter-sex	T	M	F	Inter-sex	T	M	F	Inter-sex	T
Tetu	39,293	41,155	5	80,453	41,343	43,303	5	84,651	43,501	45,562	6	89,069	45,001	47,134	6	92,141
Kieni East	55,360	55,012	4	110,376	58,249	57,883	4	116,136	61,288	60,903	4	122,196	63,402	63,004	5	126,411
Kieni West	43,843	44,677	5	88,525	46,131	47,008	5	93,144	48,538	49,461	6	98,005	50,212	51,167	6	101,385
Mathira East	48,070	50,992	3	99,065	50,578	53,653	3	104,234	53,218	56,453	3	109,674	55,053	58,400	3	113,457
Mathira West	29,480	30,412	3	59,895	31,018	31,999	3	63,020	32,637	33,669	3	66,309	33,763	34,830	3	68,596
Nyeri South (Othaya)	44,115	46,964	2	91,081	46,417	49,415	2	95,834	48,839	51,993	2	100,835	50,524	53,787	2	104,313
Mukur-we-ini	43,975	45,156	6	89,137	46,270	47,512	6	93,788	48,684	49,992	7	98,682	50,363	51,716	7	102,086
Nyeri Central	69,955	70,380	3	140,338	73,605	74,053	3	147,661	77,446	77,917	3	155,366	80,118	80,604	3	160,725
Mt. Kenya Forest*	123	65		188	129	68	-	198	136	72	-	208	141	74	-	215
Aberdare Forest*	74	32		106	78	34	-	112	82	35	-	117	85	37	-	121
Total	**374,288**	**384,845**	**31**	**759,164**	**393,819**	**404,927**	**33**	**798,779**	**414,370**	**426,057**	**34**	**840,461**	**428,662**	**440,753**	**36**	**869,450**

(Source KNBS 2019)

Nyeri County has a total population of 759,164 (2019 population census) people which comprises of 374,288 men, 384,845 women and 31 individuals who are intersex. The County's population accounts for approximately 2% of the entire Country's population. According to the Kenya Population and Housing Census report by KNBS Nyeri's population is distributed across 248,050 households with an average household size of 3 and spread out across 8 sub counties (excluding the forest regions of Aberdare and Mt. Kenya Forest) with varying population densities. However, the County has a population density of 228 people per square kilometre.

The County's population is distributed across 8 sub counties and two forest regions. Table 4-6 below provides sex disaggregated data as per the 2019 census report and projections across the 8 sub-counties for the next five years.

A significant proportion of the County's population is in the Kieni, Mathira and Nyeri Central regions respectively while Tetu and Mukurwe-ini have the least number of people. The

population of women is slightly higher compared to that of men across the sub-counties apart from Kieni East. The County's population is expected to grow to 869, 450 by 2027 from the 759,164 in 2019. This is a growth rate of about 1.72% compared to the anticipated national growth rate of 1.86% within the same period.

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 each 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 4-6 below gives a summary of the population of the county by selected age groups and sex.

4.3.1.4 Population Projections by Age Cohort

Table 4-6: Population projections by age cohort

Age Cohort	2019 (Census)				2022 (Projection)				2025 (Projection)				2027 (Projection)			
	M	F	Inter-sex	T	M	F	Inter-sex	T	M	F	Inter-sex	T	M	F	In-ter-sex	T
0-4	37,016	36,082		73,098	39,976	40,230		80,206	39,912	40,002		79,914	39,598	39,684		79,281
5-9	77,943	37,313		75,079	39,199	39,917		79,116	39,533	40,373		79,906	39,495	40,221		79,716
10-14	78,855	37,479		76,522	37,322	37,818		75,140	38,442	39,204		77,646	38,666	39,512		78,178
15-19	37,969	35,558		73,527	35,785	36,429		72,214	36,014	36,788		72,802	36,755	37,716		74,471
20-24	29,778	29,391		59,169	34,861	36,153		71,014	36,147	36,516		72,663	36,300	36,765		73,065
25-29	24,018	25,279		49,297	33,935	34,997		68,932	34,521	36,121		70,642	35,407	36,384		71,791
30-34	26,380	28,205		54,585	29,823	31,849		61,672	33,290	33,879		67,169	33,683	34,634		68,316
35-39	25,905	27,229		53,134	27,377	28,943		56,319	26,915	29,674		56,589	29,182	31,003		60,185
40-44	23,836	24,202		48,038	25,455	26,701		52,156	26,871	27,477		54,349	26,582	27,966		54,547
45-49	21,774	21,794		43,568	21,316	23,043		44,359	23,461	25,074		48,536	24,372	25,581		49,952
50-54	18,644	20,024		38,668	18,173	19,447		37,620	18,660	20,581		39,241	20,001	21,868		41,868
55-59	15,916	16,562		32,478	15,828	16,260		32,088	16,207	17,546		33,754	16,518	18,263		34,781
60-64	10,311	11,207		21,518	11,644	12,073		23,716	13,623	14,493		28,116	13,848	15,289		29,137
65-69	8,661	9,507		18,168	9,314	9,868		19,182	8,470	9,817		18,287	9,576	11,325		20,901
70-74	7,986	9,208		17,194	8,529	9,140		17,669	7,371	9,159		16,530	6,983	9,128		16,111
75-79	3,991	6,447		10,438	6,379	7,146		13,525	6,163	8,136		14,300	5,691	8,147		13,838
80+	5,289	9,353		14,642	10,798	11,079		21,876	10,839	11,332		22,171	10,995	12,265		23,259
Age NS**	5	5	31	41	5	5	33	43	6	6	34	45	6	6	36	47
Total	**454,277**	**384,845**	**31**	**759,164**	**405,714**	**421,093**		**826,847**	**416,445**	**436,178**	**34**	**852,660**	**423,658**	**445,757**	**36**	**869,444**

**The age of the intersex population was not provided in the census data and thus they were included among the 5 individuals who did not state their age.*
***Age Not Specified*

(Source KNBS 2019)

It is evident that almost 40% of the County's population is within the 0-19 age bracket. With such population composition, the demand for water and sanitation services is bound to be on the rise and should be prioritized in planning. More information and discussion about the age structure of the population is provided. This is summarized in table 4-6 above.

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 4-7: Population Projection by Urban Area

Urban Area	Census (2019)				2022 (Projection)				Projection (2025)				Projection (2027)			
	M	F	In-ter-sex	T	M	F	In-ter-sex	T	M	F	In-ter-sex	T	M	F	Inter-sex	T
Nyeri	40,697	39,382		80,081	42,821	41,437		84,260	45,055	43,599		88,657	46,609	45,103		91,715
Karatina	12,451	11,100		23,552	13,101	11,679		24,781	13,784	12,289		26,074	14,260	12,713		26,973
Othaya	3,675	2,975		6,650	3,867	3,130		6,997	4,069	3,294		7,362	4,209	3,407		7,616
Mukurwe-ini	3,393	3,115		6,508	3,570	3,278		6,848	3,756	3,449		7,205	3,886	3,568		7,453
Chaka	3,098	2,872		5,970	3,260	3,022		6,282	3,430	3,180		6,609	3,548	3,289		6,837
Kiganjo	1,667	2,342		4,009	1,754	2,464		4,218	1,846	2,593		4,438	1,909	2,682		4,591
Mweiga	1,872	1,737		3,609	1,970	1,828		3,797	2,072	1,923		3,995	2,144	1,989		4,133
Endarasha	1,430	1,313		2,743	1,505	1,382		2,886	1,583	1,454		3,037	1,638	1,504		3,141
Naromoru	4,180	3,917		8,097	4,398	4,121		8,520	4,628	4,336		8,964	4,787	4,486		9,273
Others	932	8,604		9,533	981	9,053		10,030	1,032	9,525		10,554	1,067	9,854		10,918
Total	**73,395**	**77,357**		**150,752**	**77,225**	**81,394**		**158,619**	**81,255**	**85,641**		**166,896**	**84,057**	**88,595**		**172,652**
***The data provided does not include the intersex population**																

(Source KNBS 2019)

Regarding the population distribution across rural and urban centres, 80.14% of the people reside in rural areas, while 19.86% of the people live within the county's urban areas. According to the KNBS census report on urbanization, Nyeri County has 8 urban centres/ trading centres with a population of more than 2000 people (The urban/ trading centres are as shown in Table 6 above) and a total urban population of 150,752 people. Nyeri town is the largest urban centre with a population of 80,081people. The County's urban population is expected to grow to 172,652 people by 2027. In anticipation for this growth, the Government needs to enhance urban planning and provision of services such as water supply and solid waste management within the urban areas. Furthermore, there needs to be more controlled development within the urban areas and residential areas surrounding the urban centres.

4.3.1.6 Population Density and Distribution

This section presents population density and distribution in the county.

Table 4-8: Population distribution and density by sub-county

Sub-County	2019 (Census)			2022 (Projection)			2025 (Projection)			2027 (Projection)		
	Area (Km²)	Population	Density	Area (Km²)	Population	Density	Area (Km²)	Population	Density	Area (Km²)	Population	Density
Tetu	217	80,453	372	217	84,651	391	217	89,069	411	217	92,141	426
Kieni East	449	110,376	246	449	116,136	259	449	122,196	272	449	126,411	282
Kieni West	518	88,525	171	518	93,144	180	518	98,005	189	518	101,385	196
Mathira East	130	99,065	760	130	104,234	799	130	109,674	841	130	113,457	870
Mathira West	162	59,895	369	162	63,020	388	162	66,309	409	162	68,596	423
Nyeri South	169	91,081	538	169	95,834	566	169	100,835	596	169	104,313	617
Mukurwe-ini	179	89,137	498	179	93,788	524	179	98,682	551	179	102,086	570
Nyeri Central	168	140,338	837	168	147,661	881	168	155,366	927	168	160,725	959
Mt. Kenya Forest*	611	188	0	611	198	0	611	208	0	611	215	0
Aberdare Forest*	722	106	0	722	112	0	722	117	0	722	121	0
	3,325	**759,164**	**228**	**3,325**	**798,779**	**240**	**3,325**	**840,461**	**253**	**3,325**	**869,450**	**261**

(Source KNBS 2019)

Table 4-8 above provides information on Nyeri County's Population density and distribution disaggregated by sub counties. Nyeri County has a population Density of 228 people per square kilometre which is significantly higher compared to the National density of 82. With an expected increase in population, the County's population density is expected to reach 261 people per square kilometre by 2027. The population density is higher in Nyeri Central Sub County considering that it is largely an urban region and lowest in the expansive rural Kieni sub-counties. The current and expected continued high concentration of people within Nyeri Central, Othaya and Mathira sub-counties requires continuous investment in both social and physical infrastructures to cater for their needs. The low population density in the Kieni region relative to the land size implies that there is a lot of unutilized land whose potential could be tapped for Agricultural purposes. However, the climatic condition of this region makes it hard to undertake rain-fed agriculture and thus the government should invest in improving irrigation within this region as a measure to promote food security.

Table 4-9 below shows the population projections by broad age groups.

Table 4-9: Population Projection by Broad Age Groups

Age Group	2019 (Census)			2022 (Projection)			2025 (Projection)			2027 (Projection)		
	M	F	T	M	F	T	M	F	T	M	F	T
Infant Population (<1 Year)	7,398	7,367	14,765									
Under 5 Population	37,016	36,082	73,098	39,976	40,230	80,206	39,912	40,002	79,914	39,598	39,684	79,281
Pre-School (3- 5 Years)	22,356	21,599	43,955	23,799	24,063	47,862	23,856	24,090	47,946	23,734	23,939	47,673
Primary School (6 –13 Years)	61,600	60,301	121,901	61,187	62,145	123,332	62,298	63,550	125,848	62,456	63,693	126,149
Secondary School (13 –19 Years)	54,032	50,637	104,669									
Youth (15 –29 Years)	91,765	90,228	181,993	104,581	107,579	212,160	106,682	109,425	216,107	108,462	110,865	219,327
Women of Repro-ductive Age (15 – 49Years)		191,658	191,658		218,115	218,115		225,529	225,529		2,300,489	2,300,489
Econom-ically Active Population (15 – 64 Years)	234,531	239,451	473,982	254,197	265,893	520,090	265,710	278,150	543,860	272,647	285,467	558,114
Aged (65+)	25,927	34,515	60,442	35,020	37,233	72,253	32,843	38,444	71,288	33,245	40,865	74,109

(Source KNBS 2019)

Approximately 23.97% of the county's population is within the youthful age bracket (15- 29 years) while 50.23% is within the reproductive age bracket (15-49 years). The number of women who are within the reproductive age bracket account for about 49.8% of the women population. The county enjoys a huge labour force with about 62.98% of its population being within the working age bracket of between 15 and 65 years.

Further, the population of children under five years' accounts for about 10% of the population while those within the preschool age bracket of between 3 and 5 years of age make up 5.79% of the County's population. On the other hand, individuals within the primary school and secondary school age brackets (6-13 years and 13-19 years respectively) are about 29.84% of the County's population. This demographic profile calls for concerted efforts between the different levels of government towards improvement of educational and health facilities and creation of more employment opportunities.

4.3.1.7 Population of Persons with Disability

Table 4-10 below shows the population of persons with disability by type and sex in Nyeri County.

Table 4-10: Population of Persons with Disability

Type	0 - 14				15 - 24				25 - 34				35 - 54				55+			
	M	F	Inter-sex	T	M	F	Inter-sex	T	M	F	Inter-sex	T	M	F	Inter-sex	T	M	F	Inter-sex	Total
Hearing																				2513
Speech																				2437
Visual																				6530
Mental																				5468
Physical																				11243
Self-care																				3692
Other																				0

(Source KNBS 2019)

Nyeri County has a population of 21,860 individuals with disabilities. This accounts for approximately 2.4% of the entire Country's population of PLWDs. Out of the 21,860 PLWDs, 8,588 are male while 13,270 are female. Notably, the County's disability prevalence stands at 3.2 which is higher than the National prevalence of 2.2. Some of the factors that affects disability prevalence include tendencies in health conditions, environmental factors, prevalence of occurrence of traffic accidents, natural disasters, conflicts, and substance abuse. Based on this, it is important to access the reason behind the high disability prevalence and to put in place measures towards reducing it, and to develop social protection programs aimed at helping and empowering the population of PLWDs.

4.3.1.8 Demographic Dividend Potential

Table 4-11 shows the demographic dividend potential of Nyeri County.

Table 4-11: Demographic Dividend Potential

Category	2019	2023	2024	2025	2026	2027
Population Size	759,164.00	835,408	844,012	852,615	861,008	869,397.00
Population below 15 (%)	29.60%	28.19%	28.02%	27.85%	27.56%	27.28%
Population 15 – 64 (%)	62.43%	63.20%	63.50%	63.79%	63.99%	64.20%
Population above 65 (%)	7.96%	8.61.%	8.48%	8.36%	8.44%	8.52%
Dependency Ratio	0.6	0.58	0.57	0.57	0.56	0.56
Fertility Rate	2.9	2.8	2.8	2.8	2.8	2.7

(Source KNBS 2019)

The County's fertility rate in 2022 was 2.9 compared to the National average of 3.4. Additionally, 62.43 percent of the county's population is within the productive age bracket. To take advantage of this demographic composition, the county should invest in programmes that increase employment and harness the productivity of this age bracket. Failure to provide opportunities to the growing young population will result in rising unemployment and an increased risk of social upheavals. Nyeri County is on the right track as projections show that the dependency ratio will reduce gradually meaning the number of dependents will reduce and thereby, with lower dependency ratio there is likely to be increased productivity, growth, and overall development in the county.

4.3.2 Population

Chorongi informal settlement is in Ruring'u ward, Nyeri town constituency, Nyeri Central sub-county in Nyeri County. The settlement measures approximately 10.2 acres. The settlement plan contains 33 plots comprising 2 churches, 1 public dispensary, 1 public primary school, 1 cattle dip area, 1 commercial area, 1 community centre and 26 individually owned plots.

4.3.3 Health

Chorongi informal settlement has 1 public dispensary.

4.3.4 Ethnicity

The population of Chorongi Informal Settlement comprises of the Kikuyu community farmers growing crops such as maize, beans, assorted vegetables and sweet potatoes.

4.3.5 Culture, Archeological and Historical Heritage

The project will not affect any cultural, archaeological and historical heritage within the project sites.

4.3.6 Education

The settlement is served by several public and private schools. It is home to Chorongi Primary School.

Figure 4-7: Chorongi Primary school.

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 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 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

Kenya Vision 2030 is the national development blueprint for period 2008 to 2030 and was developed following on the successful implementation of the Economic Recovery Strategy of Wealth and Employment Creation which saw the country's economy back on the path to rapid growth since 2002. GDP growth rose from 5.3% to 5.4% in 2020 but dropped to 5.1 in 2021 (KNBS 2021).

This goal is expected to be achieved by developing basic infrastructure services such as roads, streetlights, water and sanitation facilities, storm water drains, footpaths, and others while ensuring that the country has a clean, secure and sustainable environment by 2030 through reduction of pollution and improvement of waste management.

Relevance

The proposed project is in line with the vision 2030 as:

- It will also lead to an improved road network after the improvement works of the road infrastructure.
- Lead to adequate water supply within the settlement.
- It will also contribute to ensuring a clean and sustainable environment through the improvement of solid waste management in Chorongi Informal Settlement
- It will lead to a secure environment through provision of security lights and high mast flood lights that will play a great role in fighting insecurity within the settlement.

5.2.4 Environmental Guidelines for Roads and Bridges, 2010

The guideline for roads and bridges provides detailed analysis of environmental issues arising from road works along with mitigation measures that have been used in the national and the

international contexts. The focus is on simply, fulfilling the law that requires assessing the state of environment before and after the road construction period hence achieving sound environmental management for the road transportation system. It also addresses environmental practices to be followed during the development stages starting from tender, feasibility, design, construction, operation, and maintenance phase.

Relevance

The proponent will ensure preparation of an ESMMP that will serve as a tool in the monitoring and mitigating any environmental impacts that may arise during the road improvement construction works. Sustainable and environmental methods of carrying out the road works will be considered during the design stages, construction, operation, and maintenance phases.

5.2.5 National Climate Change Response Strategy, 2010

The strategy paper recognizes that Kenya is a water-scarce Country and offers a variety of strategies for ensuring that the resource is utilized in ways that recognize that it is a finite resource. The paper also argues that interventions in the water sector should take a participatory approach involving different water users including gender groups, socioeconomic groups, planners, and policy makers in water resource management (Kenya, 2010: 53).

Relevance

This policy will apply in the water works interventions. The project will engage all relevant stakeholders during all phases of the project implementation.

5.2.6 The National Environmental Sanitation and Hygiene Policy- 2016 - 2030

The policy paper on Kenya Environmental Sanitation and Hygiene is aimed at improving hygiene behaviour and environmental sanitation through access and support to enjoy a dignified quality of life in a hygienic and sanitary environment free from suffering ill health caused by poor sanitation.

Relevance

The project will be in line with this policy as it will involve upgrading of the water, sanitation and solid waste management infrastructures in the area.

5.2.7 Forest Policy (2014)

This policy by the Ministry of Environment, Water and Natural Resources intends to ensure forests in the country are protected from wanton destruction. The goal of the policy is to increase the area under forest to 10% of the total land area in the country.

Relevance

The proposed improvement works on the roads infrastructure will therefore be required to be consistent with this policy. Where clearance of forests or sections of forests is envisaged, especially during clearance of the road reserve, establishment of workers' camps, quarries and material borrowing sites, it would be important to put in place appropriate mitigation measures such as those specified in the environmental management plan of this ESIA report.

5.2.8 National Gender and Development Policy

The National Gender and Development Policy provide a framework for advancement of women and an approach that would lead to greater efficiency in resource allocation and utilisation to ensure empowerment of women. The National Policy on Gender and Development is consistent with the Government's efforts of spurring economic growth and thereby reducing poverty and unemployment, by considering the needs and aspirations of all Kenyan men, women, boys and girls across economic, social and cultural lines. The policy is also consistent with the Government's commitment to implementing the National Plan of Action based on the Beijing Platform for Action (PFA). The overall objective of the Gender and Development Policy is to facilitate the mainstreaming of the needs and concerns of men and women in all areas in the development process in the country.

Relevance

This law will be of relevance to the Contractor in ensuring that all genders are given an equal opportunity during recruitment during the construction phase and operation phase of the project.

5.2.9 Integrated National Transport Policy, 2009

The policy aims to develop, operate and maintain an efficient, cost effective, safe, secure and integrated transport system that links the transport policy with other sectorial policies, in order to achieve national and international development objectives in a socially, economically and environmentally sustainable manner.

The policy proposes that environmentally acceptable planning for roads' development and maintenance shall include EIAs. Issues to be considered are environmental impacts, energy conservation and the transportation of hazardous substances.

Relevance

The policy requires development of the road sector to be ecologically sensible. This ESIA study identifies the anticipated environmental impacts that are likely to occur during the improvement works of the road infrastructure. An ESMMP shall be developed to assist in the monitoring and mitigating of impacts likely to occur during project implementation.

5.2.10 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.

5.2.11 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.

5.2.12 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.

5.2.13 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

5.2.14 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.

5.2.15 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.

5.2.16 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.

5.2.17 The National Poverty Eradication Plan (NPEP)

The objective of NPEP is to alleviate poverty in rural and urban areas by 50 percent by the year 2015 as well as the capabilities of the poor and vulnerable groups to earn income. It also aims to narrow gender and geographical disparities and a healthy, better educated and more productive population. This plan has been prepared in line with the goals and commitments of the World Summit for the Sustainable Development (WSSD) of 1995.

Relevance to the proposed project.

Since unemployment is among the indicators of poor societies, pursuits to address it build individuals capacity to relieve poverty. The job opportunities anticipated during the project cycle will aid in improving livelihoods for the beneficiaries.

5.3 Overview of Relevant Legislation

5.3.1 The 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, programmes, 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 programmes 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 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.

5.3.4 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 Nyeri County

5.3.5 The Kenya Roads Act, 2007

The Act established the Kenya National Highways Authority in addition to other Authorities with clear and separated mandates. The Kenya National Highways Authority has the responsibility for the management, development, rehabilitation, and maintenance of all National trunk roads.

Relevance

For the purposes of discharging its responsibility, the Authority shall have the powers and duties to construct, upgrade, rehabilitate and maintain roads under its control.

5.3.6 Traffic Act, 2012 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

This project is under the provisions of this Act as it proposed to utilize the road reserves and improve the existing roads.

5.3.7 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.

5.3.8 Energy Act 2019

The provisions of this Act apply to every person or body of persons importing, exporting, generating, transmitting, distributing, supplying or using electrical energy; importing, exporting, transporting, refining, storing and selling petroleum or petroleum products; producing, transporting, distributing and supplying any other form of energy, and to all works or apparatus for any or all of these purposes. The Act shall regulate generation, importation, exportation, transmission, distribution, supply, and use of electrical energy with the exception of licensing of nuclear facilities; regulate importation, refining, exportation, transportation, storage and sale of petroleum and petroleum products with the exception of crude oil; regulate production, conversion, distribution, supply, marketing and use of renewable energy.

Relevance

There are several electricity transmission lines belonging to Kenya Power Company Limited along the proposed road sites. The Consulting engineers and the Contractor will have to liaise with Kenya Power during relocation of power lines on the road carriage way while observing the regulations in this Act. The Contractor will adhere to the regulations during installation of the streetlights and high mast flood lights.

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 policy is intended to protect safety and health of workers in workplaces during construction and operation phases. It is tailored at implementation of the EHS plan in compliance with the relevant sections of this Act. The Act provides Occupational Health and Safety guidelines that should be followed and adhered to in any workplace. The proposed improvement works project will provide employment opportunities to many workers at various categories.

Relevance

Contractor will be required to register site as a workplace with the local county Directorate of Occupational Safety and Health Services (DOSHS) in line with this Act. 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. The ESMMP prepared under this assessment has provided for specific health and safety aspects to be complied with during implementation of the project. The ESMMP also provides mitigation measures that can be undertaken to ensure compliance with the requirements of this policy.

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 CCA 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 programmes 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 so as 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 section 8.5 and 8.6 of this report. Those not satisfied will be advised to seek justice though the environmental court.

5.3.18 HIV AIDS Prevention and Control Act (Act No. 14 of 2006)

This is an Act of Parliament to provide measures for the prevention, management and control of HIV and AIDS, to provide for the protection and promotion of public health and for the appropriate treatment, counselling, support, and care of persons infected or at risk of HIV and AIDS infection, and for connected purposes.

Section 3 of the Act indicates the purpose of the legislation including public awareness and rights to people living with HIV/AIDS

5.3.19 Sustainable Waste Management Act 2022

The Act covers: domestic waste, waste electronic equipment, extended producer responsibility, hazardous waste, industrial waste, organic and non-organic waste, payment for environmental service, pollution, private sector entity, producer, public entity, recycle, re-use, recovery, sustainable waste management and waste management facilities. The Act identifies the following objectives: sustainable waste management promotion; improving the health of all Kenyans by ensuring a clean and healthy environment; reduction of air, land, fresh water and marine pollution; ensuring the delivery of waste service; creating an enabling environment for employment in the green economy in waste management, recycling and recovery; circular economy practices promotion; mainstreaming resource efficiency principles in sustainable consumption; improving responsible public behaviour on waste and environment. The Act is based on the following principles: precautionary principle; polluter pays principle; payment for ecosystem services; zero waste principle.

Relevance

The project will generate a lot of waste ranging from solid waste such as papers, plastic bottles, cement bags among others and wastewater will also be generated during the construction, operation, and decommissioning phases. The Contractor will adhere to the laid-out regulations. The Contractor will also engage a NEMA licensed waste handler to ensure proper disposal of waste.

5.3.20 The Sexual Offences Act 2006

This is an Act of Parliament to make provision about sexual offences, their definition, prevention, and the protection of all persons from harm from unlawful sexual acts, and for connected purposes. The Act is a big step in the fight against sexual offences as it has strong punishment for criminals.

Relevant Sections in this Act include: -

- 24- Sexual offences relating to position of authority and persons in position of trust.
- 25- Sexual relationship which pre-date position of authority or trust.
- 26- Deliberate transmission of HIV or any other life threatening sexually transmitted disease.

5.3.21 The Children Act, 2010

This Act protects the welfare of children within the Country. The Act identifies Children as a person below the age of 18 years old and protects them from exploitation.

Of particular importance to this project, is section 10, which protects the child from:

- Economic exploitation (only the people above 18 years will be considered for job opportunities in the project).

Any work that interferes with his/ her education, or is harmful to the child's health or physical, mental, spiritual, moral or social development.

5.3.22 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.

5.3.23 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, security lighting, and sanitation will have significant impacts within and around Chorongi 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 Find Procedures”, has been presented in Annex 4 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 triggered 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 their complaints and solutions provided. There will be no physical displacement of people within the settlement. A Grievance Redress Mechanism (GRM) for this project has been prepared and included in section 8.4 and 8.5 of this report.

5.4.4 World Bank Directive on Vulnerable Groups

They are considered as marginalized and vulnerable. 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 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.

This ESIA Study has considered the vulnerable community members along the project area, engage them in various consultations to include them and their various vulnerabilities in the ESIA with a means of adequately providing mitigation measures to their various disadvantages for all phases of the project.

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, high mast, green space, water and sewer networks 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

taken into account. 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 the applicability of World Operational Safeguards as it applies to this to the proposed improvement works in Chorongi 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 in number,

OP	Title	Comments
		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:

1. ILO Convention 87 on Freedom of Association and Protection of the Right to Organize
2. ILO Convention 98 on the Right to Organize and Collective Bargaining
3. ILO Convention 29 on Forced Labour
4. ILO Convention 105 on the Abolition of Forced Labour
5. ILO Convention 138 on Minimum Age (of Employment)
6. ILO Convention 182 on the Worst Forms of Child Labour
7. ILO Convention 100 on Equal Remuneration
8. ILO Convention 111 on Discrimination (Employment and Occupation)
9. UN Convention on the Rights of the Child, Article 32.1
10. 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 Nyeri County Government Relevant Legislations and Policies

5.7.1 Nyeri County Climate Change Fund Act 2021

This Act was established to facilitate and coordinate financing of Climate Change Adaptation and Mitigation activities, and for connected purposes.

The County Climate Change Action Plan shall:

- be aligned to the current National Climate Change Action Plan and respond to the specific needs and circumstances of the county.
- contain a climate change needs and response assessment for the county.
- articulate a climate change response implementation plan informed by the climate change needs and response assessment, and specifying measures and mechanisms for:
    - ✓ guiding the county to Sub- County the achievement of low carbon climate resilient sustainable development.
    - ✓ mainstreaming climate change into county development plans, programmes, strategies and projects;
    - ✓ adaptation to and mitigation of climate change; (
    - ✓ enhancing research, capacity building and knowledge management on climate change and climate change response
    - ✓ enhancing public awareness for effective participation in climate change response;
    - ✓ monitoring, evaluation and periodic review to integrate learning and best practice in the implementation of the County Climate Change Action Plan

Relevance to the Project

The project will mainstream Climate Resilience in Chorongi Infrastructural Projects through its designs, material used and general project activities. Detailed explanation on mainstreaming climate resilience has been discussed in chapter 2 section 2.8 of this report

5.7.2 Nyeri County Transport Act, 2021

This is an Act of Nyeri County to provide for County transport road use and maintenance, parking, street lighting, traffic management and for connected purposes.

Relevance to the Project

The project shall involve the installation of street lighting within the settlement. The Proponent: County Government of Nyeri shall be responsible for the maintenance of traffic and streetlights

The project shall ensure existing street lighting is not affected during project implementation.

5.7.3 Nyeri County Water and Sewerage Services Act, 2017.

An ACT of the County Assembly of Nyeri to provide for development, regulation and management of Water, Sewerage, irrigation, flood and storm water management systems, water conservation and connected purpose.

The Objective and purpose of the Act is to provide for the development, management and regulation of water and sewerage services.

Relevance to the Project

The project shall adhere to the regulations and requirements stipulated in this Bill. The project shall engage the Water Service Providers throughout the project period.

5.7.4 The Nyeri County Public Participation ACT, 2015

An Act of the County Assembly of Nyeri to provide a mechanism for the involvement of and participation by the public and stakeholders in decision making and governance processes in Nyeri County; to give effect to the provisions of Articles 1, 10, 35, 48, 174, 201, 232 and paragraph 14 of part 2 of the fourth schedule of the Constitution and Sections 87, 88 and 91 of the County Governments Act, 2012 and other laws requiring public participation and for connected purposes.

The purpose of this Act is to enhance, promote and facilitate public participation in the county government and specifically to – (a) facilitate the implementation of constitutional provisions set out under- (i) Article 1 on sovereignty of the people; (ii) Article 10 on national values; (iii) Article 35 on access to information; (iv) Article 48 on access to justice; (v) Article 174 on the objects of devolution; (vi) Article 201 on principles of public finance; (vii) Article 232 on values and principles of public service; (viii) Section 14 of Part 2 of the Fourth Schedule to the Constitution; and (ix) Any other provision related to public participation. (b) give effect to public participation framework stipulated under part VIII of the County Governments Act, 2012, the Public Finance Management Act, 2012 and the Urban Areas and Cities Act, 2011; (c) promote participatory democracy; (d) transparency and accountability in decision making; (e) community empowerment and support; (f) promote partnership and collaboration in public processes; (g) enhance public awareness and understanding of government processes; (h) reduce conflicts related to public or government decisions; and (i) enhance community ownership of public decisions

Relevance

The project shall ensure all stakeholders and the public are engaged throughout all phases of the project

5.7.5 Nyeri County Youth Development Act, 2021

This is an Act of the County Assembly of Nyeri 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.

5.7.6 Nyeri County Solid Waste Management Act 2021

The purpose of this Act is to provide for a legal framework for the management of solid waste in the county.

Relevance to the project

The project shall include establishment of waste management garbage collection points. All the regulations stipulated in the act shall be adhered to during project implementation.

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 clean potable water in promoting health and wellbeing cannot be over emphasized. This will benefit the residents of Chorongi 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 sanitation. The project will partake in achieving the goal through the development of sanitation infrastructures (sewer lines) and garbage collection.

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.

5.10 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 The Kenya Roads Board

The Kenya Roads Board was established in 2000 through an Act of Parliament (The Kenya Roads Board, 1999, No. 7) and mandated to do these functions, among others, to: co-ordinate the implementation of all policies relating to the development, rehabilitation and maintenance of the road network; co-ordinate the development, rehabilitation and maintenance of the road network with a view to achieving efficiency, cost effectiveness and safety; administer the funds derived from the fuel levy and any other funds that may accrue to it; monitor the operations or activities undertaken by road agencies in the development, rehabilitation and maintenance of roads and evaluate, by means of technical, financial and performance audits, the delivery of works and many other

Relevance

The project will involve upgrading of 930m to tarmac road. It is necessary that the County Government of Nyeri and the Contractor incorporate the principles of integrated national transport policy in the construction and maintenance of the road.

5.10.8 County Government of Nyeri

The County Government of Nyeri 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).

5.10.9 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.

5.10.10 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: PUBLIC PARTICIPATION AND STAKEHOLDER CONSULTATIONS

6.1 Background to Public Consultation in ESIA

Timely, well-planned, and implemented public involvement and consultation is a vital component of a successful ESIA study.

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 Stakeholder 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

No	Name	Category
6.	Chief	National Government Administration
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 Nyeri, 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 19, 2023 at Chorongi Social Hall. Residents were notified regarding the meeting by the local administration in collaboration with the county representatives. The meetings were held in public venues accessible to all where the following stakeholders were present.

- Area chief Area residents and
- 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 6-3: Number of participants

Meeting - September 19,2023 Venue- Chorongi social hall	
List of participants	**Number**
Male	15
Female	10
Total participants	25

Meeting in progress with Administration, KSIP members, Consultant and members of the community.

Administration, Consultant and members of the community.

Figure 6-1: Public Participation meetings.

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 Kikuyu languages to ensure the community understood the project scope, objectives and anticipated impacts in all project phases.

Outcomes of the meeting

- 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 on November 22, 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. A summary of concerns and suggestions raised by the community are presented in the table 6-4 below.

Table 6-4: Outcome of the household questionnaire

Comment		Response
Status of Infrastructure	Majority of the residents highlighted the water, sanitation, security lighting, solid waste management road infrastructures were in poor conditions.	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.
Road challenges	The residents highlighted they face challenges with the sources of water within the settlement. The road infrastructures challenges included but not limited to: • They have potholes, • They are muddy, • They are impassable during rainy season, • Lack proper drainages and • They lack streetlights in the area	One of the project's components is construction of road infrastructures. This will play a major role in improving road infrastructures within the settlement
Sanitation challenges	The residents highlighted they face challenges with sanitation within the settlement. They stated the	One of the project's components is provision of garbage collection bins. This will play a major role in

Comment		Response
	settlement lacks a public waste collection point.	improving sanitation within the settlement. The project will also involve construction of a public ablution block. This will ensure proper disposal of wastewater within the settlement.
Water challenges	The residents highlighted they face challenges with the sources of water within the settlement. Some of the challenges highlighted with the water included: • Unreliable due to rationing, • Dirty during rainy seasons and • The rivers tend to dry up during the sunny season. With these factors the residents stressed the importance of ensuring proper sanitation within the settlement to improve water infrastructures.	One of the project's components is provision and improvement of water supply within the settlement.
Security concerns	The residents highlighted they faced insecurity issues within the settlement. They highlighted: • Burglary, • Theft with violence, • Pickpocketing, • Drug trafficking and • Murder They stressed the importance of improving security within the settlement	One of the project's components is implementation of security lighting by the County Government. This will play a major role in improving security within the settlement

Comment		Response
Road challenges	The residents highlighted they faced road challenges within the settlement. The challenges included but not limited to: • Roads within the settlement have potholes, • Roads within the settlement are muddy, • Roads within the settlement are impassable during the rainy season, • Roads within the settlement lack proper drainages, • Roads within the settlement lack streetlights.	The project will involve upgrading and improvement of road infrastructures within the settlement. The challenges mentioned will be taken into consideration during design.
Positive impacts.	The positive impacts that will be associated with the project as highlighted by the residents will include but not limited to • Improved security in the area • Clean reliable and sufficient water • Improved roads will ensure farm produce are transported on time. • Proper waste management • Improved hygiene, sanitation and promote good health in the area. • Improve the standards of living for the community. • Creation of job opportunities for the youths • Good drainages will prevent and reduce bad odour that would	The project will ensure the community positively benefits from the project

Comment		Response
	have been brought about by waste water and solid waste. • The land values in the area will increase after implementation and installation of the proposed infrastructures	
Anticipated Negative impacts.	The negative impacts that will be associated with the project as highlighted by the residents included: • Generation of waste during the construction period.	Mitigation measures will be developed to minimize the negative impacts while ensuring the positive impacts benefits both the community and the environment. An Environmental, Monitoring and Management Plan (EMMP) will be developed to assist in the mitigation of the potential impacts.
Mitigation measures for the negative impacts	**Mitigating security issues**: The following were concerns and suggestions highlighted by the respondents: **Generation of waste** • They suggested proper waste disposal and segregation of waste within the sites. These mitigation measures aim to address the specific concerns identified during the meetings and create a more positive and effective environment for the implementation of the Project.	The mitigation measures highlighted will be implemented during project implementation period. An ESMMP highlighting project impacts and mitigation measures will be developed. These mitigation measures aim to address the specific concerns identified and create a more positive and effective environment for the implementation of the Project.
Project Support and Awareness	• Every respondent acknowledged their awareness of the project and expressed their commitment to supporting the project throughout its implementation phase.	

Comment		Response
	• They emphasized the need to ensure continuous community engagement through all project phases	
Recommendations	• The residents stated job opportunities should first be given to the local people. • The residents recommended implementation of mitigation measures to prevent and minimize the negative impacts. • The community stated they would like the construction of drainages should be a priority during road construction. • The roads constructed should accommodate persons living with disability	Majority of the skilled and non-skilled workers will be sourced within the settlement.

6.5 Interviews

The key informants targeted in the consultations were from Government institutions operating within the project area. A structured questionnaire was also administered to the key stakeholders on November 20, 2023-November 24, 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. The analysis of the output from the questionnaires is discussed below:

Table 6-5: Summary of the Key Stakeholder Interviews and engagement

Name	Designation	Comments	Response
Anne Wandiri	Officer Commanding Officer	Will the project engage the Youth and Women in the settlement?	Labor will be sourced from the community. All youth and women will be involved through a free and fair process

Name	Designation	Comments	Response
			through the administration's office.
		How does the project plan to reduce accidents during construction?	The Contractor and Consultant will be actively on site. Measure have been put in place to prevent and minimize accidents during construction
		Construction period may impact community negatively by increase in Gender Based Violence cases	Measures to mitigate Gender Based violence shall be put in place. They include setting clear channels to report such incidences, training on GBV, sensitization of workers and community and workers signing code of conduct forms.
		Communications and engagements should be done with Settlement Executive Committee and office of the Chief.	All engagements and communications will be made through the administration's office and other stakeholders identified in the settlement.
Sammy M. Nyaga	Assistant County Commissioner	Sustainability of the project	Desk and field studies have been done and assessments has been done to determine the sustainability of the project.
		Resident's houses will be demolished.	Before onset of works, the project route will be marked by surveys. From the environmental and social screening exercise conducted there will be no demolition of structures

Name	Designation	Comments	Response
		More surface run-off from tarmacked roads will lead to erosion	Re-vegetation will be done to bare surfaces to avoid erosion. This will also help avoid clogging of water drainages by eroded soils.
		The main KPLC towers should be improved	Solar Lightings are part of the interventions of the project.
Eng. Joseph Mwangi	County Structural Engineer (Principal Superintending Engineer)	People will be displaced by the project.	From the environmental and social screening exercise conducted, it was identified there will be no displacement of people within the project area. The infrastructures will be developed on public land and road reserves
		Disruption of services especially where services are along road reserves.	All service providers will be informed before onset of the construction period. In case of any interruption of services, the shortest time will be taken to restore them. Relocation of power poles and water services will be done during road construction in consultation with the service provides
Kennedy Kanoga Mundiu	Environmental Officer	The project will be of much benefit to the residents in terms of major concerns of insecurities, environmental degradation.	The Project will have positively impacted the environment and social aspects in the settlement and the community

CHAPTER 7: IMPACTS IDENTIFICATION AND MITIGATION MEASURES

7.1 Introduction

This ESIA assessment has been systematically conducted to determine whether the proposed Project will have adverse 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 three 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 impact.

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 was 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 Preconstruction phase positive impacts for the Road Construction

7.3.1 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.

7.3.2 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.

7.4 Construction Phase Positive impacts Road Construction

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

7.4.1 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.

Temporary job opportunities shall be available during the construction phase of the project and shall include casual labourers, food catering, artisans and many more. This shall be an important positive impact to the community because unemployment has been cited as one of the most pressing problems in Kenya today. During operation phase, there will be employment of permanent workers to ensure operation and maintenance of the infrastructures.

7.4.2 Promote social inclusion and equity.

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

7.4.3 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 road connectivity.

7.4.4 Economic growth

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

7.4.5 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 the town centres 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.

7.5 Operation Phase Positive Impacts Roads Construction

The following are the positive impacts during operation phase of the proposed Project:

7.5.1 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.

7.5.2 Improved Transport and Economy of the People

The proposed road will facilitate easy transportation within the project area as well as increasing communication among the communities within the settlement. The improved road would be particularly beneficial to passengers and cargoes as transportation time will be shortened. Operation vehicles costs are very high such as high fuel consumption and frequent need to replace parts due to the condition of the road. It is anticipated with the improved status of the road transport costs shall be lowered.

7.5.3 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 Nyeri County and its neighbourhood. Once the people shall be empowered in the project area, some shall invest and develop the nearby towns.

7.5.4 Reduced Cases of Water Related Diseases

Proper drainage areas will ensure stagnant water does not accumulate hence reducing exposure to water borne diseases and malaria. This will effectively reduce related medical expenses among the poor people in the project area with extended long-term increased social productivity.

7.5.5 Accessibility to Social Services and Infrastructure

Improved roads will reduce the travel time hence improving the transportation of goods and services as well as transportation of people within the area. People will be able to access social services and infrastructure with ease.

7.5.6 Benefit to Persons Living with Disabilities (PLWD)

By upgrading of roads within the settlement, Persons Living with Disabilities (PLWD) will easily access different places within the settlement.

7.6 Decommissioning Phase Positive Impacts Road Construction

The following are the positive impacts during decommissioning phase of the proposed Project:

7.6.1 Employment Opportunities

Temporary employment opportunities will be created for the demolition of laid and constructed structures 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 the Water 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 Water Project

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

7.8.1 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.

Temporary job opportunities shall be available during the construction phase of the project and shall include casual labourers, food catering, artisans and many more. This shall be an important positive impact to the community because unemployment has been cited as one of the most pressing problems in Kenya today. During operation phase, there will be employment of permanent workers to ensure operation and maintenance of the infrastructures.

7.8.2 Promote Social Inclusion and Equity

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

7.8.3 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 road connectivity.

7.8.4 Economic Growth

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

7.8.5 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 the town centres 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.

7.9 Operation Phase Positive Impacts Water Project

The following are the positive impacts during operation phase of the proposed Project:

7.9.1 Improved Accessibility to Clean and Reliable Water Supply

The project once commissioned will have a direct benefit to Chorongi Informal Settlement that is currently experiencing acute water shortages due to low water supply compared to the current demand for water in these towns.

7.9.2 Improved Hygiene and Sanitation in the Project Areas

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 because of improved water supply networks including consumer connections.

7.9.3 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.

7.9.4 Improved revenue for Nyeri Water and Sewerage Companies

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

7.10 Decommissioning Phase Positive Impacts Water Project

The following are the positive impacts during decommissioning phase of the proposed Project:

7.10.1 Employment Opportunities

Temporary employment opportunities will be created for the demolition of laid and constructed structures 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 the Security Lighting

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 Security Lighting

The following are the positive impacts during 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.

Temporary job opportunities shall be available during the construction phase of the project and shall include casual labourers, food catering, artisans and many more. This shall be an important positive impact to the community because unemployment has been cited as one of the most pressing problems in Kenya today. During operation phase, there will be employment of permanent workers to ensure operation and maintenance of the infrastructures.

7.12.2 Promote social inclusion and equity.

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

7.12.3 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 road connectivity.

7.12.4 Economic growth

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

7.12.5 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 the town centres 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 Phase Positive Impacts Security Lighting

The following are the positive impacts during operation phase of the proposed Project:

7.13.1 Increased security

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

7.14 Decommissioning Phase Positive Impacts Security Lighting

The following are the positive impacts during decommissioning phase of the proposed Project:

7.14.1 Employment opportunities

Temporary employment opportunities will be created for the demolition of laid and constructed structures 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 anticipated impacts for the proposed interventions are as represented in Tables 7.2-7.4 based on perceived environmental impact levels and mitigations.

Table 7-2: Impact analysis for roads

Associated Impacts	Impact Levels	Management Actions
Pre-Construction Phase		
• Labour influx	Medium	• Effective community engagement and strong grievance mechanisms on matters related to labour
Construction Phase		
• 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 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 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;

Associated Impacts	Impact Levels	Management Actions
• 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,
• Impact to soil	Low	• 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. • 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
• Water pollution	Medium	• 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.

Associated Impacts	Impact Levels	Management Actions
• Accidental Oil and fuel Spills and Leaks	Medium	• 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	Low	• No anticipated displacement was identified during social screening studies undertaken.
• Disruption of local community who have built along the way	Medium	• The construction works especially along home entrances will be fast tracked to reduce inconveniences. Access bridges will be provided for the community during construction period
• Disruption of public utilities	Medium	• Contractor to carry out piloting to locate services such as pipes and cables along before commencing excavation works. • 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.

Associated Impacts	Impact Levels	Management Actions
		• 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 in open areas
• Workers welfare	Medium	• 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 available at all times 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 has to 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.
• 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 daily and avoid peak traffic periods;
• 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.

Associated Impacts	Impact Levels	Management Actions
• 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 Baraza. • 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	Medium	• 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.
• 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
• 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.

Associated Impacts	Impact Levels	Management Actions
		• 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: - 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;

Associated Impacts	Impact Levels	Management Actions
		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 unless they are at immediate risk of injury or in physical danger. • Refrain from physical punishment or discipline of children
Operation phase		
Pollution of water and soils	•	• Blockages should be detected and promptly replaced. • County Government to attend to blocked drainages promptly to prevent excessive loss of soil through erosion.

Associated Impacts	Impact Levels	Management Actions
		• Provide high risk areas with appropriate drainage for effective channelling of burst sewage spills
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;
Visual and landscape impact management	• Medium	• Elaborate landscaping and maintenance of these sites can limit the viewpoints to the facilities and thus reduce their visual impact.
Air pollution	• Medium	• Policing of roadworthy vehicles to reduce air pollution • Periodical air quality monitoring along the road
Road Maintenance impacts	• Medium	• Incorporate recycling of road resurfacing waste where possible; • Composting of vegetation waste for reuse as a landscaping fertilizer; • Manage sediment and sludge removed from storm water; • All removed paint materials suspected or confirmed as containing lead as a hazardous waste should be properly disposed.
Risk of encroachment and construction of structures on the way leave	• Medium	• Arrest and prosecution of encroachers as required by Nyeri County Bylaws on Way Leaves and Road Reserves
Road accidents	• Medium	• After construction phase is complete, the client in liaison with relevant authorities should sensitize 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 the set roads usage rules; • Speed bumps should be erected in areas of high human activity such as the market centres, schools and health centres. • Provision of adequate road signages

Associated Impacts	Impact Levels	Management Actions
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	Medium	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	Medium	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	Medium	• 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 for Water

Associated Impacts	Impact Levels	Management Actions
Pre-Construction Phase		
• Labour influx	Medium	• Effective community engagement and strong grievance mechanisms on matters related to labour
Construction Phase		
• 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 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 with 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 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;

Associated Impacts	Impact Levels	Management Actions
• 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,
• Impact on soil	Low	• 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. • 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
• Water pollution	Medium	• 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.

Associated Impacts	Impact Levels	Management Actions
• Accidental Oil and fuel Spills and Leaks	Medium	• 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.
• Workers welfare	Medium	• 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 available at all times 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 has to 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.
• Loss of temporary assets and sources of livelihood	Low	• No anticipated displacement was identified during social screening studies undertaken.
• Disruption of local community who have built along the way	Medium	• The construction works especially along home entrances will be fast tracked to reduce inconveniences. Access bridges will be provided for the community during construction period
• 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.

Associated Impacts	Impact Levels	Management Actions
		• 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.
• 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
• Workers welfare	Medium	• 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 available at all times 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 has to 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.

Associated Impacts	Impact Levels	Management Actions
• 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 daily and avoid peak traffic periods;
• 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.
• 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 Baraza. • 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	Medium	• 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.
• 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

Associated Impacts	Impact Levels	Management Actions
• 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. • 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.

Associated Impacts	Impact Levels	Management Actions
		- 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.
• 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.

Associated Impacts	Impact Levels	Management Actions
		• Refrain from physical punishment or discipline of children
Operation phase		
Risk of illegal connection and vandalism of the water pipeline	• Medium	• This shall require constant inspection by NYEWASCO 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 NYEWASCO
Increased domestic wastewater generation.	Medium	• The Client to consider construction of a sewerage system in the project areas
Risk of water pipeline bursts leading to water wastage	Low	• 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, NYEWASCO
Risk of encroachment and construction of structures on the pipeline way leave	Low	• Arrest and prosecution of encroachers as required by Nyeri • County Bylaws on Way Leaves and Road Reserves • NYEWASCO to undertake awareness campaigns aimed at preventing encroachment
Health and Safety Risks	Medium	• Regular check, repair, and maintenance of the water pipeline by NYEWASCO 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)

Associated Impacts	Impact Levels	Management Actions
		• Development of an inventory of system components, with information including age, construction materials, and drainage areas served elevations. • Carry continuous Public Health Awareness
Pollution of water and soils	Medium	• Blockages should be detected and promptly replaced. • NYEWASCO 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.
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.

Table 7-4: Impact Analysis Security Lighting

Associated Impacts	Impact Levels &	Management Actions
Pre-construction Phase		
• Labour influx	Low	• Effective community engagement and strong grievance mechanisms on matters related to labour
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 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;
• Noise and excessive vibrations	low	• Workers shall use ear muffs/plugs when performing operations producing over 85 dB of continuous noisy; • 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; • 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;

Associated Impacts	Impact Levels &	Management Actions
		• Where noisy activities must be undertaken near sensitive receptors, the neighbouring occupants must be informed in advance and works limited to day time 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 top soil 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 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 on a daily basis and avoid peak traffic periods; • Warn road users about traffic diversion by using signs, as well as use of traffic marshals;

Associated Impacts	Impact Levels &	Management Actions
		• 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
• 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.
• Impact on soil	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.

Associated Impacts	Impact Levels &	Management Actions
		• 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.
Impact on Water Resources from: • Increased Water demand • Waste water • Oil Spillage	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;
• Loss of temporary assets and sources of livelihood	Low	• The survey and social screening studies undertaken during the ESIA did not encounter likelihood of loss of assets

Associated Impacts	Impact Levels &	Management Actions
• Disruption of local community who have built along the way	Low	• The construction works especially along home entrances will be fast tracked to reduce inconveniences. Access bridges will be provided for the community during construction period
• 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.
• Traffic Impacts and accidents	low	• 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 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

Associated Impacts	Impact Levels &	Management Actions
		• 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 utilisation 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
• Workers welfare	low	• 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 available at all times 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);

Associated Impacts	Impact Levels &	Management Actions
		• The contractor has to 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.
• 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.
• 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.

Associated Impacts	Impact Levels &	Management Actions
		• 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.
• 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, 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.

Associated Impacts	Impact Levels &	Management Actions
		• Liaise with the administration units (County and National Government) to provide regular surveillance and patrols to protect workers and unacceptable behavioural interaction of local communities and workers
• Increased Transmission of HIV/AIDS	Low	• 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.
• 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

Associated Impacts	Impact Levels &	Management Actions
		• 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	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. • 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	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: 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;

Associated Impacts	Impact Levels &	Management Actions
		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 street lights	Low	• 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
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;

Associated Impacts	Impact Levels &	Management Actions
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. • 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

The aim of the environmental and social management and monitoring plan (ESMMP) is to detail the actions required to effectively implement the mitigation measures identified and recommended in the ESIA. These actions are required to minimize negative impacts and enhance positive impacts associated with the proposed project. The ESMMP actions present the commitments made by the proponent, for addressing the impacts of the project. It is important to note that an ESMMP is a living document since it is to be updated and amended as new information (e.g. environmental data), policies, authority guidelines and technologies develop. 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; Chorongi 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 ESMMP

The objectives of the ESMMP 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 (ESMMP)

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 Kenya Informal Settlement Improvement Project water supply project is provided below for the;

a) Pre- Construction Stage,
b) Construction
c) Operational Stage, And
d) Decommissioning Stage Respectively.

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

Table 8-2: Preconstruction ESMMP Roads

Associated Impacts	Management Actions	Monitoring Indicator	Monitoring frequency	Responsibilities	Cost in KES
		Social impact			
Labour influx	• Effective community engagement and strong grievance mechanisms on matters related to labour	• Number of grievances logged on site. • Records of local and non-local workers	Daily	Contractor	Contractor to cover in his costs

Table 8-3: Construction ESMMP Roads

Associated Impacts	Management Actions	Monitoring Indicator	Monitoring frequency	Responsibilities	Cost IN KES
Environmental					
• Noise and excessive vibrations	• 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 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;	• Number of complaints received from neighbouring residents	Daily	Contractor	KES 5253

Associated Impacts	Management Actions	Monitoring Indicator	Monitoring frequency	Responsibilities	Cost IN KES
• Air pollution and dust generation	• 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 generating activities (excavation, handling, and transport of soils) during times of strong winds. • Vehicles delivering construction materials and vehicles hauling excavated materials shall be	• Cases of respiratory complication at nearby health centre • Visible dust in project site	Daily	Contractor	KES 5253

Associated Impacts	Management Actions	Monitoring Indicator	Monitoring frequency	Responsibilities	Cost IN KES
	covered to reduce spills and windblown dust;				
• 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,	• Waste tracking documentation. • Number of complaints from community not happy with waste management of spoil material	Daily	Contractor	250,000
• Impacts on soil	• The contractor to adhere to the proposed soil conservation practices. • Proper and compacted back filling.	• Presence of pollutants in soil • Visible oil spillage on soil	Daily	Contractor	Contractor to cover in his cost

Associated Impacts	Management Actions	Monitoring Indicator	Monitoring frequency	Responsibilities	Cost IN KES
	• 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. • 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.				

Associated Impacts	Management Actions	Monitoring Indicator	Monitoring frequency	Responsibilities	Cost IN KES
	• Rehabilitation of the site after construction				
Impact on Water Resources from: • Increased Water demand • Waste water • Oil Spillage	• 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. • Grey water to be contained and properly channelled. • Onsite treatment of grey water by the facility approved by the resident engineer.	• Levels of effluents in water bodies • No of complaints received in regard to water pollution and reduced water supply.	Monthly	Contractor	Contractor to cover in his cost
• Accidental Oil and fuel Spills and Leaks	• Checking and regular servicing of Equipment. • Re-fuelling at safe locations,	• Presence of oil spillages	• Daily	• Contractor	• Contractor to cover in his cost

Associated Impacts	Management Actions	Monitoring Indicator	Monitoring frequency	Responsibilities	Cost IN KES
	• 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 ESIA. • Any displacement that may be identified during construction to be dealt with on case-by-case basis	• No of complaints received in regard to loss of livelihood	• Daily	• Contractor	No RAP
• Disruption of local community who have built along the way leave	• The construction works especially along home entrances will be fast tracked to reduce inconveniences. Access bridges will be provided for the	• Availability of access bridges • Number of complaints	• Daily	• Contractor	Contractor to cover in his cost

Associated Impacts	Management Actions	Monitoring Indicator	Monitoring frequency	Responsibilities	Cost IN KES
	community during construction period				
• 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.	• Number of public utilities damaged. • Number of complaints from community due to lack of certain services	• Daily	• Contractor	• KES 52,532
• 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.	• Number of locals recruited. • Records of workers on site	• Daily	• Contractor	• Contractor to cover in his cost

Associated Impacts	Management Actions	Monitoring Indicator	Monitoring frequency	Responsibilities	Cost IN KES
	• The contractor shall comply with the required Law of Kenya under DOSHS and Labour requirements • 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	• 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.	• Number of cases of diseases reported. • No of workers trained on HIV/ AIDS • Number of gender-disaggregated toilets constructed	Weekly	Contractor	KES 26,266

Associated Impacts	Management Actions	Monitoring Indicator	Monitoring frequency	Responsibilities	Cost IN KES
	• 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	• Records of women recruited	Weekly	Contractor	No additional cost
• 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	• No of crime related incidences reported about the project	Daily	Contractor	Contractor to add in his cost
• Increased GBV	• The Contractor shall require his employees, sub-contractors, sub-consultants, and any	• Mitigation plan for GBV occurring at the community level as a	Daily	Contractor County Government	KES 26,266

Associated Impacts	Management Actions	Monitoring Indicator	Monitoring frequency	Responsibilities	Cost IN KES
	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	result of project implementation. • Number of GBV cases happening at the community level that receive survivor-centered referral and care • GBV trainings			

Associated Impacts	Management Actions	Monitoring Indicator	Monitoring frequency	Responsibilities	Cost IN KES
	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	• SEA Action Plan • Code of Conduct • Number of staff trainings • SEA FP	Daily	• Contractor • County Government	• Covered under GBV

Associated Impacts	Management Actions	Monitoring Indicator	Monitoring frequency	Responsibilities	Cost IN KES
members	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	• 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			

Associated Impacts	Management Actions	Monitoring Indicator	Monitoring frequency	Responsibilities	Cost IN KES
	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				

Associated Impacts	Management Actions	Monitoring Indicator	Monitoring frequency	Responsibilities	Cost IN KES
	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	• 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	• Availability of child protection strategy • Signed CoC • Identification cards for all workers	Daily	Contractor	Covered under GBV

Associated Impacts	Management Actions	Monitoring Indicator	Monitoring frequency	Responsibilities	Cost IN KES
	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				
Conflicts between Contractor and Community	• Establishment of a formal grievance and redress mechanism by the supervising consultant/Engineer. • The Contractor shall be required to minimize the possibility of occurrence of grievances with the local community. • The contractor shall maintain a Complaints Register on site detailing all contacts of aggrieved persons, the investigations undertaken, and response provided, action	• Number of grievances lodged	Daily	Contractor, SEC&GRC	SEC & GRC KES 78,798

Associated Impacts	Management Actions	Monitoring Indicator	Monitoring frequency	Responsibilities	Cost IN KES
	taken and by whom, any follow up action taken. • Copies of received complaints shall be copied to the supervising consultant/Engineer and issues to be addressed accordingly.				
Project Intervention Priority Conflicts	• Continuous community engagement and participation • Establishment of a formal grievance and redress mechanism • Maintaining complaints register on site detailing all contacts of aggrieved persons, the investigations undertaken and response provided, action taken and by whom, any follow up action taken.	• Number of grievances received	Daily	• National and County Government	• No additional costs
• Risk of accidents at work site	• Contractor to provide a Healthy and Safety Plan prior to the commencement of works to be approved by the Supervising Engineer. The plan shall comprehensively analyse all potential safety and health risks	• Availability of incidences Occurrence book on site • No of complains from workers for lacking water or	Daily	Contractor	PPEs- KES 105,064 OSH trainings- KES 26,266

Associated Impacts	Management Actions	Monitoring Indicator	Monitoring frequency	Responsibilities	Cost IN KES
	and provide corresponding prevention measures, including emergency response plan. • All workers to be inducted and trained on specific safety measures regularly throughout the construction period. • As applicable, works including operating equipment and electromechanical installations shall be performed only by duly qualified personnel. • 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	sanitation facilities			

Associated Impacts	Management Actions	Monitoring Indicator	Monitoring frequency	Responsibilities	Cost IN KES
	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				
• Workers welfare	• 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 available at all times 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);	• Number of sanitation facilities available • Availability of drinking water • Agreement with a health facility	Daily	Contractor	KES 26,266

Associated Impacts	Management Actions	Monitoring Indicator	Monitoring frequency	Responsibilities	Cost IN KES
	• The contractor has to 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.				
• Traffic congestion	• 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 daily and avoid peak traffic periods;	• Erected traffic related signage's • No of complaints raised by road users. • Availability of traffic management plan	Daily	Contractor	KES 105,064

Table 8-4: Operational ESMMP Roads

Potential Impacts	Management Actions	Monitoring Indicators	Monitoring frequency	Target Areas& Responsibilities
Negative Impacts				
Environmental				
Pollution of water and soils	• Blockages should be detected and promptly replaced. • County Government to attend to blocked drainages promptly to prevent excessive loss of soil through erosion. • Provide high risk areas with appropriate drainage for effective channelling of burst sewage spills;	Number of visible blocked drainages	Daily	All work areas Responsibility County Government of Nyeri
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.	Number of un-reinstated land Land degradation	Daily	All work areas Responsibility County Government of Nyeri
Social				
Risk of encroachment and construction of structures on the way leave	• Arrest and prosecution of encroachers as required by Nyeri • County Bylaws on Way Leaves and Road Reserves	• Number of structures constructed	Weekly	All work areas Responsibility County Government
Occupation Health and Safety Risks				

Potential Impacts	Management Actions	Monitoring Indicators	Monitoring frequency	Target Areas& Responsibilities
Health and safety risks	• Regular check, repair, and maintenance of the road • Activate a community watch group for information sharing on the status of the roads appurtenances. • Development of an inventory of system components, with information including age, construction materials, and drainage areas served elevations. • Carry continuous Public Health Awareness	• Number of accidents and incidents • Presence of blocked chambers	Daily	County Government of Nyeri

Table 8-5: Decommissioning ESMMP Roads

Potential Impacts	Management Actions	Monitoring Indicators	Monitoring frequency	Responsibilities
Negative impacts				
Environmental				
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;	Presence of solid waste in the environment	Daily	Contractor
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;	• Levels of noise produced. • Number of complaints recorded	Daily	Contractor
Occupational Health and Safety Impacts				
Occupational Health and Safety	• Provide the correct PPE for the workers when conducting the demolition activities.	• Records of accidents	Daily	Contractor

Potential Impacts	Management Actions	Monitoring Indicators	Monitoring frequency	Responsibilities
	• 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.	and incidents		
Social Impacts				
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 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.	• Number of reported cases • Training records	Throughout decommissioning	Contractor

Potential Impacts	Management Actions	Monitoring Indicators	Monitoring frequency	Responsibilities
	• 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). • 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,	• Training records • Number of complaints	Throughout decommissioning	Contractor

Potential Impacts	Management Actions	Monitoring Indicators	Monitoring frequency	Responsibilities
	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.			

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

Table 8-6: Preconstruction ESMMP Water

Associated Impacts	Management Actions	Monitoring Indicator	Monitoring frequency	Responsibilities	Cost In KES
Social impact					
Labour influx	• Effective community engagement and strong grievance mechanisms on matters related to labour.	Employees records Number of local workers engaged	Daily	Contractor	Contractor to cover in his costs

Table 8-7: Construction ESMMP Water

Associated Impacts	Management Actions	Monitoring Indicator	Monitoring frequency	Responsibilities	Cost In KES
Environmental					
• Noise and excessive vibrations	• 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	• Number of complaints received from neighbouring residents	Daily	Contractor	KES 5253

Associated Impacts	Management Actions	Monitoring Indicator	Monitoring frequency	Responsibilities	Cost In KES
	(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 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 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	• Cases of respiratory complication at nearby health centre • Visible dust in project site	Daily	Contractor	KES 5253

Associated Impacts	Management Actions	Monitoring Indicator	Monitoring frequency	Responsibilities	Cost In KES
	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;				
• 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	• Waste tracking documentation. • Number of complaints from community not happy with waste management of spoil material	Daily	Contractor	250,000

Associated Impacts	Management Actions	Monitoring Indicator	Monitoring frequency	Responsibilities	Cost In KES
	designated points and Contractor to dispose to appropriately. • Contractor's Camps and Construction Sites to have designated waste collection points,				
• Impacts on soil	• 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.	• Presence of pollutants in soil • Visible oil spillage on soil	Daily	Contractor	Contractor to cover in his cost

Associated Impacts	Management Actions	Monitoring Indicator	Monitoring frequency	Responsibilities	Cost In KES
	• 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 Water Resources from: • Increased Water demand • Waste water • Oil Spillage	• 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	• Levels of effluents in water bodies • No of complaints received in regard to water pollution and reduced water supply.	Monthly	Contractor	Contractor to cover in his cost

Associated Impacts	Management Actions	Monitoring Indicator	Monitoring frequency	Responsibilities	Cost In KES
	pollution of the surface water and surface water bodies. • Prompt action to be taken by the contractor in case of any pollution incident. • Grey water to be contained and properly channelled. • Onsite treatment of grey water by the facility approved by the resident engineer.				
• 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.	• Presence of oil spillages	• Daily	• Contractor	• Contractor to cover in his cost

Associated Impacts	Management Actions	Monitoring Indicator	Monitoring frequency	Responsibilities	Cost In KES
• Loss of temporary assets and sources of livelihood	• 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	• No of complaints received in regard to loss of livelihood	• Daily	• Contractor	No RAP
• Disruption of local community who have built along the way leave	• The construction works especially along home entrances will be fast tracked to reduce inconveniences. Access bridges will be provided for the community during construction period	• Availability of access bridges • Number of complaints	• Daily	• Contractor	Contractor to cover in his cost
• 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.	• Number of public utilities damaged. • Number of complaints from community due to lack of certain services	• Daily	• Contractor	• KES 52,532

Associated Impacts	Management Actions	Monitoring Indicator	Monitoring frequency	Responsibilities	Cost In KES
	• Consultation and liaison with the various service providers shall be undertaken throughout the project life.				
• 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. • The contractor shall comply with the required Law of Kenya under DOSHS and Labour requirements • Proper records of labour force on site while avoiding child and forced labour. • Fair treatment, non-discrimination, and equal opportunity of workers.	• Number of locals recruited. • Records of workers on site	• Daily	• Contractor	• Contractor to cover in his cost
• Increased Transmission of HIV/AIDS	• Sensitize workers and the surrounding communities on awareness, prevention and management of	• Number of cases of diseases reported. • No of workers trained on HIV/ AIDS	Weekly	Contractor	KES 26,266

Associated Impacts	Management Actions	Monitoring Indicator	Monitoring frequency	Responsibilities	Cost In KES
	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.	• Number of gender-disaggregated toilets constructed			
• 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	• Records of women recruited	Weekly	Contractor	No additional cost

Associated Impacts	Management Actions	Monitoring Indicator	Monitoring frequency	Responsibilities	Cost In KES
• 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	• No of crime related incidences reported about the project	Daily	Contractor	Contractor to add in his cost
• 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:	• 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 • GBV trainings	Daily	Contractor County Government	KES 26,266

Associated Impacts	Management Actions	Monitoring Indicator	Monitoring frequency	Responsibilities	Cost In KES
	- 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-				

Associated Impacts	Management Actions	Monitoring Indicator	Monitoring frequency	Responsibilities	Cost In KES
	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). • 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-	• 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	Daily	• Contractor • County Government	• Covered under GBV

Associated Impacts	Management Actions	Monitoring Indicator	Monitoring frequency	Responsibilities	Cost In KES
	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.	coordination meetings			

Associated Impacts	Management Actions	Monitoring Indicator	Monitoring frequency	Responsibilities	Cost In KES
	• 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	• 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.	• Availability of child protection strategy • Signed CoC • Identification cards for all workers	Daily	Contractor	Covered under GBV

Associated Impacts	Management Actions	Monitoring Indicator	Monitoring frequency	Responsibilities	Cost In KES
	• 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				
Conflicts between Contractor and Community	• Establishment of a formal grievance and redress mechanism by the supervising consultant/Engineer.	• Number of grievances lodged	Daily	Contractor, SEC&GRC	SEC & GRC KES 78,798

Associated Impacts	Management Actions	Monitoring Indicator	Monitoring frequency	Responsibilities	Cost In KES
	• The Contractor shall be required to minimize the possibility of occurrence of grievances with the local community. • The contractor shall maintain a Complaints Register on site detailing all contacts of aggrieved persons, the investigations undertaken, and response provided, action taken and by whom, any follow up action taken. • Copies of received complaints shall be copied to the supervising consultant/Engineer and issues to be addressed accordingly.				
Project Intervention Priority Conflicts	• Continuous community engagement and participation • Establishment of a formal grievance and redress mechanism • Maintaining complaints register on site detailing all contacts of aggrieved persons, the	• Number of grievances received	Daily	• National and County Government	• No additional costs

Associated Impacts	Management Actions	Monitoring Indicator	Monitoring frequency	Responsibilities	Cost In KES
	investigations undertaken and response provided, action taken and by whom, any follow up action taken.				
• Risk of accidents at work site	• Contractor to provide a Healthy and Safety Plan prior to the commencement of works to be approved by the Supervising Engineer. The plan shall comprehensively analyse all potential safety and health risks and provide corresponding prevention measures, including emergency response plan. • All workers to be inducted and trained on specific safety measures regularly throughout the construction period. • As applicable, works including operating equipment and electromechanical installations shall be performed only by duly qualified personnel. • Construction Workers and the Supervising Team to be provided with Personal Protective Equipment including	• Availability of incidences Occurrence book on site • No of complains from workers for lacking water or sanitation facilities	Daily	Contractor	PPEs- KES 105,064 OSH trainings- KES 26,266

Associated Impacts	Management Actions	Monitoring Indicator	Monitoring frequency	Responsibilities	Cost In KES
	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				
• Workers welfare	• 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;	• Number of sanitation facilities available • Availability of drinking water • Agreement with a health facility	Daily	Contractor	KES 26,266

Associated Impacts	Management Actions	Monitoring Indicator	Monitoring frequency	Responsibilities	Cost In KES
	• Contractor to ensure that first aid facilities are available at all times 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 has to 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.				
• Traffic congestion	• 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	• Erected traffic related signage's • No of complaints raised by road users. • Availability of traffic management plan	Daily	Contractor	KES 105,064

Associated Impacts	Management Actions	Monitoring Indicator	Monitoring frequency	Responsibilities	Cost In KES
	Plan itineraries for site traffic daily and avoid peak traffic periods;				

Table 8-8: Operational ESMMP Water

Potential Impacts	Management Actions	Monitoring Indicators	Monitoring frequency	Target Areas& Responsibilities
Negative Impacts				
Environmental				
Pollution of water and soils	• Blockages should be detected and promptly replaced. • NYEWASCO 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	Number of bursts Visible blocked drainages	Daily	All work areas Responsibility County Government of Nyeri
Increased domestic wastewater generation.	• The client to consider ensure all household are connected to the new reticulations.	Visible grey water in the environment	Daily	All work areas Responsibility NYEWASCO
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 Nyeri
Risk of water pipeline bursts leading to water wastage	• Regular check, repair, and maintenance of the water pipeline	• Number of bursts and leakages	Daily	Water pipeline routes Responsibility NYEWASCO

Potential Impacts	Management Actions	Monitoring Indicators	Monitoring frequency	Target Areas& Responsibilities
	• 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, NYEWASCO			
Social				
Risk of illegal connection and vandalism of the water Pipeline	• This shall require constant inspection by NYEWASCO 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 NYEWASCO	• Number of vandalized infrastructures • Records of reported cases	Daily	All work areas <u>Responsibility</u> NYEWASCO

Potential Impacts	Management Actions	Monitoring Indicators	Monitoring frequency	Target Areas& Responsibilities
Risk of encroachment and construction of structures on the pipeline way leave	• Arrest and prosecution of encroachers as required by Nyeri • County Bylaws on Way Leaves and Road Reserves • NYEWASCO to undertake awareness campaigns aimed at preventing encroachment	• Number of structures constructed	Weekly	All work areas Responsibility NYEWASCO
Occupation Health and Safety Risks				
Health and safety risks	• Regular check, repair and maintenance of the water pipeline and sewer lines by NYEWASCO 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) • Awareness rising among community members not to dump solids in manholes. • Development of an inventory of system components, with information including age, construction materials, and drainage areas served elevations.	• Number of accidents and incidents • Presence of waste in chambers	Daily	NYEWASCO County Government of Nyeri

Potential Impacts	Management Actions	Monitoring Indicators	Monitoring frequency	Target Areas& Responsibilities
	• Carry continuous Public Health Awareness			

Table 8-9: Decommissioning ESMMP Water

Potential Impacts	Management Actions	MONITORING Indicators	Monitoring frequency	Responsibilities
Negative impacts				
Environmental				
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;	Presence of solid waste in the environment	Daily	Contractor
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;	• Levels of noise produced. • Number of complaints recorded	Daily	Contractor
Occupational Health and Safety Impacts				
Occupational Health and Safety	• Provide the correct PPE for the workers when conducting the demolition activities.	• Records of accidents	Daily	Contractor

Potential Impacts	Management Actions	MONITORING Indicators	Monitoring frequency	Responsibilities
	• 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.	and incidents		
Social Impact				
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 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.	• Number of reported cases • Training records	Throughout decommissioning	Contractor

Potential Impacts	Management Actions	MONITORING Indicators	Monitoring frequency	Responsibilities
	• 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). • 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,	• Training records • Number of complaints	Throughout decommissioning	Contractor

Potential Impacts	Management Actions	MONITORING Indicators	Monitoring frequency	Responsibilities
	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.			

8.3.3 Environmental and Social Management and Monitoring Plan (ESMMP) Security Lighting

Table 8-10: Pre-construction EMMP Security lighting

Associated Impacts	Management Actions	Responsibilities	Monitoring Indicator	Monitoring frequency	Budget in KES
Social Impacts					
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	• Daily	• Contractor to cover in his rates

Table 8-11: Construction EMMP Security lighting

Associated Impacts	Management Actions	Monitoring Indicator	Monitoring frequency	Responsibilities	Cost IN KES
Environmental					
• Noise and excessive vibrations	• 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	• Number of complaints received from neighbouring residents	Daily	Contractor	KES 5253

Associated Impacts	Management Actions	Monitoring Indicator	Monitoring frequency	Responsibilities	Cost IN KES
	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 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 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.	• Cases of respiratory complication at nearby health centre • Visible dust in project site	Daily	Contractor	KES 5253

Associated Impacts	Management Actions	Monitoring Indicator	Monitoring frequency	Responsibilities	Cost IN KES
	• 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;				
• 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	• Waste tracking documentation. • Number of complaints from community not happy with waste management of spoil material	Daily	Contractor	250,000

Associated Impacts	Management Actions	Monitoring Indicator	Monitoring frequency	Responsibilities	Cost IN KES
	Contractor to dispose to appropriately. • Contractor's Camps and Construction Sites to have designated waste collection points,				
• Impacts on soil	• 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.	• Presence of pollutants in soil • Visible oil spillage on soil	Daily	Contractor	Contractor to cover in his cost

Associated Impacts	Management Actions	Monitoring Indicator	Monitoring frequency	Responsibilities	Cost IN KES
	• 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 Water Resources from: • Increased Water demand • Waste water • Oil Spillage	• 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	• Levels of effluents in water bodies • No of complaints received in regard to water pollution and reduced water supply.	Monthly	Contractor	Contractor to cover in his cost

Associated Impacts	Management Actions	Monitoring Indicator	Monitoring frequency	Responsibilities	Cost IN KES
	pollution of the surface water and surface water bodies. • Prompt action to be taken by the contractor in case of any pollution incident. • Grey water to be contained and properly channelled. • Onsite treatment of grey water by the facility approved by the resident engineer.				
• 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.	• Presence of oil spillages	• Daily	• Contractor	• Contractor to cover in his cost

Associated Impacts	Management Actions	Monitoring Indicator	Monitoring frequency	Responsibilities	Cost IN KES
• Loss of temporary assets and sources of livelihood	• 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	• No of complaints received in regard to loss of livelihood	• Daily	• Contractor	No RAP
• Disruption of local community who have built along the way leave	• The construction works especially along home entrances will be fast tracked to reduce inconveniences. Access bridges will be provided for the community during construction period	• Availability of access bridges • Number of complaints	• Daily	• Contractor	Contractor to cover in his cost
• 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.	• Number of public utilities damaged. • Number of complaints from community due to lack of certain services	• Daily	• Contractor	• KES 52,532

Associated Impacts	Management Actions	Monitoring Indicator	Monitoring frequency	Responsibilities	Cost IN KES
	• Consultation and liaison with the various service providers shall be undertaken throughout the project life.				
• 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. • The contractor shall comply with the required Law of Kenya under DOSHS and Labour requirements • Proper records of labour force on site while avoiding child and forced labour. • Fair treatment, non-discrimination, and equal opportunity of workers.	• Number of locals recruited. • Records of workers on site	• Daily	• Contractor	• Contractor to cover in his cost
• Increased Transmission of HIV/AIDS	• Sensitize workers and the surrounding communities on awareness, prevention and management of	• Number of cases of diseases reported. • No of workers trained on HIV/ AIDS	Weekly	Contractor	KES 26,266

Associated Impacts	Management Actions	Monitoring Indicator	Monitoring frequency	Responsibilities	Cost IN KES
	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.	• Number of gender-disaggregated toilets constructed			
• 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	• Records of women recruited	Weekly	Contractor	No additional cost

Associated Impacts	Management Actions	Monitoring Indicator	Monitoring frequency	Responsibilities	Cost IN KES
• 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	• No of crime related incidences reported about the project	Daily	Contractor	Contractor to add in his cost
• 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:	• 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 • GBV trainings	Daily	Contractor County Government	KES 26,266

Associated Impacts	Management Actions	Monitoring Indicator	Monitoring frequency	Responsibilities	Cost IN KES
	- 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-				

Associated Impacts	Management Actions	Monitoring Indicator	Monitoring frequency	Responsibilities	Cost IN KES
	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). • 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-	• 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	Daily	• Contractor • County Government	• Covered under GBV

Associated Impacts	Management Actions	Monitoring Indicator	Monitoring frequency	Responsibilities	Cost IN KES
	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.	coordination meetings			

Associated Impacts	Management Actions	Monitoring Indicator	Monitoring frequency	Responsibilities	Cost IN KES
	• 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	• 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.	• Availability of child protection strategy • Signed CoC • Identification cards for all workers	Daily	Contractor	Covered under GBV

Associated Impacts	Management Actions	Monitoring Indicator	Monitoring frequency	Responsibilities	Cost IN KES
	• 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				
Conflicts between Contractor and Community	• Establishment of a formal grievance and redress mechanism by the supervising consultant/Engineer.	• Number of grievances lodged	Daily	Contractor, SEC&GRC	SEC & GRC KES 78,798

Associated Impacts	Management Actions	Monitoring Indicator	Monitoring frequency	Responsibilities	Cost IN KES
	• The Contractor shall be required to minimize the possibility of occurrence of grievances with the local community. • The contractor shall maintain a Complaints Register on site detailing all contacts of aggrieved persons, the investigations undertaken, and response provided, action taken and by whom, any follow up action taken. • Copies of received complaints shall be copied to the supervising consultant/Engineer and issues to be addressed accordingly.				
Project Intervention Priority Conflicts	• Continuous community engagement and participation • Establishment of a formal grievance and redress mechanism • Maintaining complaints register on site detailing all contacts of aggrieved persons, the	• Number of grievances received	Daily	• National and County Government	• No additional costs

Associated Impacts	Management Actions	Monitoring Indicator	Monitoring frequency	Responsibilities	Cost IN KES
	investigations undertaken and response provided, action taken and by whom, any follow up action taken.				
• Risk of accidents at work site	• Contractor to provide a Healthy and Safety Plan prior to the commencement of works to be approved by the Supervising Engineer. The plan shall comprehensively analyse all potential safety and health risks and provide corresponding prevention measures, including emergency response plan. • All workers to be inducted and trained on specific safety measures regularly throughout the construction period. • As applicable, works including operating equipment and electromechanical installations shall be performed only by duly qualified personnel. • Construction Workers and the Supervising Team to be provided with Personal Protective Equipment including	• Availability of incidences Occurrence book on site • No of complains from workers for lacking water or sanitation facilities	Daily	Contractor	PPEs- KES 105,064 OSH trainings- KES 26,266

Associated Impacts	Management Actions	Monitoring Indicator	Monitoring frequency	Responsibilities	Cost IN KES
	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				
• Workers welfare	• 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;	• Number of sanitation facilities available • Availability of drinking water • Agreement with a health facility	Daily	Contractor	KES 26,266

Associated Impacts	Management Actions	Monitoring Indicator	Monitoring frequency	Responsibilities	Cost IN KES
	• Contractor to ensure that first aid facilities are available at all times 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 has to 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.				
• Traffic congestion	• 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	• Erected traffic related signage's • No of complaints raised by road users. • Availability of traffic management plan	Daily	Contractor	KES 105,064

Associated Impacts	Management Actions	Monitoring Indicator	Monitoring frequency	Responsibilities	Cost IN KES
	Plan itineraries for site traffic daily and avoid peak traffic periods;				

Table 8-12: Environment and Social Management Plan Operational Phase

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 Responsibility County Government of Nyeri	Throughout Operation period	To be determined during operation phase

Table 8-13: Environment and Social Management Plan Decommissioning Phase

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	
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	Contractor	One-off	

Potential Impacts	Management Actions	Responsibilities	Monitoring Frequency	Budget
	health risk to human beings and the environment, to prevent the workers and surrounding communities from getting into contact with it.			
	Social Impacts			
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 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-	Contractor	Throughout decommissioning phase	To be established at decommissioning phase

Potential Impacts	Management Actions	Responsibilities	Monitoring Frequency	Budget
	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). • 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	Contractor	Throughout decommissioning phase	

Potential Impacts	Management Actions	Responsibilities	Monitoring Frequency	Budget
	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.			

8.4 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).

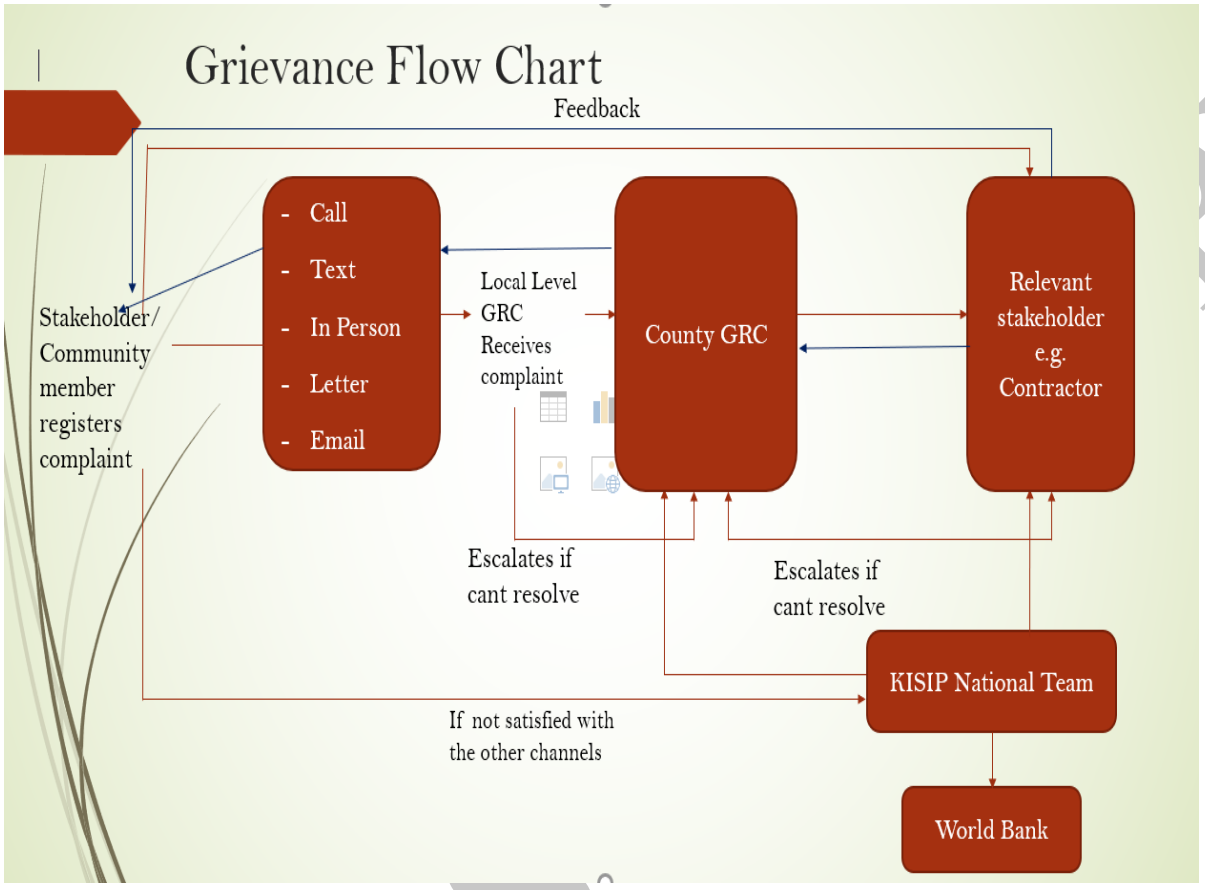
c) Investigation: Appropriate investigation will be decided at the assessment stage. If deemed necessary, the investigation can include a risk assessment. The investigation may include follow-up meetings between stakeholders and the contractor, where an impartial party is present, Minutes are recorded 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 2 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 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

Process	Description	Completion Timeframe	Responsible person
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 of complaint at National Coordinator GRC Document date of receipt, name of c	Document date of receipt, name of complainant	1 day	National level GRM Officer

Process	Description	Completion Timeframe	Responsible person
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 Sample 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 area of 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 be in charge of 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 total cost for the proposed upgrading works is **KES 109,863,225.70** and the project is estimated to take 1 year

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.

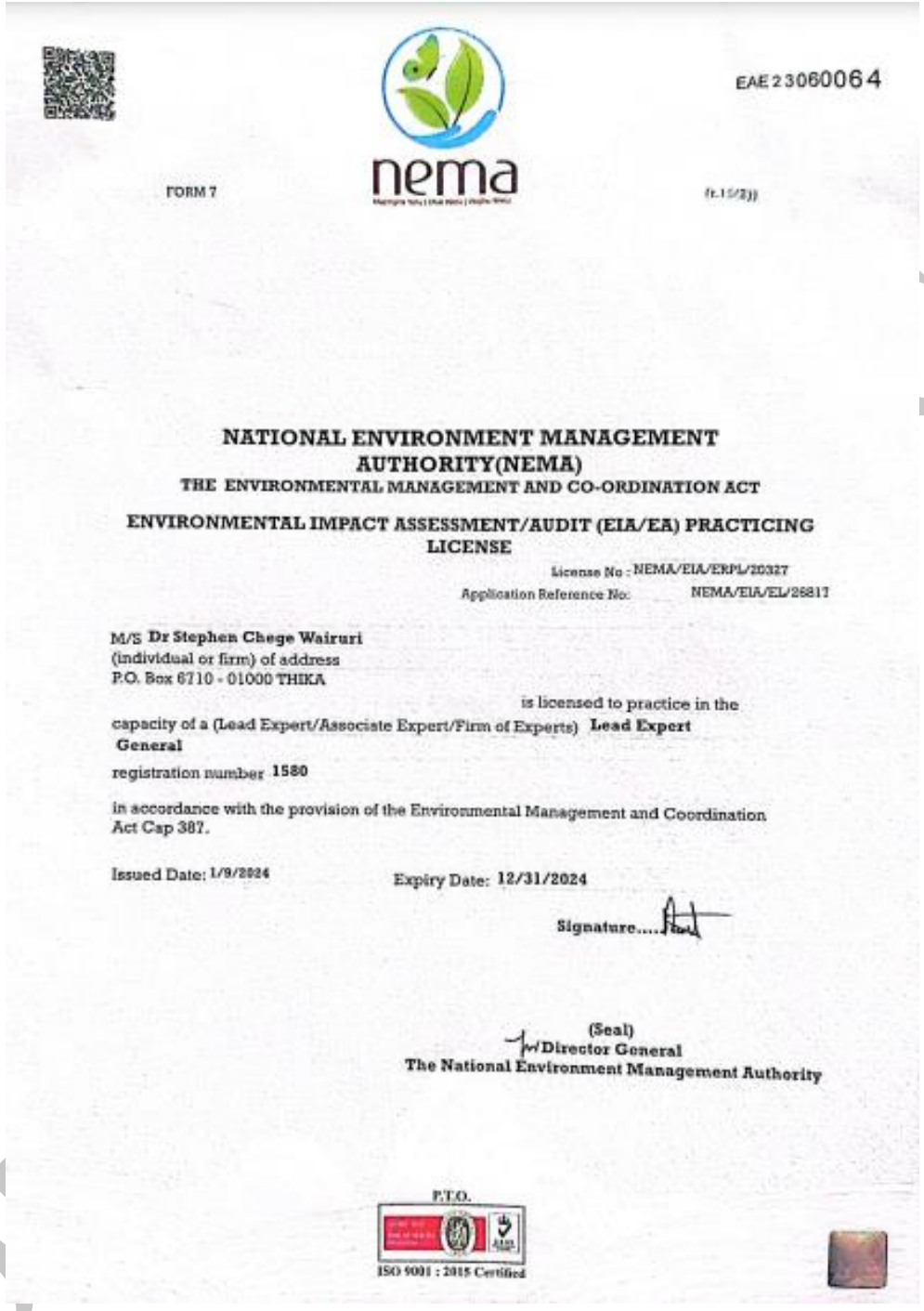
- The proponent should be given all the available support to implement the project.
- Necessary permits should be issued by the licensing authority so that the work can commence such and National Environment Management Authority (NEMA) license, Directorate of Occupational Safety and Health Services (DOSHS) 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.

REFERENCES

1. https://pubdocs.worldbank.org/en/837721522762050108/Environmental-and-Social-Framework.pdf (retrieved on April 5, 2024, at 2:00 P.M)
2. https://sdgs.un.org/goals. Sustainable Development Goals
3. https://www.un.org/en/climatechange/paris-agreement.
4. https://www.knbs.or.ke/download/2019-kenya-population-and-housing-census-volume-ii-distribution-of-population-by-administrative-units
5. https://hdl.handle.net/10568/80459- Climate Risk Profile Nyeri County
6. KISIP 2 ESMF
7. KISIP 2 RPF
8. Republic of Kenya (2010). The Constitution of Kenya, 2010. National Council of Law Reporting. Nairobi.
9. Republic of Kenya (2000), Environment Management and Co-ordination Act, (1999), Cap 387. National Council of Law Reporting. Nairobi.
10. Republic of Kenya (2000), Environment Management and Co-ordination (Amendment) Act 2015. National Council of Law Reporting. Nairobi.
11. Design Report for KISIP 2 Nyeri County (Losai/GATH JV)
12. Kenya gazette supplement Acts Public Health Act (Cap. 242) government printer, Nairobi
13. Kenya gazette supplement number 56. Environmental Impact Assessment & Audit Regulations 2003.Government Printer, Nairobi
14. Republic of Kenya, Water Act (2016), Government Printer, Nairobi Republic of Kenya,
15. World Bank's Safeguards Instruments
16. Nyeri County Integrated Development Plan (CIDP) – 2023 - 2027.
17. Nyeri Municipality Integrated Development Plan (IDeP) 2018-2022
18. Kenya Population-Based HIV Impact Assessment (KENPHIA) 2018
19. KNBS, Economic Survey 2021

ANNEXES

Annex 1: Lead Expert NEMA License



EAE 23060064

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 list.

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 Chorongi Informal Settlement held on September 19, 2023
Date and Time:	September 19, 2023
Venue:	Chorongi

MEMBERS PRESENT

NO.	NAME	DESIGNATION	ORGANIZATION
1.	Ann Kioko	Team Leader	KISIP
2.	Christine Sabwiri	SHO	KISIP
3.	Blanton Gitau	Engineer	KISIP
4.	Perister Kigwa	Municipal Manager	Nyeri Municipal Board
5.	Joseph Mwangi	Nyeri Municipal Board-Engineer	Nyeri Municipal Board
6.	Harry Ndumia	Engineer	County Government Nyeri
7.	Joseph Njomo	Physical Planner	County Government Nyeri
8.	Erick Muthee	Road Engineer	GATH
9.	Joseph Mwaura	Ass. Engineer	GATH
10.	Risper pete	Sociologist	GATH
11.	Kelvin Mwangi	EHS Officer	GATH
12.	Moses Odhiambo	GIS	GATH
13.	Esther Kairu	Ass. Chief	NGAO
14.	Joseph Ndengwa	Community member	Community member
15.	Ann Mutahi	Community member	Community member
16.	George Ndiritu	Community member	Community member
17.	Teresa Muthoni	Community member	Community member
18.	Lydiah Wanjiku	Community member	Community member
19.	Boniface Wairia	Community member	Community member
20.	Parak Wana	Community member	Community member
21.	John Njogu	Community member	Community member
22.	Paul Ndengwa	Community member	Community member
23.	Anthony Ndiritu	Community member	Community member
24.	Hellen Mutahi	Community member	Community member
25.	Ruth Wangui	Community member	Community member

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 11:00a.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. 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:**

MINUTE No.	ITEM DESCRIPTION
	• 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 landowners • 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 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

MINUTE No.	ITEM DESCRIPTION
	members were guided through the list of selected interventions. Community members identified the following projects as the top priorities for implementation in Chorongi: [List of Priority Projects]. • Roads • Drainage • High mast floodlight/streetlight • Solid waste management 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 Ass. 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 was adjourned at 3:30PM. 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.

Attendance Sheet

Annex 3: Sample questionnaires.

REPUBLIC OF KENYA

IDA International Development Association WORLD BANK GROUP

AFD AGENCE FRANÇAISE DE DEVELOPPEMENT

ESIA KEY INFORMANT INTERVIEW 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.

Your response will be treated with confidentiality and will only be used for the purpose of this project.

Name of project area:	NYERI CENTRAL S/COUNTY
Name of the Institution:	MINISTRY OF INTERIOR
Name of the Respondent:	SAMMY M. NYAGAH
Designation:	ASSISTANT COUNTY COMMISSIONER
Tel No:	0723 873329
Name of the Interviewer:	Ruper Pete
Date of interview:	23/11/2023

SECTION A: GENERAL INFORMATION

1. What your views on the following infrastructures in this area?

Infrastructures	Rate (Tick appropriately)		
	Poor	Fair	Good
Water		✓	
Sanitation	✓		
Solid waste Management	✓		
Road conditions	✓		
Security	✓		
Green spaces	✓		

2. 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, and street lights)?

Yes ☑ No ☐

3. Do you support the project?

Yes ☑ No ☐

4. State any concerns regarding the implementation of the proposed project?

(i) Sustainability of the interventions at the expiry of the project.

5. Are there any viable options for this project?

Yes ☑ No ☐

a) Please name them and give reasons

(i) Providing security of tenure to the residents of the settlements.

(ii) Deepening community involvement as part of their contribution to the project.

2

SECTION B: ANTICIPATED IMPACTS

6. What are the expected **POSITIVE** impacts of the project from the construction phase through to the commissioning and operations phases?

(I) Provision of labour/incomes to the residents
(II) Improvements in access to public amenities
(III) Improved security
(IV) Improved accessibility
(V) Better planned settlements.

7. What are the expected **NEGATIVE** impacts of the project from the construction phase through to the commissioning and operations phases?

(I) May involve demolitions due to unplanned nature of settlements.

8. Do you think this project will affect the normal land use in the area and if so in what way?

Improvement in public utilities will make the settlements have better living standards leading to more commercial uses as opposed to residential.

9. Are there historical or cultural heritage that would be affected by this project? If so, state them.

No

3

10. Are there hydro-geological (ground-water) or surface water resources condition that will be affected by this project? If so, state them.

- Could lead to increase in surface run-off

11. What suggestions would you make to mitigate any adverse environmental and social impacts during the project construction, commissioning and operations?

(i) More ~~grass~~ surface run-off from tarmacked roads may lead to erosion ~~need~~ to need to improve drainages and plant more trees.
(ii) Have more green spaces.
(iii) Install Solar lights as opposed to mains.

12. Any relevant observations, recommendations or comments on this project

1. Incorporate tenure security.
ii. Incorporate more green spaces
(iii) Tree planting

Signature:
Tel No.: 0723 873329
Stamp :

4