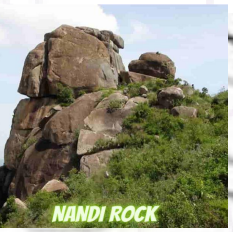
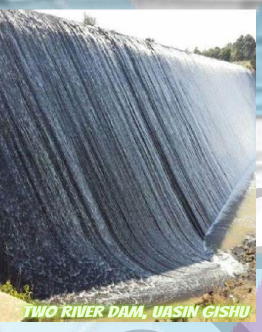
MINISTRY OF LANDS, PUBLIC WORKS, HOUSING AND URBAN DEVELOPMENT

State Department for Housing and Urban Development

KENYA INFORMAL SETTLEMENT IMPROVEMENT PROJECT (KISIP 2)

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 THE COUNTIES OF HOMA BAY, NYAMIRA, NYAMIRA AND NYAMIRA, CONTRACT NUMBER: KE-MOTI-298201-CS-QCBS





ENVIRONMENT SOCIAL IMPACT ASSESSMENT (ESIA) COMPREHENSIVE PROJECT REPORT FOR UPGRADING OF INFRASTRUCTURE IN KEROKA BLOCK B INFORMAL SETTLEMENT LOCATED IN NYAMIRA COUNTY

DECEMBER 2023

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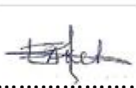
Signed  Date……21/12/2023…….
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Client

Signed …….. Date…….

COUNTY EXECUTIVE COMMITTEE MEMBER (CEC) INFRASTRUCTURE AND ROADS.

LIST OF ABBREVIATIONS

AFD	French Agency for Development
ARAP	Abbreviated Resettlement Action Plan
BOD	Biological Oxygen Demand
CIDP	County Integrated Development Plan
CLO	Community Liaison Officer
CSOs	Civil Society Organization
CDF	Constituency Development Fund
CPCT	County Project coordination team
dB	Decibels
GWASCO	Gusii Water and Sanitation Company
EHS	Environment Health and Safety
EIA	Environmental Impact Assessment
ESAAP	Environment and Social Audit Action Plan
ESAP	Environmental Social Action Plan
HSP	Healthy and Safety Plan
ESIA	Environmental and Social Impact Assessment
EMCA	Environmental Management & Coordination Act
ESMF	Environmental and Social Management Framework
ESMP	Environment and Social Management Plan
ESMMP	Environmental and Social Management and Monitoring Plan
FGD	Focus Group Discussions
GDP	Gross Domestic Product
GRM	Grievance Redress Mechanism
HIV	Human Immunodeficiency Virus
HSP	Health and Safety Plan
IDA	International Development Association
ICDP	Integrated Development Plan
IEC	Information Education and Communication
ILO	International Labour Organization
IFC	International Finance Agency
KeNHA	Kenya National Highways Authority
KISIP	Kenya Informal Settlements Improvement Project
KURA	Kenya Urban Roads Authority
KeRRA	Kenya Rural Roads Authority
LMP	Labour Management Plan
MCA	Member of County Assembly
MLPWHUD	Ministry of Lands, Public Works, Housing and Urban Development
NEMA	National Environment Management Authority
NEP	National Environment Policy
NGO	Non-Governmental Organization
NPCT	National Project coordination team
OSHA	Occupational Health and Safety Act
OP	Operations Policy
PAP	Project Affected Person

PDP	Physical Development Plan
PLWD	Persons Living with Disability
PPEs	Personal Protective Equipment
RAP	Resettlement Action Plan
RMLF	Roads Maintenance Levy Fund
RPF	Resettlement Policy Framework
SEA	Sexual Exploitation and Abuse
SH	Sexual Harassment
SFM	Significance following Mitigation
SDGs	Sustainable Development Goals
SEC	Settlement Executive Committee
STD	Sexually Transmitted Diseases
SUP	Social Upgrading Project
SR	Significant Rating
WF	Wight Factor
WB	World Bank
WIBA	Workplace Injuries and Benefits Act
WRA	Water Resources Authority

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EXECUTIVE SUMMARY

E. EXECUTIVE SUMMARY

E.1 Project Information

The Government of Kenya (GoK) through the Ministry of Lands Public Works, Housing and Urban Development (MoLPWH&UD) is implementing the Kenya Informal Settlements Improvement Project II (KISIP II). In Nyamira County. The infrastructure upgrade plan (Infrastructure Improvement) under KISIP II will include roads and drainage, secure lighting, Water and Sanitation and social amenities upgrading works. This will be funded by a credit from the World Bank (WB) through Interna Development Association (IDA) and Agence Française de Dévelopement (AFD). The target settlement in Nyamira County is Keroka Block B which is financed by IDA.

The socio- economic studies, feasibility studies, and the conceptual designs have been completed under the same consultancy. This Report therefore presents findings of Environmental and Social Assessment undertaken for the Proposed Projects, the report presents potential environment and social risks that are likely to be triggered by the Project, appropriate mitigation measures have also been provided in this assessment.

This presents Environmental & Social Impact Assessment (ESIA) Report Comprehensive Project Report prepared for Upgrading of infrastructure in Keroka Block Informal settlement, Nyamira County. The ESIA has been prepared as a deliverable under component *1* investments in infrastructure services

E.2 Scope of Works

Proposed: - Construction of 793m of R1 001, 477m of R2 001, 126m of R2 002, and 118m of R2 003 together with the accompanying storm water drainage systems, 2 no. High Mast Lights, 2no. Water kiosk, Elevated steel tank and a Vending platform as summarized in **Table E.1** below.

Table E- 1: Project Scope of Works

PROPOSED INFRASTRUCTURE	CODE ON MAP	DESCRIPTION	QTY
R1 Roads	R1 -001	6m carriageway, drainage and footpath on both side of the carriageway.	793 m
R2 Roads	R2 001	5.5m carriageway, drainage and footpath on one side of the carriageway.	477 m
	R2 002	5.5m carriageway, drainage and footpath on one side of the carriageway.	126 m
	R2 003	5.5m carriageway, drainage and footpath on one side of the carriageway.	118 m
Water and Sanitation	2 no. Water Kiosk, 108m^3 Elevated Tank & Ablution block		
Vending platform	1 no. Vending platform		
Security Lighting	2 no. High mast flood light, solar street lighting. 8m high poles, along R1 001, R2 001, R2 002 and R2 003 roads, with 63 luminaires, 2 Control Pillars and 1367 m main cable.		

Total Road	**1515 m**
Total footpath and Drainage Length	**2308 m**
Total Street lighting	**63 poles**

A map of target Settlement is presented in **Figure E.1** below

KEROKA BLOCK B SETTLEMENT LAYOUT

Figure E- 1: Layout of the Proposed Works

E.3 Legal Framework and Policy Provisions

The ESIA study preparation was guided by both national and international legal and policy instruments aimed at ensuring compliance with Environmental and Social Safeguards of the Kenyan Government and the World Bank. A summary of the instruments is presented box **E-1** below;

Box E-1: Legal and Policy Instruments

National Policies and Laws

1. Kenyan Constitution 2010
2. Kenya Vision 2030
3. Sustainable Development Goals
4. Gender Policy 2011
5. HIV and AIDS policy 2009
6. Kenya National Youth Policy 2006
7. Environmental Management and Coordination Act (EMCA), 1999
8. Water Act 2016 and subsequent regulations.
9. County Government Act no 17 of 2012
10. Urban Cities Act of 2011
11. Physical Planning Act 1996 (286)
12. Occupational Health and Safety Act (OSHA 2007)
13. The Public Health Act (Cap.242)
14. Workplace Injuries and Benefits Act 2007

International Instruments

1. Environmental Management and Social Framework (EMSF) KISIP 2 - 2019
2. Resettlement Policy Framework (RPF) KISIP 2 - 2019
3. World Bank OP 4.01 on Environment Assessment
4. World Bank OP 4.12 on Involuntary Resettlement
5. World Bank OP 4.11 on Physical Cultural Resources
6. World Bank Access to Information Policy 2015
7. World Bank Group Environment Health and Safety Guidelines on Water and Sanitation

E.4 Public and Institutional Participation

The assessment involved consultations with relevant stakeholders in the settlement. The aim of stakeholder consultations was to give a platform for information sharing and opinion gathering in relation to the proposed Project. Consultations were done in form of public meetings and key informant interviews. The issues were than analyzed and presented to design team for finalization of Project designs and planning on how best to implement the Project. The main meetings were held within the month of October 2023, attendance of the meetings was from diverse sectors of the society as summarized in **Table E-2** below.

Table E- 2: Schedule of Public Consultation

Date	Settlement	Stakeholder Consulted	Meeting Attendance
27TH October 2023	Keroka Block B Informal Settlement	Settlement Executive Committee members (SEC) for Keroka Block B Informal Settlement, Environment and Social Safeguards Team, Keroka Assistant chief, Rigoma Ward administrator, Rigoma Ward MCA, Overseer PAG Church Keroka and members of the community	Total 21 Male 16 Female 5

In Summary, issues discussed is presented are summarized below

- **Project Commencement Date** – Poor State of Infrastructure within the Settlements makes the residents appreciate the Project, the residents were informed that the Project will be implemented after completion of all relevant studies, including Engineering Designs and Environment and Social Assessment.
- **State of Infrastructure** – The residents emphasized poor state of Infrastructure in the settlements including Roads, Drainage, Solid Waste, Security, water and Sewerage.
- **Labour issues**; Local unskilled and skilled labour should be sourced from the local communities as much as possible
- **Water connection**; Residents requested for improved water supply and connection to the network that serves their area
- **Health and Safety;** Issues of occupational health and safety during construction period were emphasized, the community confirmed that they have an active first aid and public health and sanitation group and requested for involvement in the project during construction.

E.5 Potential Project Impacts

Benefits of Roads and Drainage Projects

(i) Creation of employment to people living within the informal settlements through improved access.
(ii) Improved living standard of people within the settlement through improved road infrastructure
(iii) Providing a linkage of the settlement to other parts of the city.
(iv) Provides alternative route to access the settlement, could be used during disaster times example by ambulances and fire engines.
(v) Enhanced access to social amenities like schools and health facilities within the settlement.
(vi) Improved roadside drainage hence reduced risks of flooding.
(vii) The Project will improve the living standard and well-being of the local economy through provision of road and street lighting within the settlements.

Benefits of Flood Lights

(i) The flood lights will lead to Improved Security within the settlement due to provision of floods within the settlement.
(ii) Improving the roads and street lighting infrastructure within the settlement will result to development of associate social services for example health facilities, learning institutions and recreational centre's which will eventually benefit the community.

Benefits of Social Amenities (Market, Public Park, Water and Ablution Block)

(i) The amenities will facilitate community interaction and engagements since they will serve as gathering points.
(ii) Encourage cultural promotion and diversity through the social halls.
(iii) Increased the County revenue through paying of taxes by the market vendors and ablution block operators.
(iv) Improve health, hygiene, and sanitation standards through having designated selling point and availability of washrooms within the settlement.
(v) Improvement of community livelihoods through increased trading in the new markets.

E.5.1 Negative Impacts and Mitigation Measures during Project Construction Period

E.5.3.1 Biophysical Environment Setting

The Project impacts on Biophysical environment setting of the Project area identified during the assessment is presented in **Table E.3** below.

Table E- 3: Negative Impacts on Biophysical Environment

Impacts on Vegetation Cover	**Associated Project Works and Level of Impact**	**Mitigation Measures Summary**
Loss of vegetation cover is minimal, vegetation cover within the settlement has been stripped off to provide space for construction of structures.	• Roads and Drainage minor impact	• The Contractor will ensure proper demarcation of the Project area to be affected by the construction works. • Strict control of construction vehicles to ensure that they operate only within the area to be disturbed by access routes and other works. • Where the proposed Project route requires the removal of any vegetation, care will be taken to minimize the destruction to marshlands;
Impacts on Soils		**Mitigation Measures Summary**
Soil Erosion Soil Erosion due to clearing of vegetation cover and reduced soil productivity	• Roads and Drainage - – medium impact • Water and Sewerage _medium	• The contractor to adhere to the proposed Soil conservation practices. • Proper and compacted back filling of excavated areas • The contractor to stick to clear delineation of the construction to avoid vegetation loss. • Planting of vegetation cover within the Project

Impacts on Vegetation Cover	Associated Project Works and Level of Impact	Mitigation Measures Summary
	impact	site.
Soil Compaction Soil compacting caused by construction equipment result in reduced water infiltration	• Roads and Drainage - – medium impact • Water and Sewerage _medium impact.	• Split compacted area to reduce runoff & re-vegetate where necessary. • Vehicles to be kept in designated access roads. • Minimize compaction during stockpiling by working the soil in dry state.
Soil Pollution Soil contamination caused by oils and fuel leaks from construction equipment result in increase in soil acidity.	• Roads and Drainage - – minor impact • Water and Sewerage _minor impact	• 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.
Impacts on Water Quality within shallow wells in the settlements		**Mitigation Measures**
Reduced water quality in shallow wells within the settlements.	• Roads and Drainage - – minor impact • Water and Sewerage _minor impact	• Checking on Equipment condition and Re-fuelling at safe locations, • Use of spill kits and applications of emergency spill procedures • Use of silt barriers and settling ponds on site • Storing of fuels, oils, and chemicals beneath impermeable away from surface drains • Deep soak pits for septic tanks with all water from ablution and toilets directed into the septic tank. • The machines to be properly serviced offsite and maintained to avoid spillage of effluents into the surface runoff channels.
Wastewater Management on Site	• Roads and Drainage - – minor impact • Water and Sewerage _minor impact	• Grey water to be contained and properly channelled on site. • Onsite treatment of grey water by the facility approved resident engineer and Environment Officer. • 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

Impacts on Vegetation Cover	Associated Project Works and Level of Impact	Mitigation Measures Summary
		case of any pollution incident.
Solid Wastes Management on Site	• Roads and Drainage - – minor impact • Water and Sewerage _minor impact	• 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, • Environmental Management, Health and Safety Training Programmes to be conducted for Contractor's Staff to create awareness on proper solid wastes management

E.5.3.2 Impacts on Social Environment Setting

The Project impacts on social environment setting of the Project area identified during the assessment is presented in T**able E.4** below.

Table E- 4: Anticipated Negative Impacts on Social Environment

Impacts	Associated Project Works and Level of Impact	Proposed Mitigation Measures
Labour Influx and sexual offences	• Roads and Drainage - – minor impact • Water and Sewerage _minor impact	• 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. • Comply to provisions of WIBA 2007 • Develop and implement a children Protection Strategy
Human Rights and gender inclusivity	• Roads and Drainage - – minor impact • Water and Sewerage _minor impact	• Mainstream Gender Inclusivity in hiring of workers and entire Project Management as required by Gender Policy 2011 and 2/3 gender rule. • Protecting Human Risk areas Associated with, Disadvantaged Groups, Interfering with Participation Rights, and interfering with Labour Rights
Increased	• Roads and	• Contractor and Supervision Team to liaise

Impacts	Associated Project Works and Level of Impact	Proposed Mitigation Measures
Crime and Insecurity	Drainage - – minor impact • Water and Sewerage _minor impact	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

E.5.3.3 Impacts on Health and Safety Setting

The project impacts on Health and Safety of workers and community in the Project area identified during the assessment is presented in **Table E-5** below.

Table E- 5: Anticipated Negative Impacts on Health and Safety Setting

Impact	Associated Project Works and Level of Impact	Proposed Mitigation Measures
Noise and Excessive Vibrations.	• Roads and Drainage - – medium impact • Water and Sewerage _medium impact	• Contractor will comply with provisions of EMCA 1999 (Noise and Excessive Vibrations Regulations of 2009) • The Contractor will keep noise level within acceptable limits (60 Decibels during the day and 35 Decibels during the night) and construction activities shall, where possible, be confined to normal working hours in the residential areas. • Hospitals and other noise sensitive areas such as schools shall be notified by the Contractor at least 5 days before construction is due to commence in their vicinity
Air Pollution and Dust Generation.	• Roads and Drainage - – medium impact • Water and Sewerage _medium impact	• The contractor shall comply to the provisions of EMCA 1999 (Air Quality Regulations 2014) • 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 contractor's specifications. • Water sprays shall be used on all earthwork's areas within 200 metres of human settlement especially during the dry season.
Risk of Accidents at Work Sites	• Roads and Drainage - – medium impact • Water and Sewerage _medium impact	• Contractor to provide a Healthy and Safety Plan prior to the commencement of works to be approved by the Supervising Engineer. • Provide Personal Protective Equipment including gloves, gum boots, overalls and helmets to workers, 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
Risk of Traffic	• Roads and	• Strict use of warning signage and tapes where

Impact	Associated Project Works and Level of Impact	Proposed Mitigation Measures
Accidents at workstations within the settlements	Drainage - – medium impact • Water and Sewerage _medium impact	the trenches are open and at other active construction sites. • Contractor to Employ and train Road Safety Marshalls who will be responsible for management of traffic on site. • Contractor to provide a Traffic Management Plan during construction to be approved by the Supervising Engineer

E.5.2 Project Specific Impacts during Project Operation

For purposes of better understanding the impacts of the projects during operation were further categorized into 4 categories namely;

1. Water and sewerage
2. Roads and drainage
3. Floodlights
4. Social Amenities – Water Supply, Ablution Block, Market and vending platforms.

Tables E-6 and E-7, below outline the anticipated impacts and mitigation measures during operation phase.

Table E- 6 : Anticipated Impact and Mitigation measure on Water and Sewerage

Impact	Proposed mitigation measure
Risk of encroachment on Sewerage pipelines and manholes	• Mapping and installation of beacons to illustrate the width of the pipeline reserve. • Regular patrol of the pipeline corridor for encroachment. • Prosecution of encroachers as required by County by Laws on way leaves and road reserves maintenance. • Conduct public sensitization programs on importance does not interfere with way leaves and public reserve land.
Health risks because of burst sewers	• Ensure proper and periodic maintenance of sewer lines and treatment plant. • Activate a community watch group for information sharing on the status of the sewer line. • Regular check, repair, and maintenance of the sewer line • Awareness rising among community members not to dump solids in manholes. • Regular cleaning of grit chambers and sewer lines to remove grease, grit, and other debris that may lead to sewer backups. • Development of an inventory of system components, with information including age, construction materials, and drainage areas served elevations. • Design manhole covers to withstand anticipated loads and ensure that the covers can be readily replaced if broken to minimize entry of garbage and silt into the system. Ensure sufficient hydraulic capacity to accommodate peak flows and

Impact	Proposed mitigation measure
	adequate slope in gravity mains to prevent build-up of solids and hydrogen sulphide generation
Environmental pollution due to sewage blockage	• Regular check, repair and maintenance of the sewer lines • Activate a community watch group for information sharing on the status of the sewer lines. • Awareness rising among community members not to dump solids in manholes. • Ensure embankments around the sewer ponds are properly done to prevent storm water mixing with the sewer. • Regular cleaning of grit chambers and sewer lines to remove grease, grit, and other debris that may lead to sewer backups. • Develop an inventory of system components, with information including age, construction materials, and drainage areas served including elevations. • Design manhole covers to withstand anticipated loads and ensure that the covers can be readily replaced if broken to minimize entry of garbage and silt into the system. • Ensure sufficient hydraulic capacity to accommodate peak flows and adequate slope in gravity mains to prevent build-up of solids and hydrogen sulphide generation.

Table E-7: Anticipated Impact and Mitigation measure on Roads and Drainage

Impact	Proposed mitigation measure
Increased Accidents associated with motorcycles over speeding within the settlement due to good roads	• Appropriate signage should be put up on the roads to warn drivers especially in areas where there are children or people crossing the road to reduce accidents. • The County Government to enlighten motorist and cyclist on importance of obeying traffic rules especially in residential areas. • The County Government to enlighten residents and school children on the importance of adhering to provisions of road safety rules. • Regular inspection and maintenances of the road by County Government of Nairobi to ensure the speed control parameters and signage are in good condition. • Regular crackdown, arrest and prosecution of motorists and cyclist who disobey road safety directions.
Pollution from fossil fuels from vehicles	• Encourage locals to use fuel efficient vehicles and other types such as those that run on electricity. • Encourage people do drive less and learn to use public means of transport and bicycles
Flooding due to poor drainage channels	• Maintenance of the drainage channels to ensure that there is no blockage of the channels
Loss of business associated with poor road condition during operation phase	• Regular maintenance and repair of the road by County Government, this should be through regular road marking, sealing of potholes, ensure road signage is in place among other operations

Table E- 7: Anticipated Impact and Mitigation on Floodlights

Impact	Mitigation measure
Risk of electrocution	• Ensuring that all the wires are appropriately insulated and are safe from causing harm to humans • Regular maintenance of the flood light to ensure all exposed electrical lines are repaired
May cause eye problem when there is bad lighting	• Ensure that the lighting system is proper to avoid flipping that can result to eye problems for people • Regular maintenance of the flood light to ensure efficiency

E.6 Environment and Social Assessment Finding

E.6.1: Environment Impact findings

(i) The environment and social screening identified that the KISIP Projects are classified as *Category B***.** This implies that the Projects will have less adverse impacts to natural and human environment; the impacts are easily reversible through appropriate mitigation measures provided in this assessment.

(i) The Environmental and Social Impact Assessment undertaken for the projects indicate that the investment will result in low impact on biological environment; however, the Projects triggers World Bank Operation Policy (OP) 4.01 on Environmental Assessment and (OP) 4.12 on Involuntary Resettlement. Chance Find Procedures will be applied to all works contracts as provided for by (OP) 4.11 on Physical Cultural Resources.

(ii) The Projects will have no impact on land; this is because the planned investments in the informal settlements will be implemented within road reserves. However, an abbreviated RAP prepared for the settlement identified 6PAPS Keroka Block B comprising of 3 business shed owners and 3 PAPs losing Shop Verandas. (asset register of the PAPs is presented as annex to this report)

(iii) The total budgetary requirements for for compensating the affected PAPs is provided as KSH. 111,665 (One Hundred and eleven thousand, six hundred and sixty-five shillings only).

(iv) Provisional Budget of Kenya Shillings One hundred and seventy thousand is required for implementation of mitigation measures of potential negative environmental impacts identified in the report. A separate budget is provided for RAP implementation.

MAIN REPORT

CHAPTER 1: INTRODUCTION

1.1 General Information

The Government of Kenya (GoK) through the Ministry of Lands Public Works, Housing and Urban Development (MoLPWH&UD) is implementing the Kenya Informal Settlements Improvement Project II (KISIP II). In Nyamira County. The infrastructure upgrade plan (Infrastructure Improvement) under KISIP II will include roads and drainage, secure lighting, Water and Sanitation and social amenities upgrading works. This will be funded by a credit from the World Bank (WB) through Interna Development Association (IDA) and Agence Française de Dévelopement (AFD). The target settlements in Nyamira County Kerock Block Bwhich is financed by IDA.

The socio- economic studies, feasibility studies, and the conceptual designs have been completed under the same consultancy. This Report therefore presents findings of Environmental and Social Assessment undertaken for the Proposed Projects, the report presents potential environment and social risks that are likely to be triggered by the Project, appropriate mitigation measures have also been provided in this assessment.

The project has the following four components as detailed in Table 1-1 below:

Table 1- 1: Schedule of Public Consultation

#	Component	Interventions
1	Component 1: Integrated settlement upgrading.	This component includes a combination of land tenure regularization and investments in infrastructure services.
2	Component 2: Socio-economic inclusion planning.	This component entails development of community-led plans based on socio-economic surveys, as well as linking identified vulnerable populations to existing safety net programs.
3	Component 3: Institutional capacity development for slum upgrading	This includes a set of activities designed to strengthen the capacity of Counties and National government institutions carry out slum upgrading and prevention.
4	Component 4: Program management and coordination	This component supports project management and coordination activities of both national and county governments - including fiduciary (financial management and procurement), environmental and social safeguards compliance, monitoring and evaluation, communication and community development.

This presents Environmental & Social Impact Assessment (ESIA) Report Comprehensive Project Report prepared for Upgrading of infrastructure in Keroka Block B Informal settlement, Nyamira County. The ESIA has been prepared as a deliverable under component *1* investments in infrastructure services

1.2 Scope of the ESIA Study

The NEMA regulations requires that all new projects, programmes or activities be subjected to an environmental and social impact assessment at the planning stages of the proposed undertaking to ensure that significant impacts on the environment are taken into consideration during the design, construction, operation and decommissioning of the Project.

1.3 Objectives of the EIA study

This ESIA assessment has been conducted in compliance with the Environmental Impact Assessment Regulation as outlined under the Gazette Notice No. 56 of 2003 of the Environmental Management and Coordination Act (EMCA), 1999 well as the World Bank OP 4.01 on Environmental Assessment. The Environmental & Social Impact Assessment (ESIA) is expected to achieve the following objectives discussed in box 1-1 below;

Box 1-1: EIA Objectives

- To identify all potential significant environmental and social impacts of the proposed Project and recommend measures for mitigation.
- To assess and predict the potential impacts during site preparation, construction and operational phases of the Project.
- To ensure compliance with environmental regulations.
- To generate baseline data for monitoring and evaluation of how well the mitigation measures will be implemented during the Project cycle.
- To allow for public participation as well as stakeholder Consultations.
- To develop an Environmental and Social Management Plan to mitigate the identified impacts so as to ensure sustainability of the proposed Projects.
- To recommend cost effective measures to be implemented to mitigate against the expected impacts.

1.4 Project Relevance and Justification

The decision to prioritize Keroka Block B Informal Settlement, as a focal point within the KISIP II (Kenya Informal Settlement Improvement Project Phase II) likely stems from a comprehensive evaluation of numerous factors. These considerations encompass social, economic, environmental, and developmental dimensions. Below are the discernible decisions and project justifications that underpin this choice:

1. **In-Depth Needs Assessment**: The selection of Keroka Block B Informal Settlement was based on the findings that the settlement is grappling with significant deficits in terms of infrastructure, housing, basic services, and overall quality of life. This was revealed through an in-depth needs assessment exercise that was conducted.
2. **Population Vulnerability**: priority was attributed to the vulnerability of its residents. Informal settlements frequently house marginalized and economically disadvantaged populations. Addressing the challenges faced by these vulnerable groups is in line with KISIP II's social objectives.
3. **Tailored Environmental and Social Analysis**: The Environmental and Social Impact Assessment (ESIA) process would have scrutinized distinctive characteristics. This analysis

could have identified the settlement's unique environmental vulnerabilities, social dynamics, and specific infrastructure deficiencies.

4. **Integration with National Goals**: The selection aligns with broader national development goals. Improving informal settlements supports overarching strategies for poverty alleviation, equitable urbanization, and enhanced living conditions.
5. **Community Engagement and Involvement**: Community engagement efforts likely influenced the decision-making process. Collaborating with local residents can unveil settlement-specific needs and help tailor interventions to align with community priorities.
6. **Infrastructure and Service Accessibility**: The feasibility of implementing infrastructure enhancements and basic services that would have been a consideration. The settlement's existing infrastructure and its potential for improvement likely shaped the decision.
7. **Local Government and Stakeholder Collaboration**: The support of local government and key stakeholders is pivotal for project success. The decision to target Keroka Block B could be influenced by the backing of local authorities and stakeholders, indicating a conducive environment for implementation.
8. **Equity and Social Justice**: Lakeview's selection may reflect a commitment to addressing disparities within the city. KISIP II's aspiration to uplift marginalized communities is consistent with broader aspirations of social justice and inclusivity.
9. **Learning and Replicability Potential**: The choice of Lakeview might be informed by its potential to be a learning experience for future projects. Insights garnered from Lakeview's development could be invaluable in guiding similar endeavors in other settlements.

To recap, the decision to center on the Keroka Block B Informal Settlement within the scope of KISIP II is grounded in a blend of factors. These factors encompass the settlement's unique challenges, alignment with national development objectives, social and environmental considerations, and the opportunity for meaningful impact. The ESIA process would have further honed this decision-making process by highlighting specific site-specific challenges and guiding the formulation of effective interventions to address them.

The construction project proposed within the informal settlement seeks to address critical infrastructural needs while adhering to the Environmental Management and Coordination (Environmental Impact Assessment and Audits) Regulations 2003 and their amendment regulations in 2019.

1.5 ESIA Assessment Methodology

The ESIA study was carried out based on desk review, field assessments and consultations with relevant County and National Government institutions as summarized below;

(i) Definition and Classification of Environmental and Social Impacts

An environmental or social 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 operation phases of the Project and at both stages positive and negative impacts would occur.

For each issue, the analysis is based on its nature, the predicted impact, extent, duration, intensity and probability, and the stakeholders and/or values affected. In accordance with best practice, the analysis includes issues relating to the Project's environmental and social sustainability. Appropriate Impact Rating has been presented for the situation without mitigation.

(ii) Impact Scoring and Rating Criteria

The potential impacts associated with the proposed development in the informal settlements have been preliminary assessed as presented in the matrix below. Precautionary principle was used to establish the significance of impacts and their management and mitigation i.e. where there is uncertainty or insufficient information, the Environmentalist opted to err on the side of caution.

Table 1- 2:: Environment and Social Impact Rating Criteria

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	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
Regional	3	Medium term	3	Medium	3	Likely	3	medium	3	medium	40-59	medium	0,6	medium	40-59
National	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
International	5	Permanent	5	High	5	High	5	High	5	High	80-100	low	1,0	low	80-100

Notes:[1]

Definition of Terms in the Table

Extent: An area of influence covered by the impact. In this sense, if the action produces a

[1]Environment and Social Impact Rating Developed by ESIA team for KISIP Projects in Nairobi and Nyamira County September 2023

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

Approach to Impact Mitigation and Management

The Assessment includes a description of the measures envisaged to prevent, reduce and where possible offset any significant adverse impacts on the environment. The identification of such measures is an interactive process which needs to be undertaken in parallel with the design to aid the incorporation of measures into the design during Project development. Early adoption of appropriate mitigation will help reduce significant environmental impacts to a practicable minimum.

1.5.1 Environment and Social Scoping

The scoping process involved identification of significant environmental and social issues associated with the proposed Works. ESIA Scoping was achieved through reviews of the secondary Documents and available data supported with field evaluations.

The process enabled the assessment team to determine the Project potential risks to Biophysical, Social, Health and Safety of the receptor environment around the proposed Project site. The impacts were determined to less significant and also the geographic scope of the impact was also determined to be less expansive, details of the impacts are discussed in chapter 7 and 8 of this report.

1.5.2 Desk Reviews

A desktop review was conducted prior to site visit. Documents reviewed are illustrated in **Box 1-2** below;

Box 1-2: Literature Review Documents

(i) Environmental Management and Social Framework (EMSF) KISIP 2 2019
(ii) Resettlement Policy Framework (RPF) KISIP 2 2019
(iii) Project Draft Conceptual Design Report (GA October 2023)

1.5.3 Field Assessment

The physical evaluation of the Project area was carried out within the month of September and October 2023 with specific focus on the environmental and social issues. The environmental issues assessed include,

(i) Biophysical environment (air, water, land)
(ii) Human health and safety
(iii) Traffic Management on Site
(iv) Social issues, including;
- ✓ Labour Influx Management,
- ✓ HIV and other Communicable Diseases Management.
- ✓ Gender and Youth Inclusivity and Empowerment,
- ✓ Human Right Protection and Grievance Redress Mechanism:

1.5.4 Stakeholder Consultations

The aim of stakeholder consultations was to give a platform for information sharing and opinion gathering in relation to the proposed Project. Consultations were done in form of public meetings and key informant interviews. The issues were than analyzed and presented to design team for finalization of Project designs and planning on how best to implement the Project. The main meetings were held within the month September 2023 attendance of the meetings was from diverse sectors of the society as summarized in **Table 1-2** below;

Table 1- 2: Schedule of Public Consultation

Date	Settlement	Stakeholder Consulted	Meeting Attendance
27TH October 2023	Keroka Block B Informal Settlement	Settlement Executive Committee members (SEC) for Keroka Block B Informal Settlement, Environment and Social Safeguards Team, Keroka Assistant chief, Rigoma Ward administrator, Rigoma Ward MCA, Overseer PAG Church Keroka and members of the community	Total 21 Male 16 Female 5

1.5.5 Social Infrastructure Mapping

Social mapping was undertaken while doing the community survey using full participation from the local administration and community. The focus of the process was to help in the depiction of location boundaries, roads, drainage systems, schools, drinking water facilities, source of drinking water, community infrastructure, etc. It focused on the spatial dimension of the people's realities as expressed in their background information. This process is done to

help in charting the various aspects related to land use and command areas, water bodies, rivers, drainage and health

1.5.6 Secondary Socio-Economic Data

This information was largely drawn from the Kenya National Bureau of Statistic, Nyamira County Integrated Development Plan (CDIP) 2018 -2022 and findings from field survey undertaken during Environmental and Social Impact Assessment (ESIA) process within the month of October 2023.

CHAPTER 2: PROJECT DESCRIPTION

2.1 Project Context

This chapter presents Project Interventions in the Keroka Block B Informal Settlements of Nyamira County, Environment and social screening was therefore based on Projects discussed under this chapter. The infrastructure Project are discussed in the below listed context

(i) Existing status of infrastructure within the target informal settlements observed during field visits.
(ii) Projects prioritization during the focused Group Discussions (FGD) undertaken during community consultations
(iii) Prioritized interventions in the Conceptual Design Report. (GA/NICHE October 2023)

2.2 Existing Status of infrastructure in Keroka Block B Informal Settlement

2.2.1 Roads and Footpath

Referring to draft Conceptual report prepared for the Project (GA/NICHE October 2023), the below listed summary is presented as the status of road and foot path in Keroka Block B informal settlement. The main roads within the settlement are murram/gravel, they form a clear network. Some sections of the roads flood during the rainy season which causes challenges to road users.

Table 2- 1: Status of Road and Foot Path in Keroka Block B Informal Settlement

Settlement	Access Road	Status of Access Road	Interior Settlement Roads	Characteristic of Road Network
Keroak Block B	Kisii – Sotik Highway	Bitumen Surface	Earthen	clear Network

2.2.2 Drainage Infrastructures

Storm Water Drainage as observed in Keroka Block B settlement was generally a haphazard network of open drains, characterized by overflow and during rainy Season. Existing status of drainage pattern is presented in table 2-2 below.

Table 2- 2: Status of Drainage in Keroka Block B Informal Settlements

Settlement	Drainage Network	General Slope	Alternative Drainage
Keroka Block B	Unclear network	Gently sloping	None

2.2.3 Solid Wastes Management

The table 2-3 below depicts a summary of the conditions of Solid Waste Management within Keroka Block B settlement.

Table 2- 3: Solid Waste Management in Keroka Block B Settlement

Settlement	Designated Garbage Collection Points	Alternative Dumping Ground
Keroka Block B	None	Most residents burn waste within their homesteads however there is an illegal dumping site behind Keroka Police station.

2.2.4 Water Supply

Keroka Block informal Settlement has access to county supplied water Through Gusii Water and Sanitation Company (GWASCO) however residents complain of irregular water supply.
Table 2-5 below

Table 2- 5: Water Supply Situation

Settlement	City County Supply	Access to City County Supply	Presence of Water Vendors	Illegal Connections
Keroka Block B	GWASCO	✓	✓	✓

2.2.5 Lighting and Electric Network

Socio-economic study undertaken as part of this assignment, it was found that up to 90% of the residents in Keroka Block B have access to electricity through the main grid. A small number of residents in the settlements have no access to connections due high cost of connection.

Table 2- 6: Lighting and Electric Network

Settlement	Kenya Power Connections	Illegal Networks	Street Lighting	Light Masts/Flood Lighting
Keroka Block B	✓	✓	Not functional	None

2.3 Projects prioritization during the focused Group Discussions (FGD)

2.3.1 Keroka Block B Informal Settlement:

Table 2-11 below presents a summary of Project prioritization presented by Community following Community Consultation Forums.

Table 2- 12: Keroka Block B Informal Infrastructural Prioritization

PRIORITY 1	PRIORITY 2	FGD Meetings
Roads	Street Lighting/Flood masts	Roads
Water supply	Sewerage	Solid Waste Management
Solid Waste Management	Water Supply	Flood masts/Street Lighting
Street Lighting	Solid Waste Management	Storm Water Drainage
Storm Water Drainage	Storm Water Drainage	Sewerage
Sewerage	Electricity	Water Supply

2.4 Prioritized interventions

Based upon the priorities defined previously by communities; our discussions with the County Government; our analysis of the existing situation; as well as interrelations between infrastructure components, we now propose in this chapter the direction to our design works as well as the key issues to be addressed during the next design phase.

The Conceptual Design for Keroka Block B informal settlements shall focus on the following priorities:

1. **Roads and drainage**: upgrade of the road network (main access roads and the interior network) in the target informal settlements to bitumen standards, and construction of storm water drains.
2. **Street lighting and Supply of Electrical Power**: Implementation of flood masts within the settlement. Implementation of renewable sources of electricity through provision of solar street lighting.
3. **Water Supply**: Evaluating the need to reinforce the existing network and improving household connection and construction of water Kiosks.

2.5 Projects adopted and presented in the Design Report

Proposed: - Construction of 793m of R1 001, 477m of R2 001, 126m of R2 002, and 118m of R2 003 together with the accompanying storm water drainage systems, 2 no. High Mast Lights, 2no. Water kiosk, Elevated steel tank and a Vending platform as summarized in **Table 2.7** below.

Table 2- 7: Project Scope of Works

PROPOSED INFRASTRUCTURE	CODE ON MAP	DESCRIPTION	QTY
R1 Roads	R1 -001	6m carriageway, drainage and footpath on both side of the carriageway.	793 m
R2 Roads	R2 001	5.5m carriageway, drainage and footpath on one side of the carriageway.	477 m
	R2 002	5.5m carriageway, drainage and footpath on one side of the carriageway.	126 m
	R2 003	5.5m carriageway, drainage and footpath on one side of the carriageway.	118 m
Water and Sanitation	2 no. Water Kiosk, 108m^3 Elevated Tank & Ablution block		
Vending platform	1 no. Vending platform		
Security Lighting	2 no. High mast flood light, solar street lighting. 8m high poles, along R1 001, R2 001, R2 002 and R2 003 roads, with 63 luminaires, 2 Control Pillars and 1367 m main cable.		
Total Road			**1515 m**
Total footpath and Drainage Length			**2308 m**
Total Street lighting			**63 poles**

A map of target Settlement is presented in **Figure 2.1** below

KEROKA BLOCK B SETTLEMENT LAYOUT

Figure 2- 1: Layout of the Proposed Works

2.6 Design interventions to improve infrastructure resilience.

Table 2-8 below presents Design interventions to improve infrastructure resilience.

Table 2- 8: Design interventions to improve infrastructure resilience

No.	Climate Change Influence	Design intervention
1.	Mitigation efforts towards the reduction of carbon emission during construction	The pavement structure of the roads is designed to use locally available construction materials e.g. gravel, hand packed stones and quarry dust, river sand etc. This reduces the carbon emission by the vehicles since the materials transportation and haulage distances are reduced.
2.	Mitigation efforts towards the reduction of carbon emission during use upon commissioning	The roads design is akin to the 15 minute neighborhood model by Carlos Moreno which is an urban planning concept where neighborhoods provide residents with the basic things they need — shops, schools, parks, leisure options, health care — within a 15-minute radius by foot or bike, usually referred to as active mobility. The roads are designed with cyclist and pedestrian paths to reduce dependency on vehicles thus creates a mono active mobility where people tend to walk more than they drive. This ultimately reduces the carbon emission as they use less motorized transport system. It also promotes social inclusion and interaction thereby improving their overall well-being as per Jeremy Bentham's utilitarianism model.
3.	Flooding	Sizing of the drains and culverts to accommodate the design storm for the entire upstream catchment area has been done to accommodate both extreme situations and mild cases through provision of relief gates hence a faster evacuation of flood waters out of the settlements. In settlements that are likely experience flooding, the finished road level (FRL) is designed above the adjacent ground level. Providing tree covers by planting trees and permeable hand packed stones absorbs part of the water runoff hence reducing flooding. Check walls are placed within the drainage channel to trap solids and debris for efficient flood water flow.
4.	Urban greening for aesthetics and reduction of urban heat island (UHI)	Green urban spaces, provide a wide range of benefits for people and the planet. They provide vital space for physical and mental wellbeing and a very important habitat for nature, including for birds and pollinators. Green space helps reduce air, water and noise pollution, provides protection from flooding, droughts and heat waves among others. This has been integrated in the design to bring nature back to the settlements through; ➢ Planting of trees ➢ Planting grass ➢ Use of colored paving blocks interspersed with green grass at the joints, hence projecting a green view on birds eye.
	Mitigation efforts towards	Nyamira County KISIP Team has promised to introduce sustainable practices in the transport and mobility for

5.	Greenhouse gases emission by motor vehicles	example, use of electric vehicles for inter commute and capacity building in climate proofing through continuous mainstream of the facility.

2.7 Construction Materials

Locally available Construction Materials

The designs identified locally available materials sources and through laboratory testing, and categorized their technical suitability. The design also realized the suitable sources of other construction materials such as aggregates, sand and construction water, and adopted the approach of specifying the required quality such materials.

Pavement structure

The pavement structure design was in light of the findings of the traffic study, subgrade strength, and type and strength characteristics of locally available construction materials. Based on projected traffic loading and subgrade strength, the following traffic structures have been proposed.

Table 2- 9: Alternative 1 – Type – LVII (LVSR)

Vehicular Carriage way + Shoulders			Pedestrian Foot paths
1		50 mm thick Surfacing - A.C 0/20	60 mm thick paving blocks
2		150 mm thick Hand Packed Stone base course	150 mm thick Hand Packed Stone base course
3		125 mm thick sub-base - Cement Improved Gravel Sub-base (4% cement maximum)	125 mm thick sub-base - Cement Improved Gravel Sub-base (4% cement maximum)
4		Improved subgrade to minimum class S3	Improved subgrade to minimum class S3

Table 2- 10: Alternative 2 – Type 7 (RDM Part III)

Vehicular Carriage way + Shoulders			Pedestrian Foot paths
1		50 mm thick Surfacing - A.C Type II (instead of SD recommended in RDM Part III).	60 mm thick paving blocks
2		125 mm GCS class C (0/40)	150 mm thick Hand Packed Stone base course
3		100 mm thick sub-base - Cement Improved Gravel Sub-base (4% cement maximum)	125 mm thick sub-base - Cement Improved Gravel Sub-base (4% cement maximum)
4		Improved subgrade to minimum class S3	Improved subgrade to minimum class S3

Alternative 1 recommended:

- Hand Packed Stone is labour intensive and technology easily mastered by semiskilled labour and will offer employment to locals.
- Can be trafficked immediately after laying.

2.8 Project Cost

The project cost as presented in the design report is presented in table below

Table 2- 5:Project Cost

Settlement	Roads, footpaths, drainage	security lighting	water and sanitation	social amenities	dayworks	bill 1	bill 28	CONTRACT 1 TOTALS
Mosoriot Site & Service	118,502,834.58	7,461,195.50	17,443,465.60	39,079,700.00	4,197,875.00	11,862,400.00	7,604,781.25	206,152,251.93

CHAPTER 3: ANALYSIS OF ALTERNATIVES

3.1 Project Alternatives

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.

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 neighboring land users.

The sub chapter below presents the considerations that were analyzed in determining feasible alternatives for the proposed Project as listed below.

(i) Settlement size and density: larger and denser settlements chosen receive priority to ensure that as many people as possible benefit from the investments.
(ii) Scale of potential displacement of residents: physical upgrading of the settlement should not entail large-scale displacement (and, thereby, relocation) of residents.
(iii) Land tenure status: a settlement must be located on land that is owned by the government planned under Component 2 and PDP or LPDP issued.
(iv) Location: a settlement cannot be located on a hazardous site or in an environmentally fragile area.
(v) Proximity to trunk infrastructure: to maximize settlement coverage within a limited budget and to ensure that participating settlements receive connections to the main infrastructure networks and maintenance systems, in the initial years of project implementation settlements that are in close proximity to core trunk infrastructure on the main road was a consideration.
(vi) Sustainability of the proposed rehabilitation is ensured through community's willingness to participate and remain engaged in the program.

3.2 KISIP Investments Identification

In the case of KISIP, identification and selection of investments, was a reflection of the community felt needs, as guided by given the following principles:

(i) The service should be selected from the agreed investment menu.
(ii) The investment should be a priority specified in the Physical Development Plan (PDP) of the County.
(iii) The chosen infrastructure investments should be economically justifiable.
(iv) Arrangements for operations and maintenance must be sound and give confidence that service delivery will be sustainable.

(v) Environmental and social impacts of infrastructure investments are positive.
(vi) Budget and per hectare cost must be within agreed limits.

3.3 Project Option Alternatives

The Project option as described in the ESIA is recommended as it will achieve significant improvements in lives of people working and living in informal settlements.

i) Roads and Footpath Alternatives

The proposed project will be constructed using modern, locally and internationally accepted materials to achieve public health, safety, security and environmental aesthetic requirements. The roadworks will be made using locally sourced materials that meet the Kenya Bureau of Standards requirements.

The alternative technologies available include the conventional concrete roads, prefabricated concrete panels, Tarmacked roads or even improved marram roads. These may not be desirable from a cost and durability perspective.

On the part of foot paths, can have an alternative of marram road, tarmacked or use of cabros.
The technology to be adopted i.e. tarmacked roads and cabros for footpaths will be the most economical and one sensitive to the environment. The other options will be expensive and environmental degrading due to material to be utilised and dust generation during the time of use.

ii) Lighting and electric Alternatives

High mast lights alternatives

The poles for high mast lights are often much taller than flood lights. The larger the area that you want to illuminate, the higher up your lights will need to be mounted (if you want to keep the total amount of poles to a minimum). Therefore, high mast lights are often the go-to option when illuminating large areas. It is commonly used to illuminate large areas from a very high mounting height, typically on poles ranging in height from 50ft to 150ft and are mounted to those poles via Fixed Rings or Lowering Devices. High mast lights are the ideal option when you want to illuminate a large area with less poles. LED high mast lights are currently the most cost effective and efficient way of providing even and controlled illumination of large outdoor areas due to the high mounting height and multiple luminaire configuration. This option has been adopted to illuminate the settlement of Keroka Block B. However, they are prone to vandalism.

Flood light Alternatives

Flood lighting is also used for exterior lighting and is typically mounted on poles or buildings to provide directional illumination to a variety of areas. The fixtures on flood lights can be mounted at a variety of angles, distributing the light accordingly.

Flood Lighting Applications: This type of lighting is often used to provide light to areas for security, vehicle & pedestrian use, as well as used for sports activities and other large areas in need of targeted outdoor illumination.

Flood lights typically have a mounting height of approximately 15ft-35ft, however, in several applications they can have a pole height greater than the typical max (although rarely reaching the height of high mast lighting). A closer distance will not need a long-range narrow beam, so a wider flood beam will be best. To illuminate an area at a further distance, a narrower, farther-reaching beam is necessary. This option has not been utilized due to the limitation of the area to be illuminated.

Power source alternatives;

Solar powered alternative

The high mast lights and the flood lights need power sources to light up a night. The option of solar power will require solars and batteries for storage of power during the day and be used up at night. The initial cost is high but operation wise, it is sustainable as you are utilizing the renewable energy. It is however prone wear and tear as the time goes by. In addition, they are prone to vandalism. This is the reason why the option was not chosen.

Electricity Grid alternative

This option involves connecting the street lighting to electricity from the grid. This option was chosen because of the already existing power sources within the project areas.

Hybrid system alternative

This alternative involves connecting the streetlights to the Kenyan grid together with solar power alternative. This alternative has a backing in that it utilizes also the renewable energies and also the system can work when there is power blackout in the settlement. However, the alternative was not adopted due to vandalism of solar and their batteries that will render the system un-functional.

iii) Alternative on material and design

Certainly, there are several alternative technologies that can be considered for the design and construction of roads, drainage systems, floodlights, sewer lines, and water pipelines. These technologies often prioritize efficiency, sustainability, and cost-effectiveness. Here are some alternatives to traditional methods:

1. **Road Construction:**
    - **Recycled Materials:** Using recycled materials like reclaimed asphalt pavement (RAP) and recycled concrete aggregate (RCA) can reduce the demand for virgin materials and lower costs.
    - **Porous Pavements:** Porous asphalt or concrete allows water to pass through, reducing runoff and aiding in groundwater recharge.
    - **Geo synthetics:** Geo synthetic materials like geotextiles and geo grids can enhance road stability, reduce erosion, and increase lifespan.
    - **Warm Mix Asphalt:** This technology allows asphalt to be produced and placed at lower temperatures, reducing energy consumption and emissions.
    - **Ues of virgin materials for construction of the roads;** this option uses the required materials from their processed form. They are durable and makes the road last long.

2. **Drainage Systems:**
    - **Bio retention Cells:** Also known as rain gardens, these landscaped areas collect and treat storm water naturally, promoting filtration and reducing the burden on traditional drainage systems.
    - **Permeable Pavement:** Permeable surfaces like permeable concrete or interlocking permeable pavers allow water to infiltrate, reducing runoff and erosion.
3. **Floodlights:**
    - **Materials for poles:** Utilising concrete poles for the lood mast or using Aluminium materials. Also using Iron is an option. Aluminium was chesen due to its light nature. Iron material is prone to rust and vandalism.

3.4 Land Requirement

The projects have been designed to only utilize the road reserves as designated on the Physical Development Plans (PDPs) developed by KISIP Component 2 for the targeted settlements. No private land will be acquired for the project. This has significantly minimized displacement of populations and livelihoods as a result of the Project and the need to carry out resettlement. A separate RAP has been prepared for the Project components which have an impact to people's assets and sources of livelihood.

3.5 Chosen Alternatives from KISIP Menu

The Project designs were prepared for each of the infrastructure priorities identified by the communities in the settlement during the socio-economic assessment and priority validation forums organized by the design consultants. Factors that determined the choice and design of the infrastructure were based on:

(i) Defining technical, social and environmental feasibility.
(ii) Detailing design standards for each infrastructure component.
(iii) Estimating quantities.
(iv) Preparing unit cost rates and a feasibility design cost estimate.
(v) Evaluating O&M issues and potential costs.
(vi) Revising the scope of the infrastructure components if required.

3.6 No Project Alternative

The No Project Option in respect to the proposed Project implies that the status quo is maintained. The no Project option is the least preferred option from the socio-economic and partly environmental perspective due to the following factors:

(i) There will be no improved accessibility and mobility within the settlements.
(ii) There will be no improved drainage system within the settlements.
(iii) There will be no improved Health and Sanitation within the settlements.
(iv) There will be no improved living standard/well-being, employment and local economy in the target settlements.

(v) There will be no creation of employment both during construction and operation phases of the projects.
(vi) There will be no increased Land Value within the settlements.
(vii) There will be no improved Access to Social Services within the settlements.

From the analysis above, it becomes apparent that the No Project alternative is not preferred by the community.

CHAPTER 4: POLICY, LEGAL AND INSTITUTIONAL FRAMEWORK

4.1 Introduction

The prioritized Investment under KISIP will be implemented under several Laws, By-laws, Regulations and Acts of Parliament, as well as Policy Documents and. This section is therefore aimed at assessing the existing policies and legislative framework, economic tools and enforcement mechanisms for the management of infrastructure projects at different stages.

4.2 Policy Provision

The proposed investments will be implemented within provisions of various government policies as summarized in **Table 4-1** below; detailed review of the policies will be presented in the ESIA report.

Table 4- 1: Policy Framework

No	Policy	Applicability
1	Constitution of Kenya 2010	The constitution of Kenya provides for sound management and sustainable development of all of Kenya's Projects, both public and private investments. It also calls for the duty given to the Project proponent to cooperate with State organs and other persons to protect and conserve the environment as mentioned in Part II.
2	Kenya Vision 2030	Kenya Vision 2030 is the current national development blueprint for period 2008 to 2030. The Project will directly contribute towards achievement of objectives of vision under the environment and social pillar through provision of the planned water investments under the master plan.
3	National Environment Policy (NEP)	The revised draft of the National Environmental Policy, dated April 2012, sets out important provisions relating to the management of ecosystems and the sustainable use of natural resources. During construction and operation phases ESMP will be implemented, this will ensure that the ecosystems are not destabilized by the subsequent Project activities.
4	HIV and AIDS Policy 2009	The Policy will be complied with during implementation of the Project, the Contract will in cooperate in tender document and implement HIV awareness initiatives during construction of the Project.
5	Gender Policy 2011	This policy will be referred to during Project implementation especially during hiring of staff to be involved in the project, procuring of suppliers and sub consultants and sub-contractors to the project
6	The Sustainable Development Goals (SDGs)	The concept of the SDGs was born at the United Nations Conference on Sustainable Development, Rio+20, in 2012. The objective was to produce a set of universally applicable goals that balances the three dimensions of sustainable development: environmental, social, and economic. The Investments will therefore contribute towards achieving this goal through the proposed water distribution network project
7	Kenya National Youth Policy 2006	The National Youth Policy 2006 aims at ensuring that the youth play their role, alongside adults in the development of the country. The National Youth Policy visualizes a society where youth have an equal opportunity as other citizens to realize their fullest potential, KISIP Projects will provide direct employment to the youth as required by the policy.

No	Policy	Applicability
8	Eviction Guidelines 2017	The Government shall ensure that evictions only occur in exceptional circumstances. Evictions require full justification given their potential extremely negative impact on a wide range of international recognized human rights. Under KISIP no evictions are anticipated, RAP will be prepared, and appropriate compensation and livelihood restoration provided to PAPs

4.3 Kenyan Legislations

The proposed investments will be implemented within provisions of various Acts of parliament as summarized in **Table 4-2** below; detailed review of the Acts will be presented in the ESIA report.

Table 4- 2: Acts of Parliament

No	Policy	Applicability
1	EMCA 1999	The Act provides for the establishment of a legal and institutional framework for the management of the environment, this is achieved through various regulations. For KISIP projects the below listed EMCA regulations will be applicable. (i) EMCA (Waste Management) Regulations, 2006 Legal Notice No. 121; (ii) EMCA (Water Quality) Regulations, 2006 Legal Notice No. 120; (iii) EMCA (Noise and Excessive Vibration Pollution) (Control) Regulations, 2009 Legal Notice No. 61; (iv) EMCA (Air Quality Regulations 2014)
	The Environmental (Impact Assessment and Audit) Regulations, 2003	The regulation provides a framework under which Environment and Social Impact Assessment for the Project will be prepared, Regulation 4(1) further states that: (a)''…no Proponent shall implement a project: 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 Regulations…''
	Environmental Management and Coordination (Water Quality) Regulations, 2006	Regulation 9 of these regulations provides for water quality monitoring. It states that the "Authority in consultation with the relevant lead agency, shall maintain water quality monitoring for sources of domestic water at least twice every calendar year and such monitoring records shall be in the prescribed form as set out in the second schedule to these regulations".
	(Waste Management Regulations, 2006	Regulation 4 (1) states that "no person shall dispose of any waste on a public highway, street, road, recreational area or in any place except in a designated receptacle". Regulation 4 (2) further states that "a waste generator shall collect, segregate and dispose such waste in the manner provided for under these regulations". The proponent will use provisions of this regulation to ensure that waste is handled, stored, transported and disposed as per this regulation.
	Conservation of Biological Diversity and Resources, Access to Genetic	This legislation aims at enhancing preservation of biodiversity and safeguarding of endangered and rare plant and animal species within any human activity area. Section 4 of the legislation expressly prohibits any activity which may have adverse effects on any ecosystem, lead to introduction of alien species in a given area or result in unsustainable utilization of available ecosystem resources.

No	Policy	Applicability
	Resources and Benefit Sharing) Regulations, 2006	
	Noise and Excessive Vibration Pollution (Control) Regulations, 2009	The contractor will be required to ensure compliance with the above regulations in order 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 by vehicles. The regulations provides for a maximum of 60dcl during the day and 35 dcl during the night for a construction site.
	(Wetlands, Riverbanks, Lake Shores and Sea Shore Management) Regulations, 2009	This is a supplementary legislation to EMCA with particular emphasis on management of wetland and wetland resources, riverbanks, lake shores and Sea shores. Sections 4 and 5 of Part II as well as sections 16, 17, 18 of part III of the legislation provide guidelines for conservation and sustainable use and conservation of the said environmental components and enhance them where necessary when carrying out any activity therein.
	The Environmental Management and Coordination (Air Quality Regulations 2014)	These regulations provide a framework for Management of plant and equipment emissions of hydrocarbons on site. The regulations require that all plant and equipment on site should be well serviced to manufacturers specifications to avoid air pollution, the regulation also require monitoring of baseline air quality within construction site and implementation of correction action where the standards are not complied to. Water spray will be used at all times when working in dry areas to avoid risks associated with dust menace.
2	Land Act 2012	It is the substantive law governing land in Kenya and provides legal regime over administration of public and private lands. It also provides for the acquisition of land for public benefit. The government has the powers under this Act to acquire land for projects, which are intended to benefit the general public. The projects requiring resettlement are under the provision of this Act. KISP will trigger minor disturbance to people's assets and sources of livelihood, a RAP will be prepared.
2	Water Act 2016	The Water Act 2002 was amended in the year 2016 to align to the Kenyan Constitution 2010, the Act vest the responsibility of developing water and Sanitation infrastructure to NAWASCO This implies that during implementation of Water and Sewerage Project adequate collaboration between KISIP implementing unit and NAWASCO will be required.
3	County Government Act No. 17 of 2012	The proposed Projects will be implemented within Nyamira County Government informal settlements. Part II of the Act empowers the county government to be in charge of function described in Article 186 of the constitution, (county roads, water and Sanitation, Health). The Projects once complete will be handed over to County Government for operation and maintenance.
4	Physical Land Use and Planning Act 2019	Section 29 of the said Act empowers the local Authorities (now county governments) to reserve and maintain all land planned for open spaces, parks, urban forests and green belts as well as land assigned for public social amenities. KISIP projects will be implemented with Part Development Plans (PDP) developed by the County Governments through the support of Component 2 of KISIP Project which deals with planning and land tenure.
5	The Urban Areas and Cities Act	This law passed in 2011 provides legal basis for classification of urban areas (City) when the population exceeds 500,000; a municipality when it

No	Policy	Applicability
	2011	exceeds 250,000; and a town when it exceeds 10,000) and requires the city and municipality to formulate County Integrated Development Plan (Article 36 of the Act). KISIP Projects are within Nyamira County CIDP 2018 - 2022.
6	Occupational Health and Safety Act (OSHA 2007)	The Act provides EHS 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 neighboring community.
7	The Public Health Act (Cap.242)	The Act provides guideline 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 1999 for utmost compliance.

4.4 Institutional Structure Arrangement

The proposed investments will be implemented within in liaison with various government institutions mandated to provide various services to the public under various Acts of parliament. Relevant government institutions and their role is presented in **Table 4-3** below.

Table 4- 3: Institutions Assessment

No	Policy	Applicability
1	MoLPWH&UD	Ministry of Transport, Infrastructure, Housing and Urban Development (MoLPWH&UD) is the government ministry responsible for policy formations and implementation in matters related to Transport, Infrastructure, Housing and Urban development. The ministry has established KISIP implementing unit which is responsible for planning and implementing KISIP Project across the county. KISIP is headed by a National Coordinator who is support by various team of experts in the field of: Engineers, Procurement, Sociology, Environment, Monitoring, and evaluation.
2	County Government of Nyamira	The County Government assists KISIP implementing unit to implement the Project, County Governments has also established a County Government KISIP implementation unit. The role of developing and approving of the Physical Development Plans (PDPs) is the function of the County Government through the assistance of KISIP component 2 which deals with planning and land tenure.
3	GWASCO	Gusii Water and Sanitation Company (GWASCO) is the Water Service Providers (WSP) wholly owned by Nyamira County, the (WSP) assists in developing water and sanitation designs as well as operating water and sanitation infrastructure after Project completion.
4	Kenya Power	This is a government company charged with responsibility of distribution and managing electric power with the city. During implementation of the Project Kenya Power will be consulted regularly in areas where power installations require relocation.
5	WRA	Water Resources Authority (WRA) is a government parastatal under the Ministry of Water mandated to manage water resources including rivers. WRMA will be consulted regularly in situations where river crossing will be required.

No	Policy	Applicability
6	KURA	Kenya Urban Roads Authority is a government parastatal under Ministry of Transport, Infrastructure, Housing and Urban Development (MoLPWH&UD. KURA will be consulted regularly where KISIP investments require road crossing
7	NEMA	National Environment Management Authority (NEMA) is a government parastatal under Ministry of Environment mandated to Manage Environment. NEMA will be responsible to approve and license the projects and conduct inspections during project implementation to ensure compliance to provisions of Environment license.

4.5 World Bank Policies

The assessment adopted the standard guideline of the World Bank Safeguard policies in environmental and social screening for the project. The project was therefore checked against the below listed safeguards policies and discussed below in **Table 4-4**;

Table 4- 4: Analysis of potential triggers to World Bank Safeguards Policies

World Bank Operation Policy	Applicability to the Project
Environmental Assessment OP 4.01	This policy is triggered due to proposed KISIP project interaction with natural and human environment. Also, KISIP Projects have been categorized as B which implies that the project impacts are less adverse but require Environment Assessment which defines appropriate mitigation measures.
Involuntary Resettlement OP 4.12	The proposed KISIP project will result to minor impacts to people's assets and sources of livelihood due to population density in the informal settlements. RAP be prepared and implemented prior to commencement of proposed works.
World Bank World Bank Access to Information Policy 2015	The ESIA will be prepared with meaningful stakeholder engagement with the aim of complying with the provision of the policy which requires, maximizing access to information, Setting out a clear list of exceptions, Safeguarding the deliberative process and Providing clear procedures for making information available.
World Bank Group Environment, General Health and Safety Guidelines	The ESIA will be prepared within provisions of general Health and Safety Guidelines
World Bank Group Environment Health and Safety Guidelines on Water and Sanitation	The ESIA will be prepared within provisions of water and sanitation Health and Safety Guidelines

CHAPTER 5: BASELINE INFORMATION OF TARGET SETTLEMENTS

5.1 General Information

The Project target upgrading of infrastructure in Keroka Block B informal settlement in Keroka town, the target settlement is as summarized in table 5-1 below.

Table 5- 1: Target Settlements

Location in Nyamira County	Settlement
Keroka Town	Keroka Block B Informal Settlement

Keroka is a town located in Kenya's Nyamira and Kisii counties. It is the largest town in Nyamira county after Nyamira Town. It lies in the middle of Kisii-Sotik highway and serves as a trading and administrative post. It's about 280 Kilometers from Nairobi with the gps coordinates of 0° 46' 37.6104'' S and 34° 56' 45.0204'' E. and elevation of about 2063.161 metres above sea level. Keroka is predominantly rural, but its urban population is increasing as Nyamira and Kisii is growing rapidly. With its high population, the county has a good source of labor for industrial production and agricultural value addition or the services sector. The county also has good tourist attractions and forest resources conducive for eco-tourism, camping and expedition sites

5.2 Physical Environment

5.2.1 Climate

Nyamira county has a bimodal pattern of annual rainfall that is well distributed, reliable and adequate for a wide range of crops. Annual rainfall ranges between 1200 mm-2100 mm per annum. The long and short rain seasons start from December to June and July to November respectively, with no distinct dry spell separating them. The maximum day and minimum night temperatures are normally between 28.7 C and 10.1 C respectively, resulting to an average normal temperature of 19.4 C which is favorable for both agricultural and livestock production.

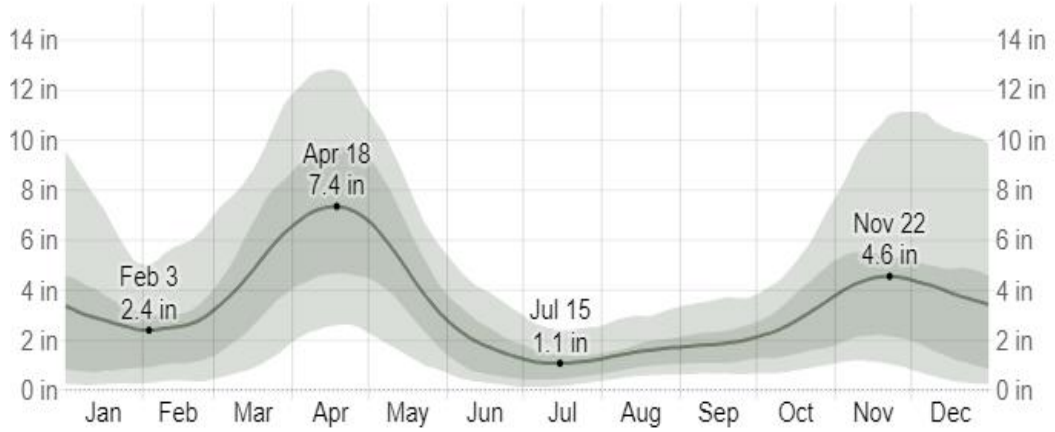


Figure 3- 1: Average Monthly rainfall of Keroka Town.

5.2.2 Topography

The purposes of this report, the geographical coordinates of Keroka are -0.776 deg latitude, 34.945 deg longitude, and 6,745 ft elevation. Keroka contains very significant variations in elevation, with a maximum elevation change of 827 feet and an average elevation above sea level of 6,651 feet. Within 10 miles also contains very significant variations in elevation (1,709 feet). Within 50 miles contains very significant variations in elevation (4,934 feet).
The area within 2 miles of Keroka is covered by cropland (52%) and trees (46%), within 10 miles by cropland (58%) and trees (34%), and within 50 miles by cropland (39%) and trees (23%).

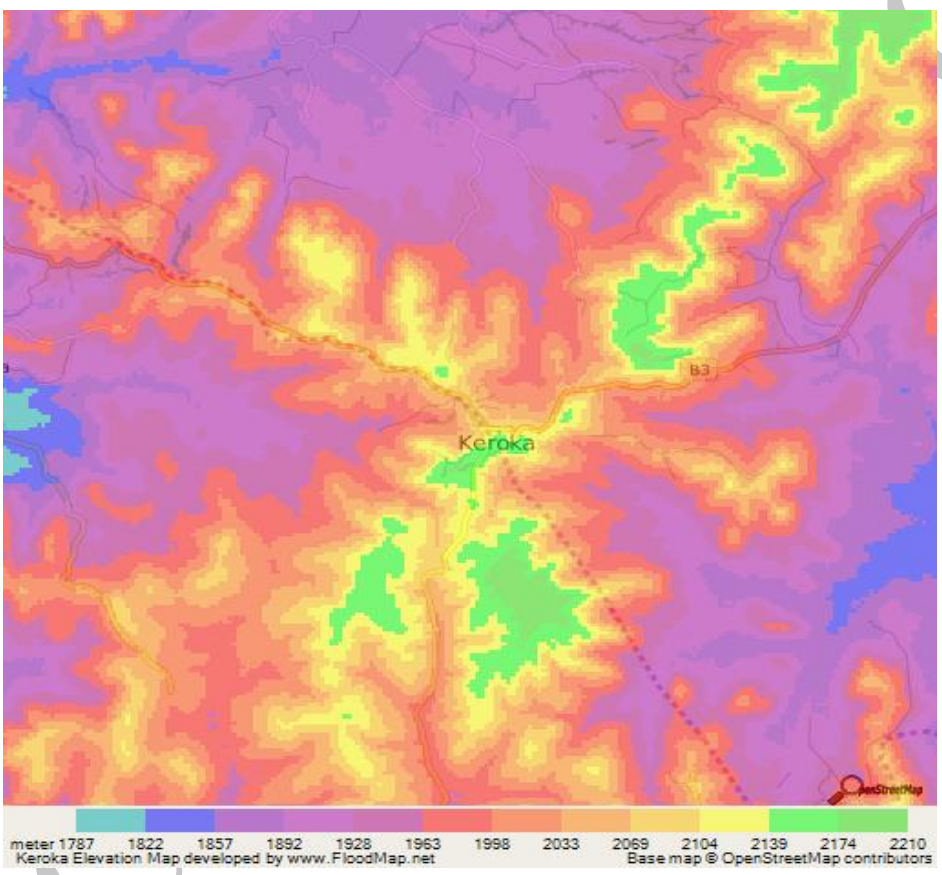


Figure 5- 2: Elevation Map of the Project Area

5.2.3 Soils and Geology

The major types of soil found in the County are red volcanic (Nitosols) which are deep, fertile and well-drained accounting for 85 per cent while the remaining 15 per cent are those found in the valley bottoms and swampy areas suitable for brick making. Though the red volcanic soils are good for farming, they make construction and road maintenance expensive.

5.2.4 Hydrology

In general, surface water resources of the catchment can be said to be fresh and non-saline with occasional high colour and turbidity. Surface waters are mainly of fair values of organic pollution (Omari, 1986). The groundwater resources of the Gucha catchment are vast and of good quality. Within the catchment, sections which are covered by the Kavirondian volcanics yield 870 m3 of water per hour. Those which are covered with volcanic tuff, agglomerates and post-intrusive granites yield 7835 m3 of water per hour (Ongwenyi, 1983).

Groundwater aquifers within the catchment lie at a depth of between 13 and 60 m Impact of hydrological and land use processes on water quality in southwest Kenya 81 below the land surface. Although groundwater resources are of good quality, their development is limited because of the availability of vast surface water resources in form of streams and rivers.

5.3 Biological Environment

5.3.1 Flora

Vegetation at the proposed project site includes trees, hedges and grass which have been well maintained. The grasses on site include Thermeda triandra and kikuyu long grasses. Hedges at the site include mainly Dovyalis caffra and Cupressus spp. while trees at the site range from exotic to indigenous species. These include; Grivellia robusta, Cassuarina equisetifolia, Eucalyptus spp. among others. The county of Nyamira supports a variety of vegetation and the most significant are expressed in the forest ecosystems. Private forests however take centre stage, with the Nkora forest located at Rangenyo being the most proximate, while the Manga rotuba Forest managed by the Catholic Church is located further north towards Oyugis. At the time of the study there was no notable threatened Flora or Fauna that may be affected by the project.

5.4 Target Settlements Assessment

KISIP 2 targets upgrading of infrastructure in Keroka Block B informal settlement in Keroka Town. Detailed assessment of the settlement is presented in sub chapters below.

5.4.1 Keroka Block B Informal Settlement in Malindi Town

Keroka Block B is located about 1 kilometer from Keroka town along Kisii - Sotik road behind Keroka Police station. Its within Keroka Location Rigoma Ward Nyamira County.

(i) Environment and Social Screening – Keroka Block B Informal Settlement

The area is located within human settlement in Keroka urban centre with limited vegetation cover, most of the Vegetation has been stripped to pave way for development of residential houses shops and markets.

Soil type is red volcanic soil that is well drained, there is no river within Keroka Block B settlement. Storm water floors through Natural drain due to the fact that there is no elaborate drainage system within the settlement. Solid waste management systems are not well developed hence waste is often damped by the road sides. Photo plate 5-9 below illustrated environmental situation in Keroka Block B Informal Settlement in Keroka.

Photo 5-9: Environmental Situation in Keroka Block B Informal Settlement

Garbage Dumped by the road side within Keroka Block B

Grey water released into natural drainage.

(ii) Existing Infrastructure in Keroka Block B Informal Settlement in Malindi town

The common type of sewerage disposal infrastructure is use of Toilets with septic tanks, pit latrines are also used in some households. hared per homestead; Most structure within the settlement are made of Brick wall, Iron sheet roof and Cement screed floor. Electricity from the national grid is readily available in the area.

Keroka and the neighbouring areas are connected with piped water supplied by Gusii Water and Sanitation Company (GWASCO) however most residents complain of frequent water supply in the area.

Photo Plate 5-10: Existing Infrastructure in Keroka Block B Informal Settlement

Privately owned water storage tanks within Keroka Block B settlement

Kenya Power transformer in within the settlement.

(iii) Social Amenities in Keroka Block B Informal Settlement

Most residents of Keroka Block B access social amenities like schools, hospitals and recreational facilities in Keroka Town however, within the settlement there is an open-air market, churches and a privately owned school.

Photo Plate 5-11: Public Facilities in Keroka Block B Informal Settlement

Keroka Open air market

A Secondary school within the settlement.

5.5 Socio Economic Profile

5.6 Socio-Economic Profile

The majority of the residents within the settlement are tenants accounting for 95% of the residents in the informal settlement while 3% indicated that they are plot owners and another 2% being structure owners

5.6.1 Ownership/Tenancy

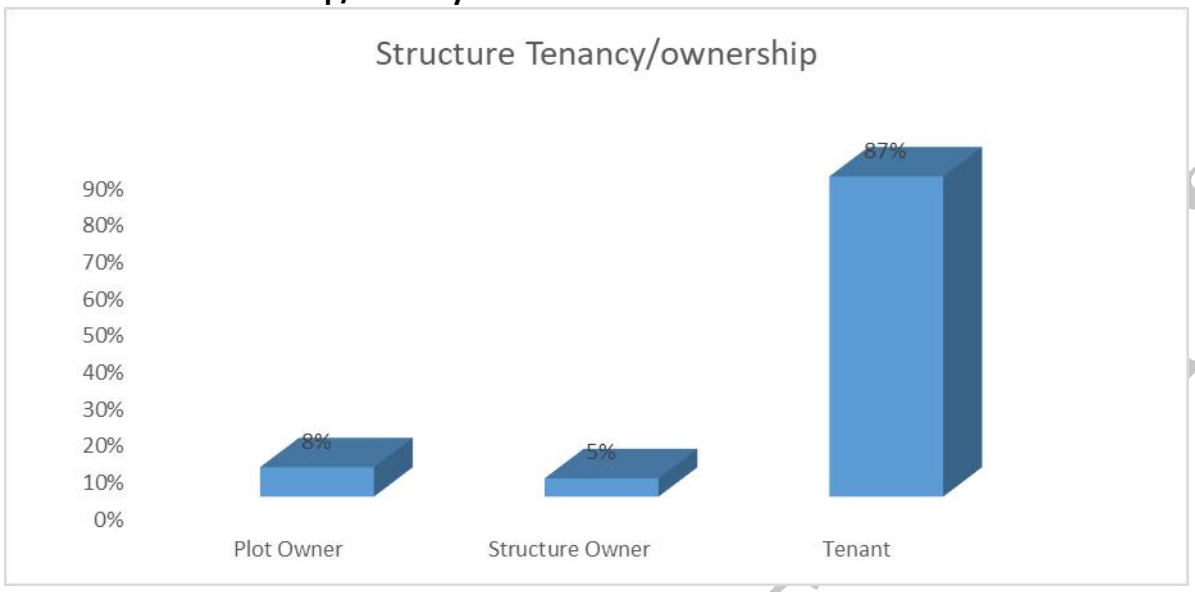


Figure 5- 1: Ownership

5.6.2 Accessibility

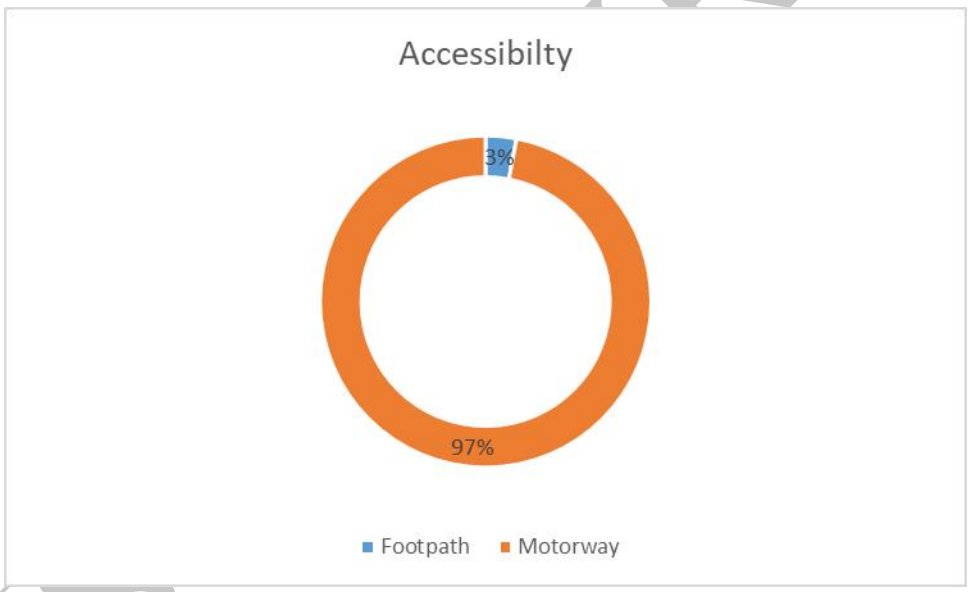


Figure 5- 1: Accessibility

There is no defined footpath as the motor able marram road widths is still where the pedestrians pass. According to the survey results, 97% of residents can access their structures by a vehicle or motorbike while 3% access through a pathway by walking.

5.6.3 Demographic Profile of Households

Gender

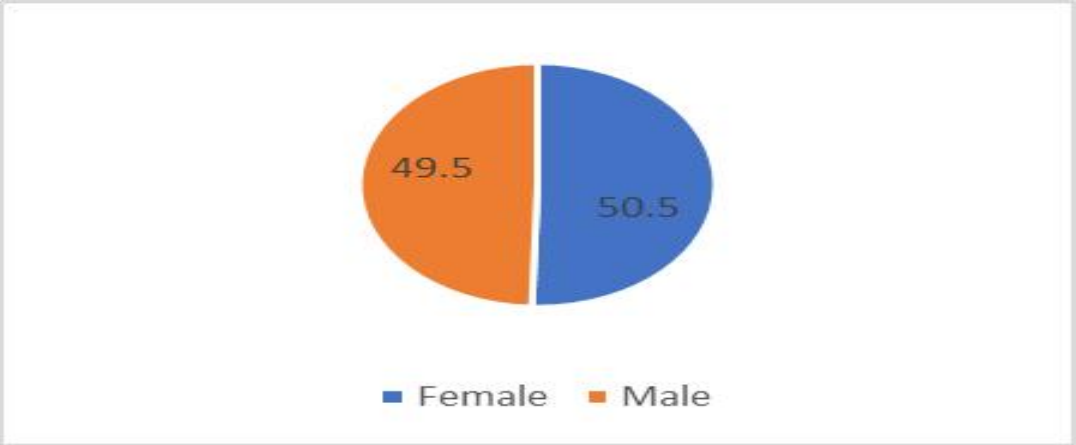


Figure 5- 1: Gender

According to findings in figure above, Keroka Block B settlement have a nearly gender balance population of 49 % males and 50% females.

Age and Marital Status

Table 5- 2: Target Settlements

	Married	Separated	Single	Widowed	Total
20-24	0.0% (0)	10.1% (10)	20.2% (20)	0.0% (0)	**30.3% (30)**
25-29	10.1% (10)	0.0% (0)	0.0% (0)	0.0% (0)	**10.1% (10)**
30-34	20.2% (20)	0.0% (0)	10.1% (10)	0.0% (0)	**30.3% (30)**
40-44	0.0% (0)	0.0% (0)	0.0% (0)	10.1% (10)	**10.1% (10)**
45-49	10.1% (10)	0.0% (0)	0.0% (0)	0.0% (0)	**10.1% (10)**
50-54	9.1% (9)	0.0% (0)	0.0% (0)	0.0% (0)	**9.1% (9)**
Total	**49.5% (49)**	**10.1% (10)**	**30.3% (30)**	**10.1% (10)**	**100.0% (99)**

From Table above, it is indicated that 30% of the population in Keroka Block B is aged 20 -24 years as well30-34 years old. According to the results in Table 4.1 10.1% represents ages 25-29, 40-44, and 45-49 years respectively and finally 9.1% represents a population of age 50-54 years. Regarding marital status, 49.5% of the population is of married couples, 10.1% are separated, 30.3%is are singles and 10% is for the widowed

Disability

From the survey results, 10.1% of Keroka Block B settlement is disabled

Education Level

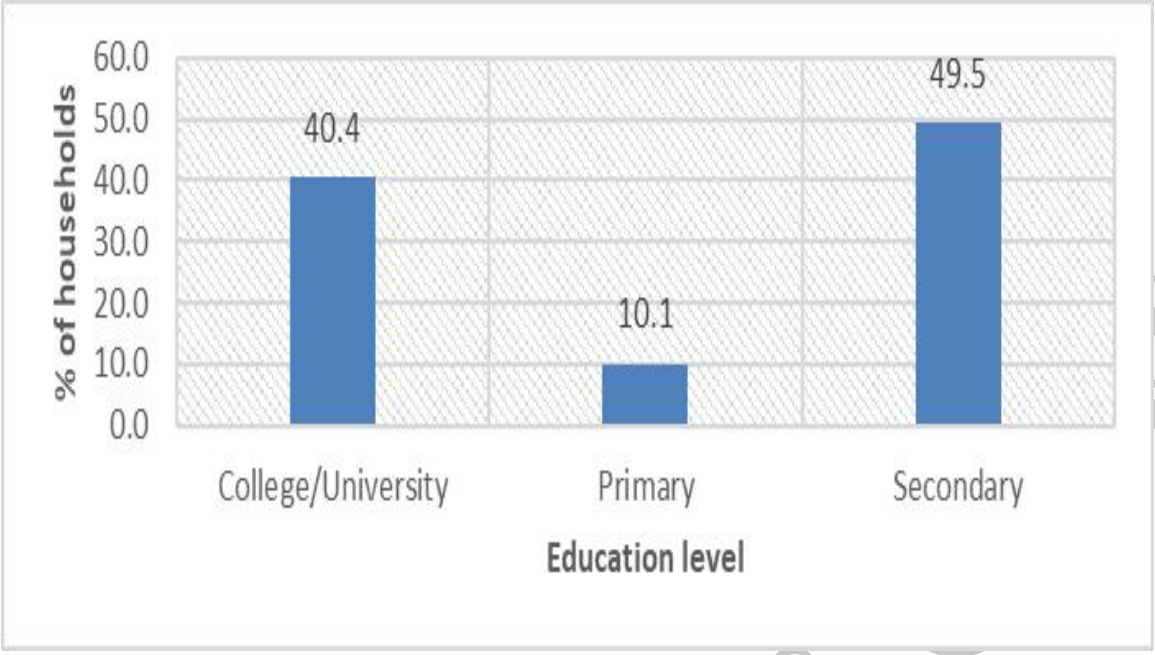


Figure 5- 1: Education Level

Results in figure above indicates that 49.5% residents of have secondary level of education, 40.4% are either college or university graduate and 10.1% went up to primary level of education. These results are indicative that majority of Keroka Block B residents have skills and knowledge and those with secondary education can undergo training to acquire the requisite skills and knowledge to enhance their employability.

5.6.4 Economic Profile of Households

Economic profiles of households are determined by individual members' occupation and level of income, and in the survey, this was established and results are given below.

Employment

Level of education was plotted against household members within the settlement and the result is posted in figure below.

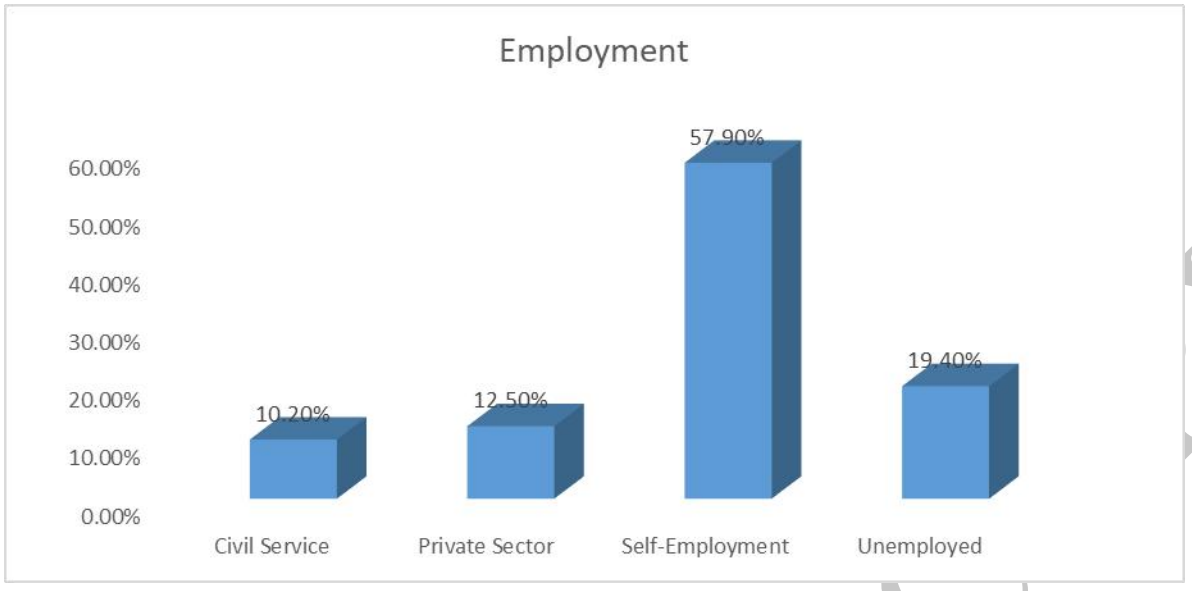


Figure 5- 1: Occupation

The findings of the survey provide an overview of the occupational landscape in the Keroka Block B settlement. A substantial 57.9% of the population is self-employed, suggesting a strong entrepreneurial spirit or a community that relies heavily on individual ventures, the unemployment rate stands at 19.4%, indicating the percentage of people actively seeking employment but currently without a job, 10.2% are civil servants while 12.5% are in private sector. The high prevalence of self-employment could point to a robust local economy driven by small businesses or individual trades. The relatively low unemployment rate suggests that a majority of the working-age population is gainfully employed, which might be reflected in the overall economic health of the settlement.

Income Levels

Residents were asked to state their monthly income.

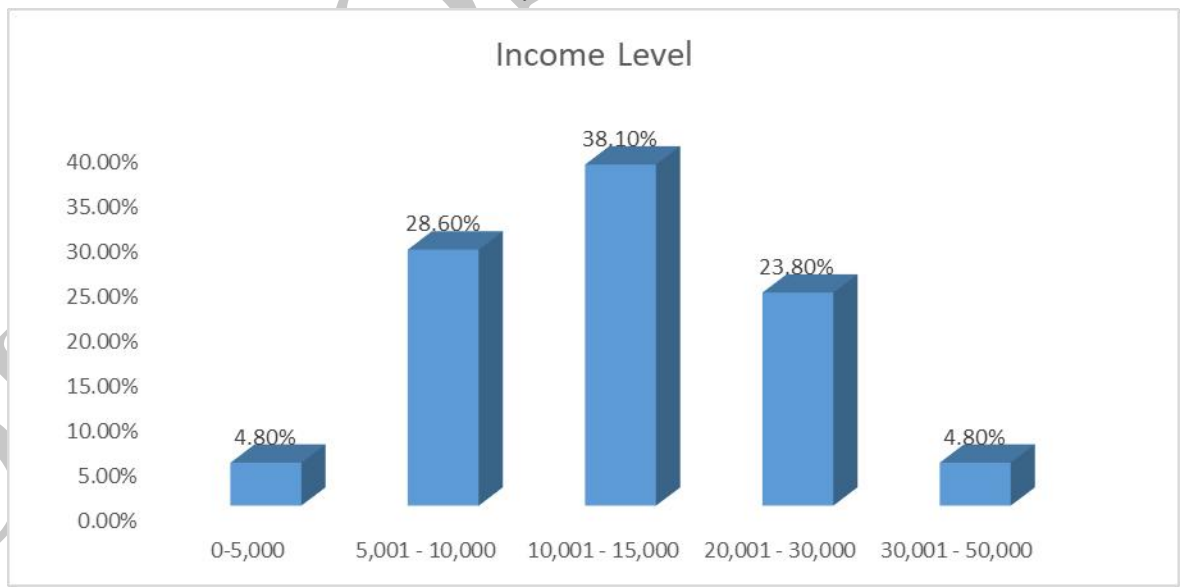


Figure 5- 1: Total Monthly Income

On income levels and according to figure 4.7, 4.8% of the people earn 5,000 or less per month. Those earning 10,001 – 15,000 are 38.1% of the people. There is another 23.8% and 4.8% of the people

earning 20,001 – 30,000 and 30,001 – 50,000 respectively. It therefore leaves 28.6% earning 50,001 - 10,000.

Expenditure on Food and Clothing

When asked to state what they spent on both food and clothing, the results posted below.

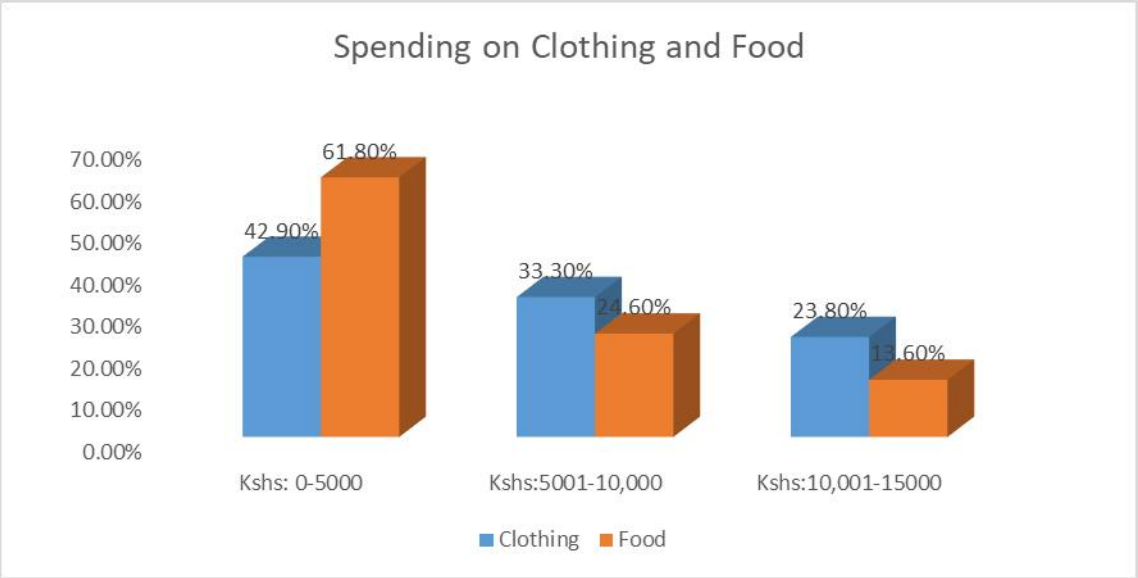


Figure 5- 1: Expenditure on Food and Clothing

For clothing, 42.9% of the households spend 5,000 or less, 33.3% spend 5,001-10,000 and 23.8% spend Kshs: 10,001-15,000. For food, 61.8% of the households spend 5,000 or less on food and 24.6% spend 5,001-10,000 and 13.6%.

5.6.5 Structure/Unit Details

Household Size

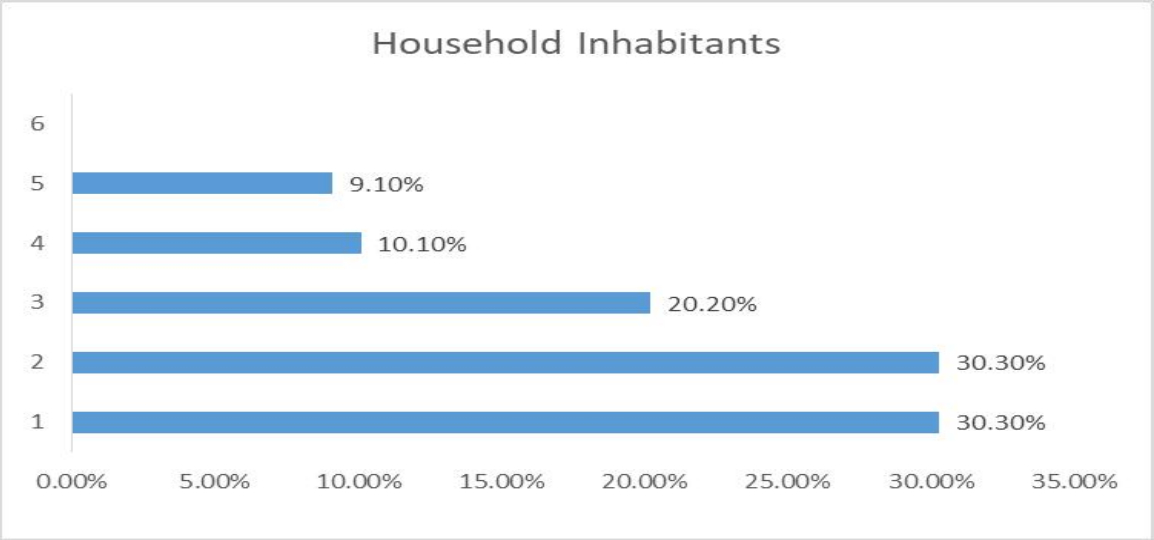
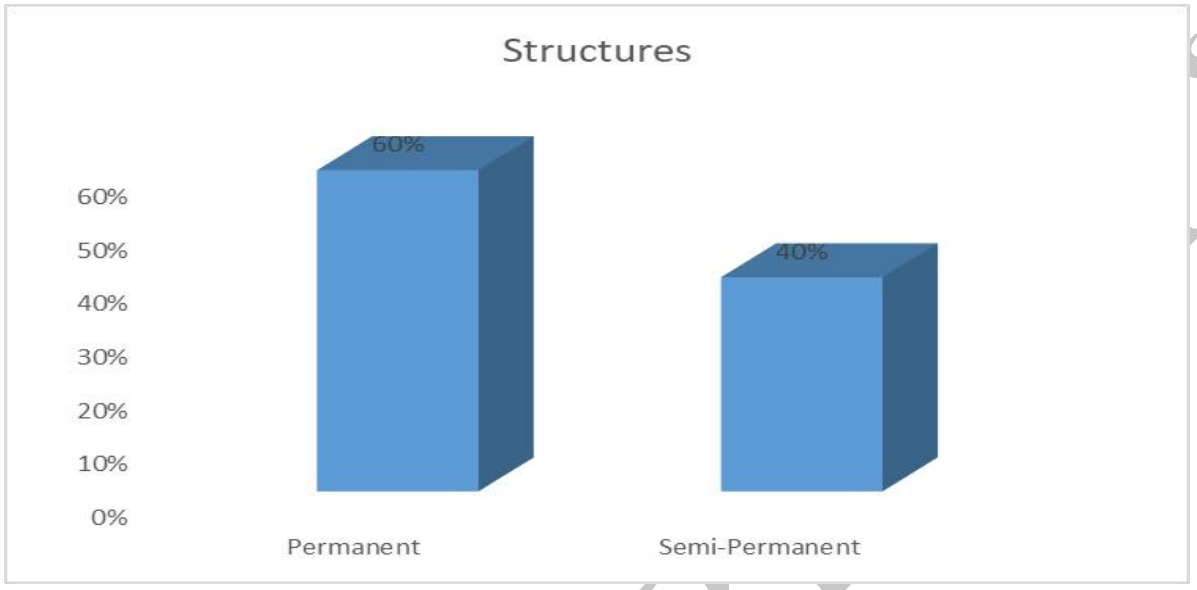


Figure 5- 1: Household Size

Findings in graph above Indicates that 30.3% of the households are having two and three occupants respectively, 20.2% of the households in Keroka Block B households have 4 individuals, 10.1% of the households carries a capacity of five and 9.1% have six occupants.

Nature of Structure: Its Wall Roof & Floor



Within Keroka Block B settlement, 60% of structures are permanent while 40% are semi permanent. The structures had different material for wall structures and according to figure 4.8, 40.4% were constructed with iron sheets for wall material, the same parcentage saw structures with stones for wall structure, 10.1% were built using ironsheets and stones, the remaining 9.1% were made of wood and stones.

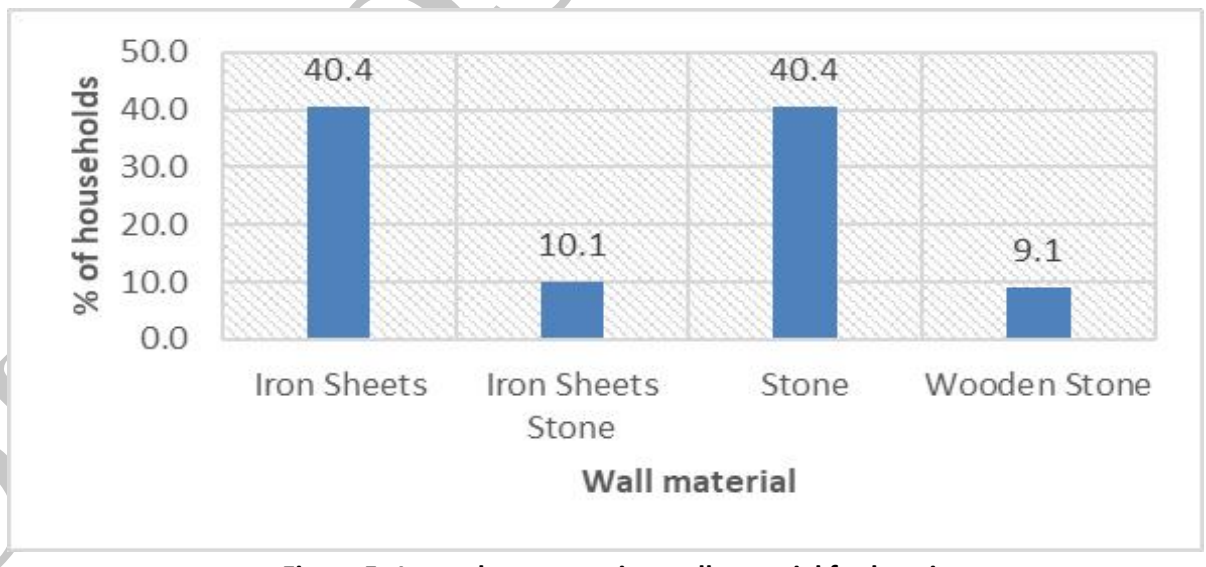


Figure 5- 1: graph representing wall material for housing.

The structures varied in sizes depending on the abilities of different families.39.4% of the households measured 30 by 25 possing the highest when it comes to the size of the structure.10.1% of the population of house holds measures 30by 30 and 30 by 25. So the largest parcentage of households has

a measure of 30 by 25 for where the house is sitting.20.2 % and 10.1% of the households measure 40by 60. Another 10.1% measures 40 by 40 .

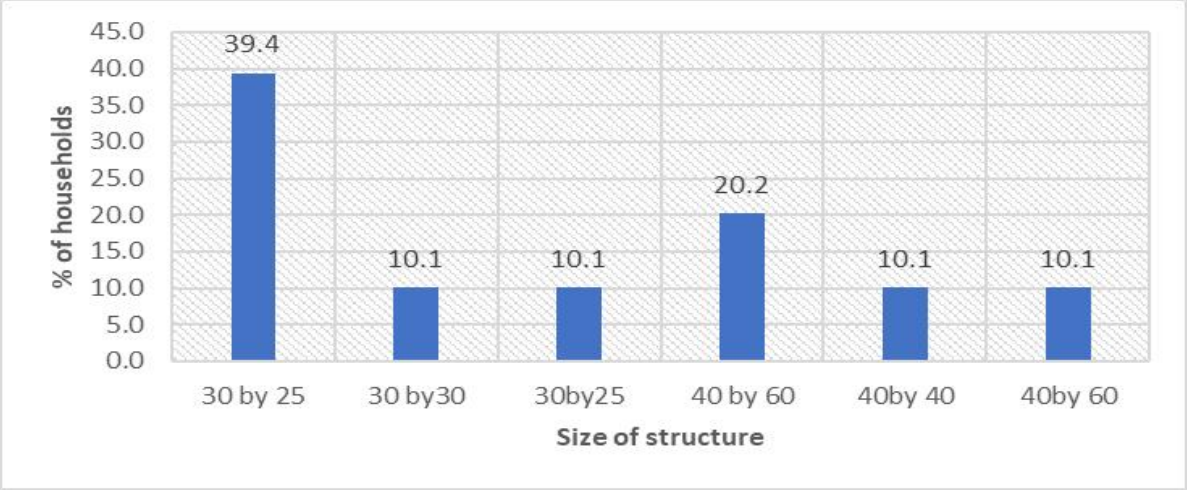


Figure 5- 1: size of the structures of different households.

Use of Structures

Most of the structures obseverd during the survay were residential as compared to business premises. Results indicates that 89.9 % of the structures are for residential purposes and 10.1% for business .

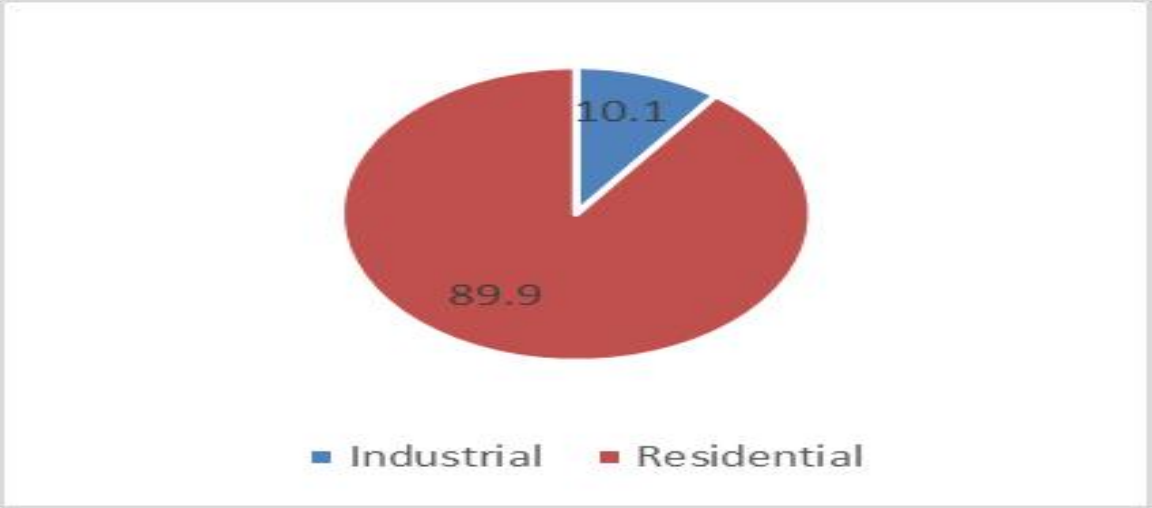


Figure 5- 1: Structure use within Keroka Block B.

Regarding employment, 40.4% of residents of Mkongeni depend on casual labour to earn their daily bread, 20.2% are self- employed, 10.1% are students and 29.3 % are unemployed.

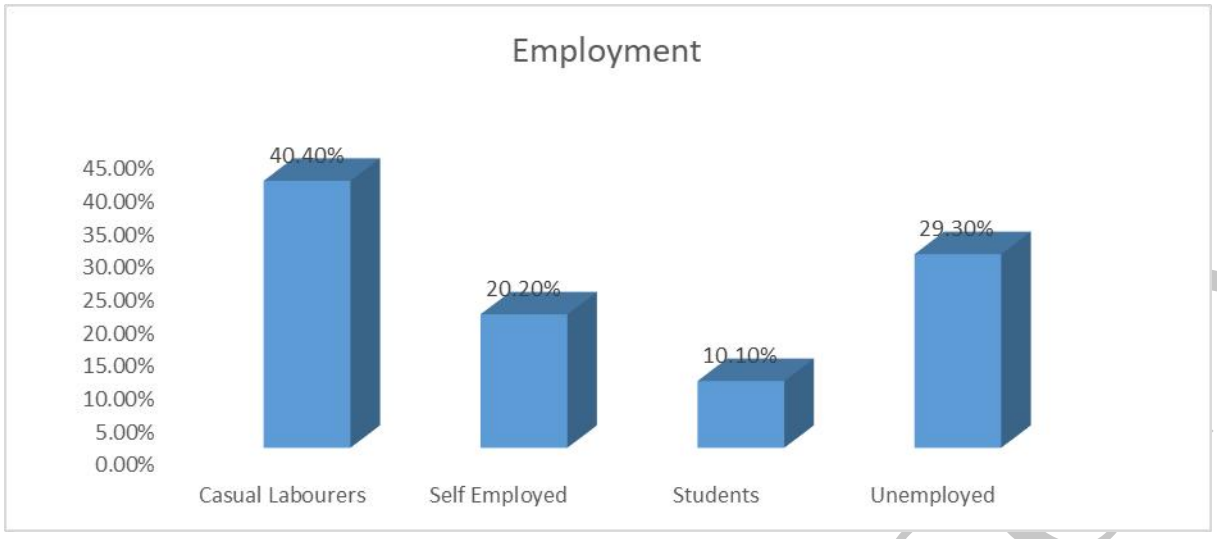


Figure 5- 1: Employment.

Most of those employed in Keroka Block B work outside the settlement. Figure below show that 50.5% of the population working outside the settlement, 10.1% working inside the settlement and the remaning 39.4% are jobless.

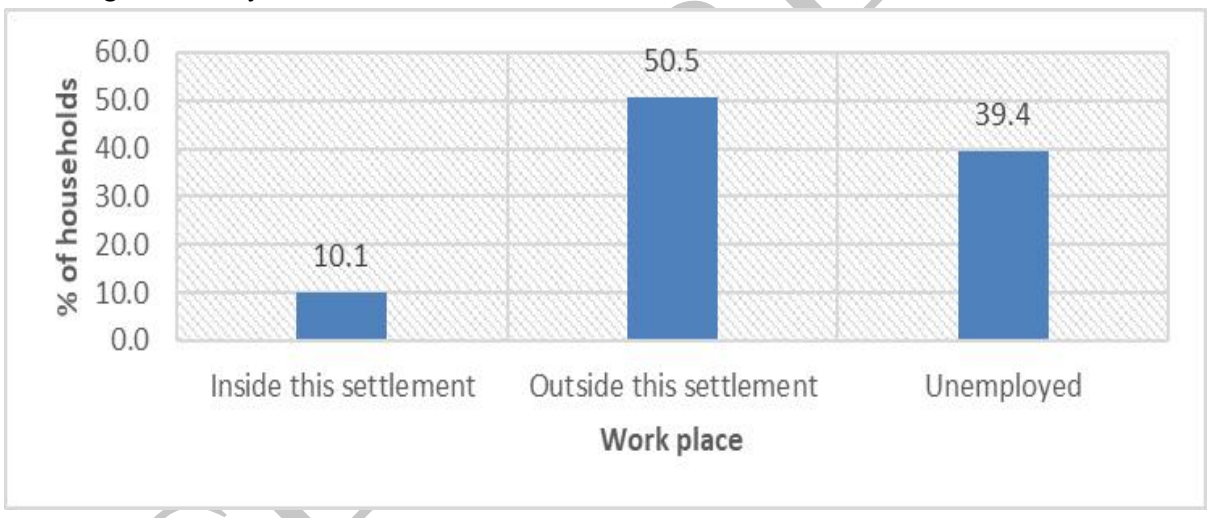


Figure 5- 1: Work Places .

The survey results figure below indicates that 39.4% of the household heads earn an income ranging from Kshs: 5,000-10,000, 30% of the working population earns Kshs: 20,000-30,000, 10.1% earning Kshs: 0-5,000 and Kshs: 30,000-50,000.

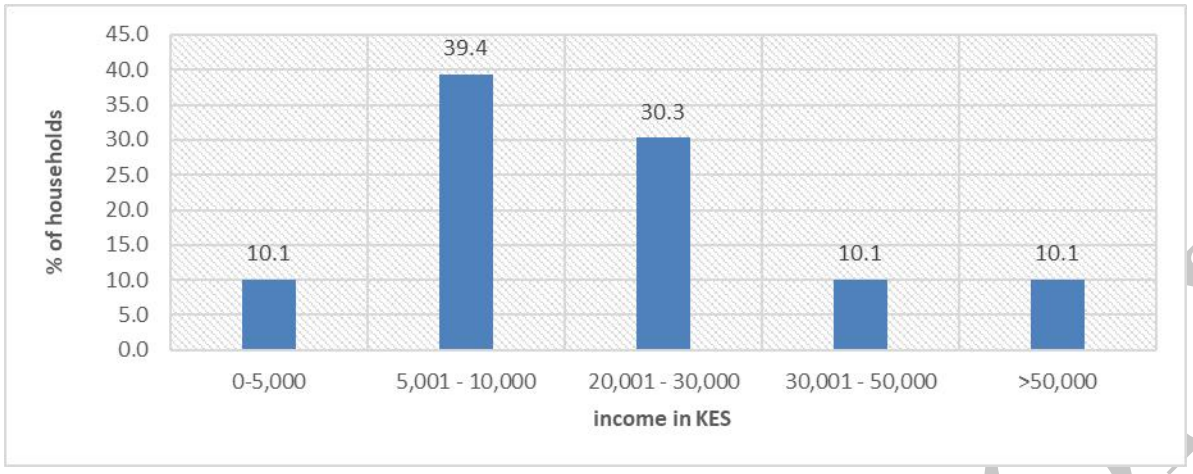


Figure 5- 1: monthly income per household.

According to results in figure below 50.5% of households within Keroka Block B spend Kshs: 10,000 - 15,000 on food, 29.3% spend Kshs: 15,000-20,000 on food and the remaining 20% spend Kshs: 30,000-50,000 per every month. Respondents were then required to show expenditure on clothing and results posted.

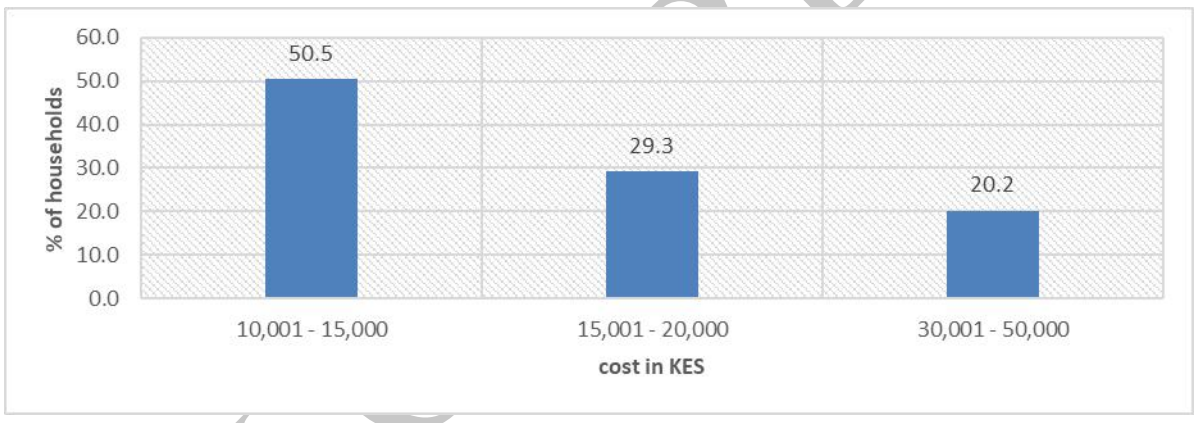


Figure 5- 1: expenditure on food per month.

On clothing expenditure 59% of households spend Kshs: 10,000-15,000, while 20.2% of the spends Kshs: 5,000-10,000 on clothing per month while the remaining 10% spends ksh 15,000 -20,000 and another 10% spend Kshs: 30,000-50,000 monthly as indicated in figure below.

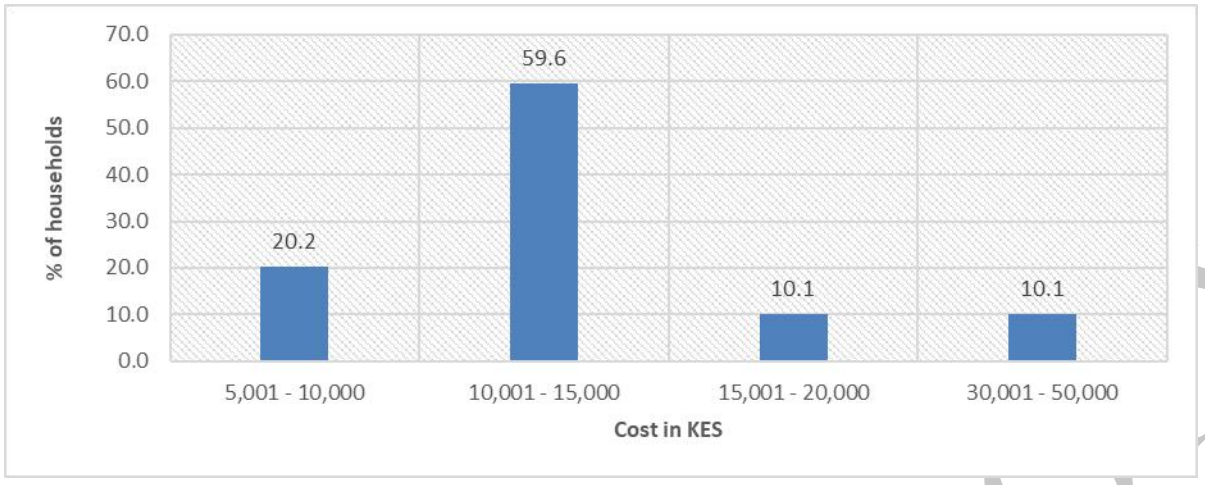


Figure 5- 1: Monthly Spending on Clothing

As we move down that lane, we come to an interesting statistic on shelter. As much as they spend a lot on food likewise, they also invested heavily on shelter.29.3% of the population spends close to Kshs 5,000-10,000 on shelter, while the largest percentage of then lying between Kshs 10,000 -15,000, 20% of the population spending Kshs 15,000-20,000 and lastly 10.1% spending a whopping Kshs 30,000-50,000.

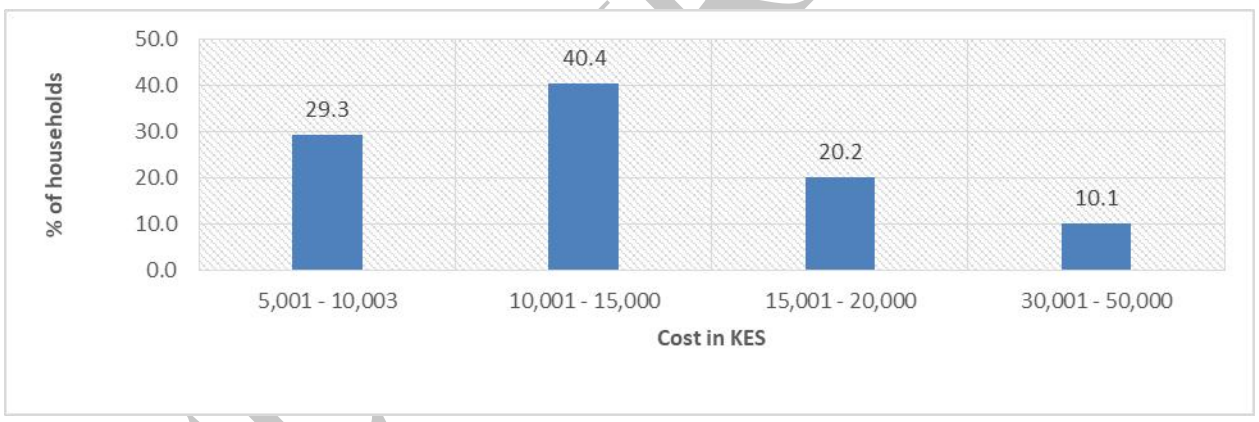


Figure 5- 1: expenditure on shelter per month.

5.6.6 Water, Sanitation and Hygiene

Sources of Water

According to results posted in figure 4.17, 50.5% of households in Keroka Block B rely on piped water for daily use, 29.3% are not connected to the piped water and preferably they depend on rain water and water from vendors. The remaining 20% uses water from rivers and streams that cut across the settlement.

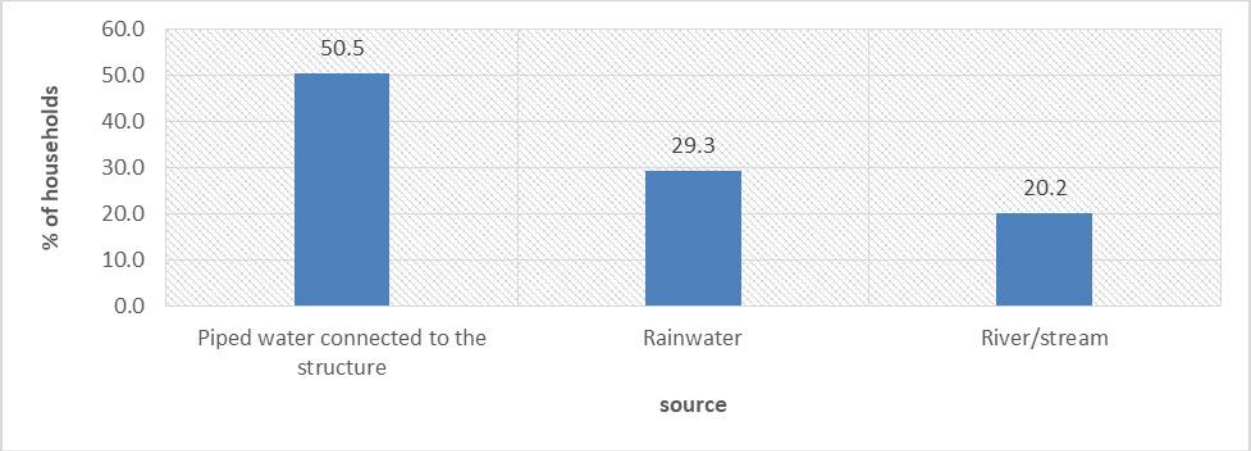


Figure 5- 1: Water Sources.

Almost half of the population buys water for their daily use. According figure 4.18, 20.2% of households spend at least Kshs: 1000 per month on water, 10.1% spend Kshs: 1,500 on water resource and another 10.1% spending Kshs: 2000 on water resource, 10.1% spending Kshs: 5000 and the remaining 49% do not pay up for the water resource

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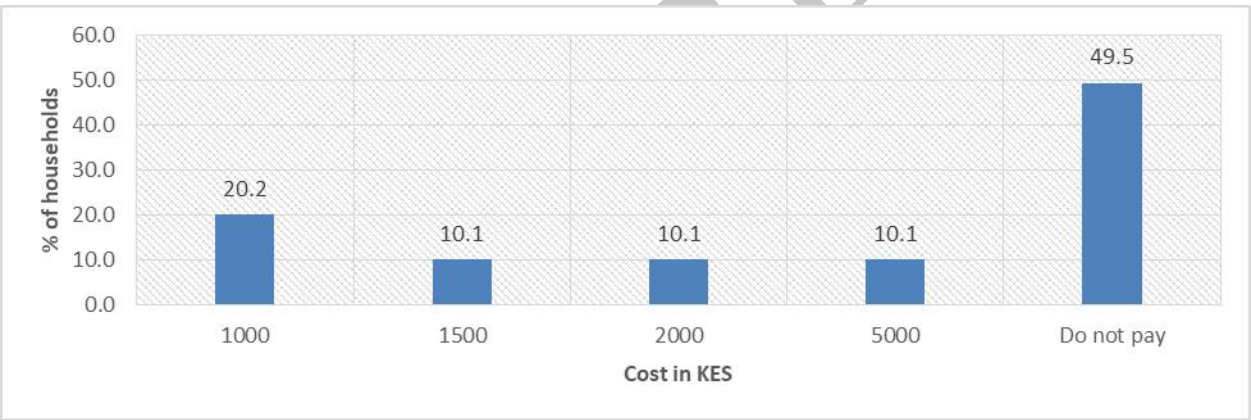


Figure 5- 1: Monthly Cost of Water.

5.6.7 Waste Management

Households in Keroka Block B manage waste from within and therefore they have to device waste disposal methods. As indicated in figure 4.19, 0.6% of the households' burn solid waste, 19.2% disposes solid waste in designated bins where they are later collected by the municipality. The other 10.1 % of the population of the households disposes their solid wastes indiscriminately on roadsides, river banks and open drains where they are scattered everywhere.

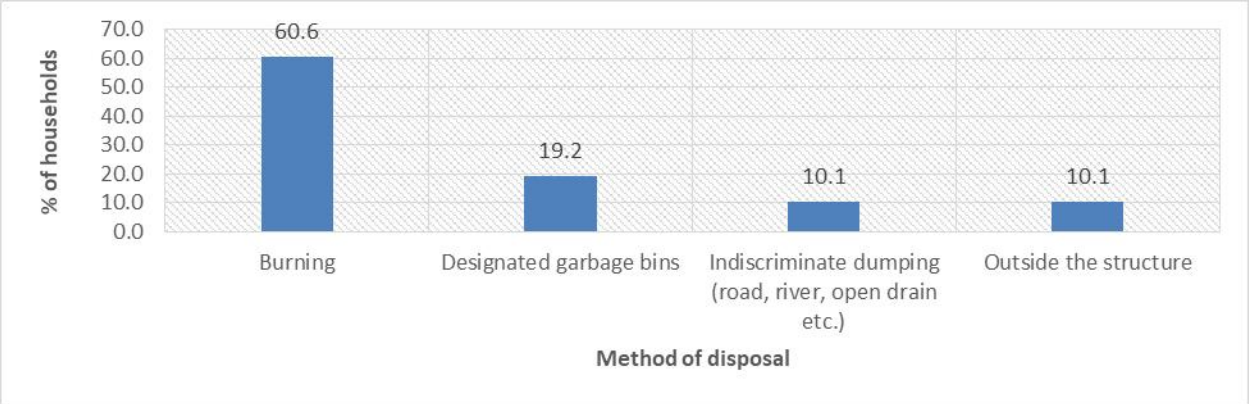


Figure 5- 1: Solid Waste Disposal

The households generate different types of solid waste within Keroka Block B and as shown in figure 4.21, 10.1% of the waste from the households is mainly glass. 20.2% made up of glass and plastic. 10.1% is waste comprising of paper, 59.6% of the waste is plastic, the biggest health hazard in our environs today.

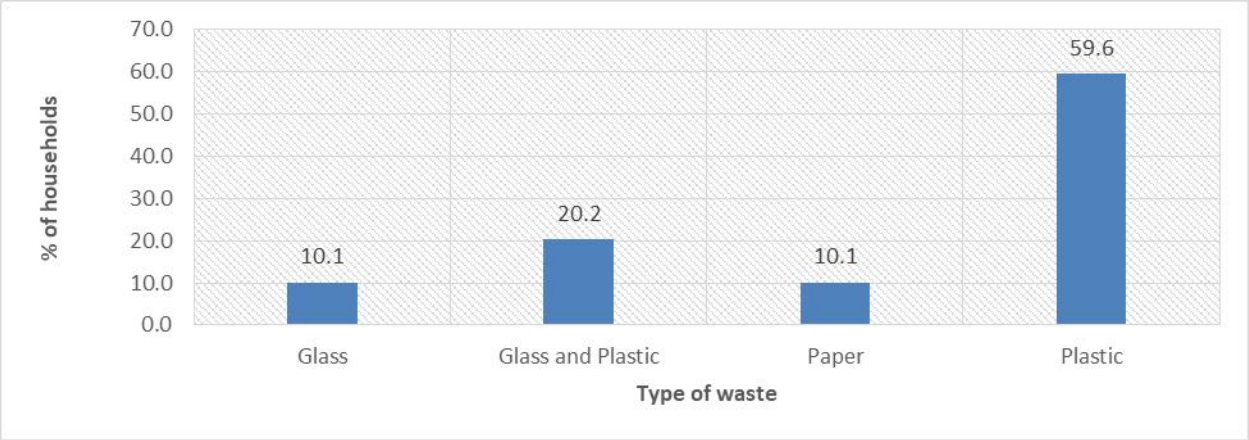


Figure 5- 1: Type of Solid Waste Generated.

Rating waste management services 69.7% residents of Keroka Block B gave it good verdict.

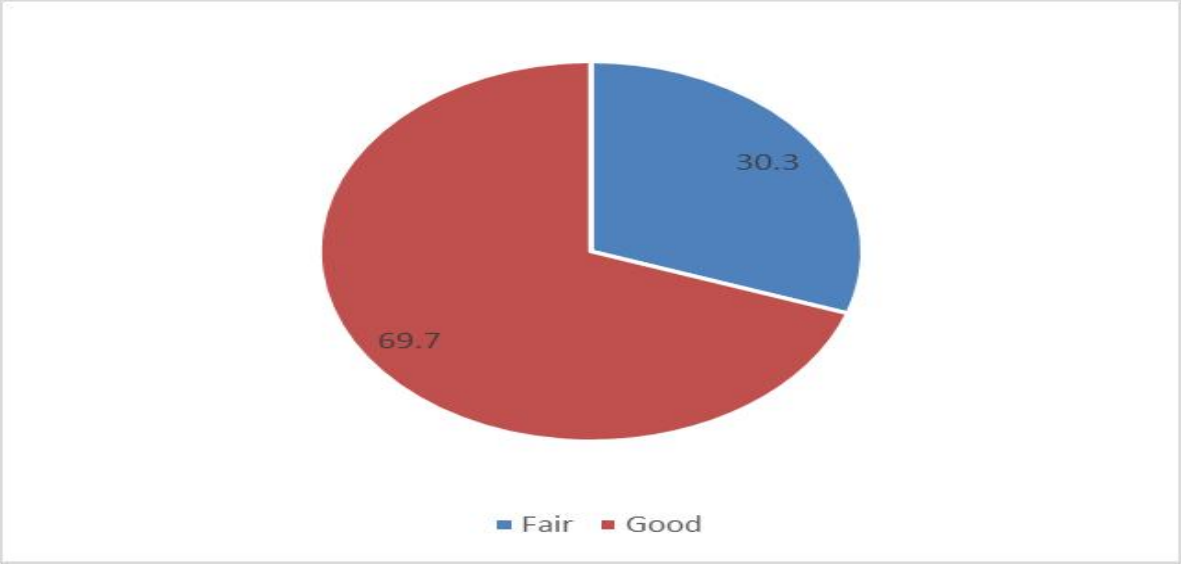


Figure 5- 1: Solid Waste Management.

5.6.8 Energy

Lighting Energy

The households in Keroka Block B are lit up with different sources of lighting energy as discussed below. A majority of 69.7% use electricity as a source of energy picks the highest percentage of 69.7% meaning that it is predominantly the common source of energy amongst residents of Keroka Block B while 20.2% of the people in Keroka Block B use solar as source of lighting energy whilst 10.1% of them use kerosene.

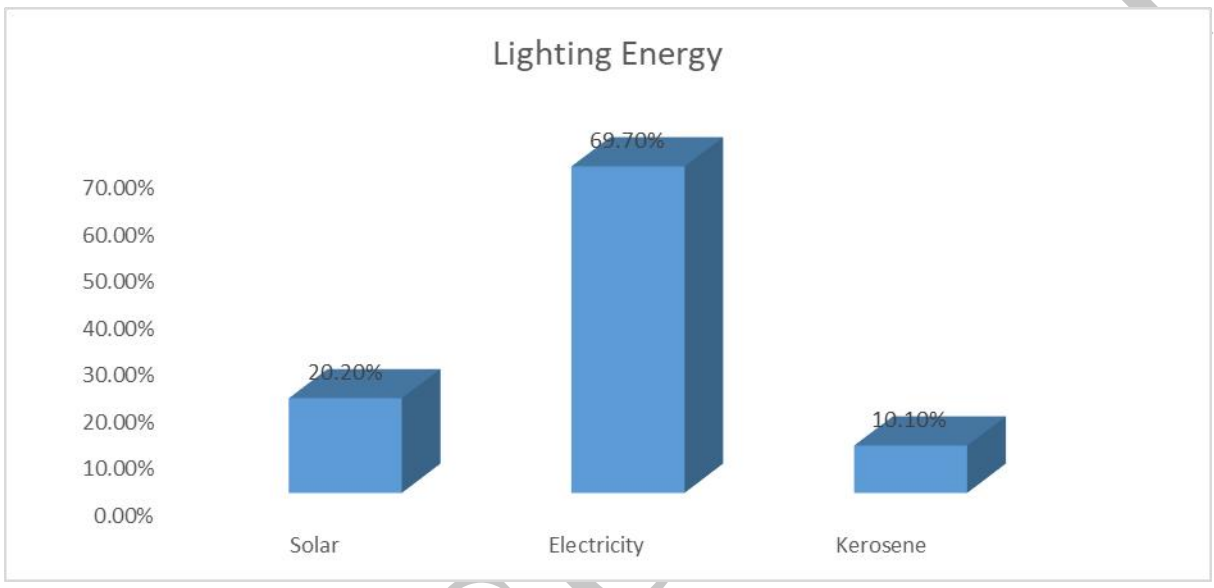


Figure 5- 1: Lighting Energy Source.

A statistic on average monthly cost of electricity had to be done since electricity was the main source of energy. Averagely 14.5% of the household spend close to Kshs: 200 per month, another 14.5 % spend Kshs: 300 per month of electricity cost and 42% spends Ksh500 on electricity monthly and 29% of the households spends Kshs 1000 per month as shown in figure below.

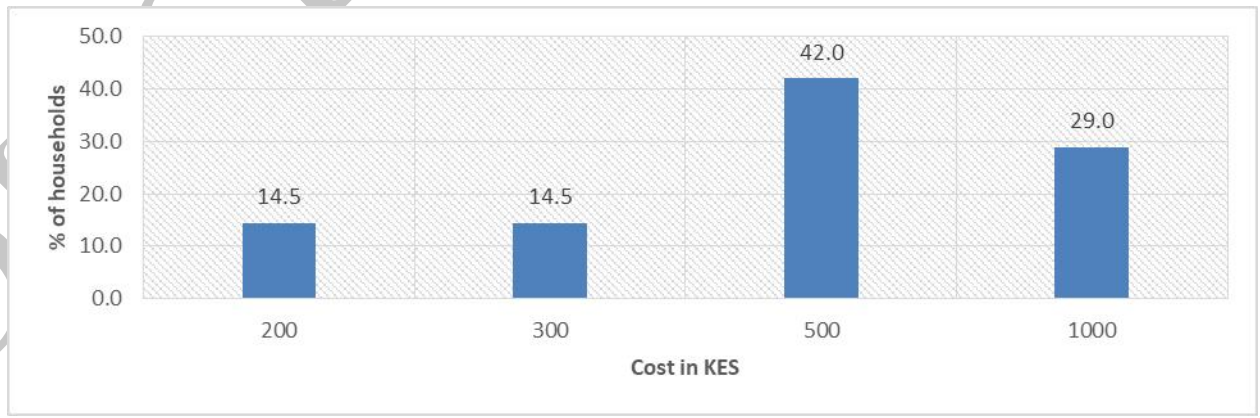


Figure 5- 1: Average Household Monthly Cost of Electricity.

Cooking Energy

Households making up to 70.7% in Keroka Block B use charcoal as cooking energy, 19.2% use firewood and the remaining 10.1% use electricity as fuel as shown below.

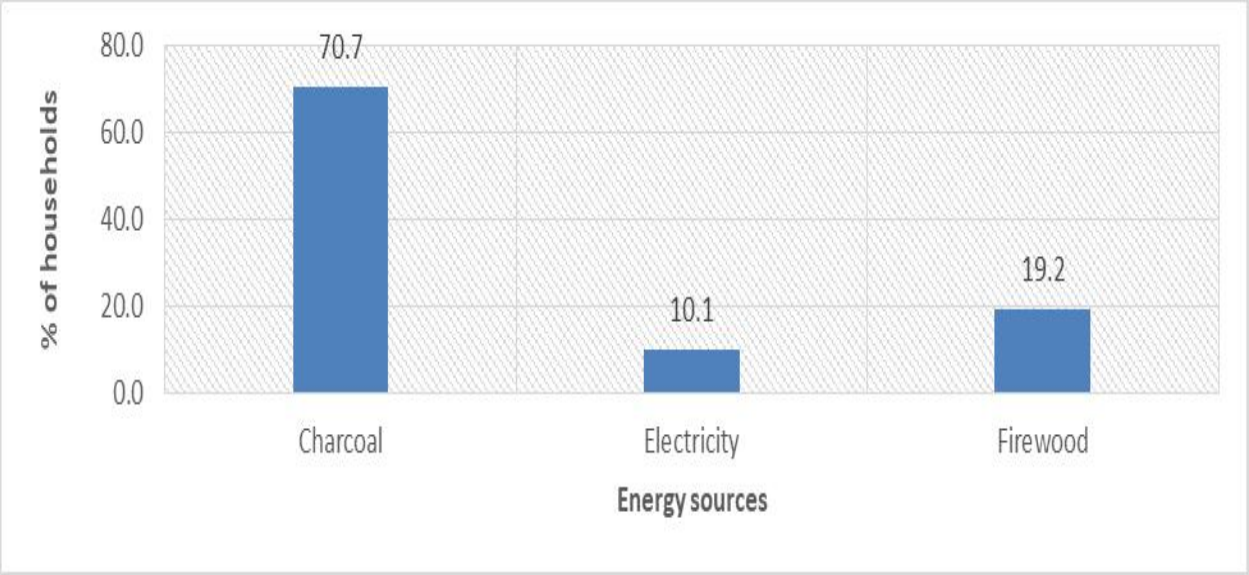


Figure 5- 1: Cooking Energy Sources

5.6.9 Transport

The households in Keroka Block B settlement prefer Bodaboda for transport because it is faster and convenient to most of them. The largest percentage of 89.9% prefer Boda-boda to Matatus and Buses as indicated below.

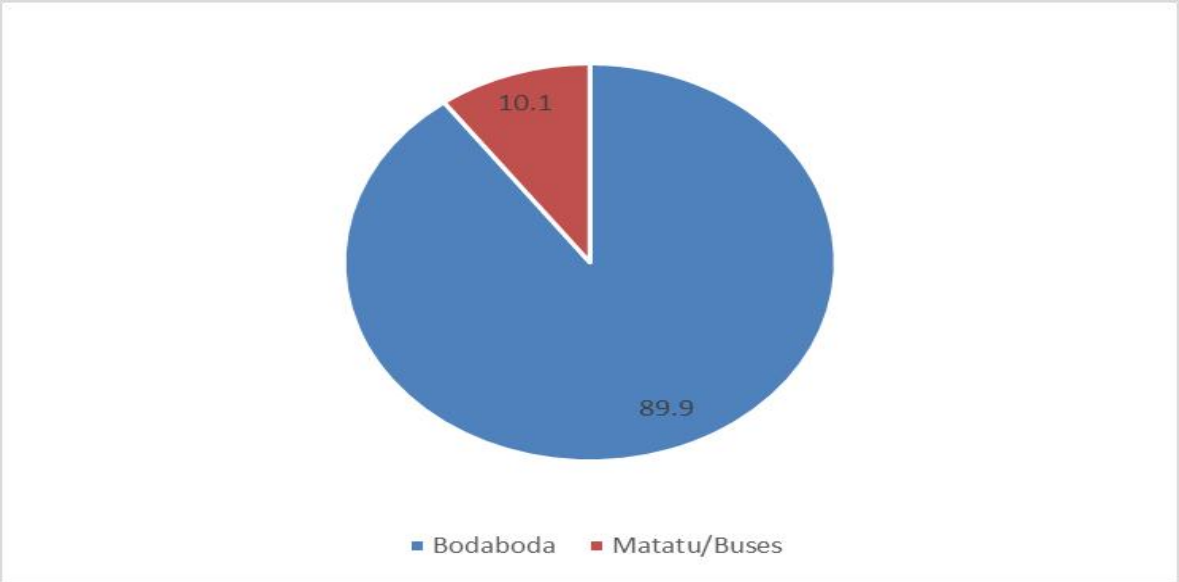


Figure 5- 1: Preferred Mode of Transportation.

5.6.10 Health

The residents of the settlement mainly get their treatment from public health facilities, while 1% of respondents indicated that they get treatment from private health facilities.

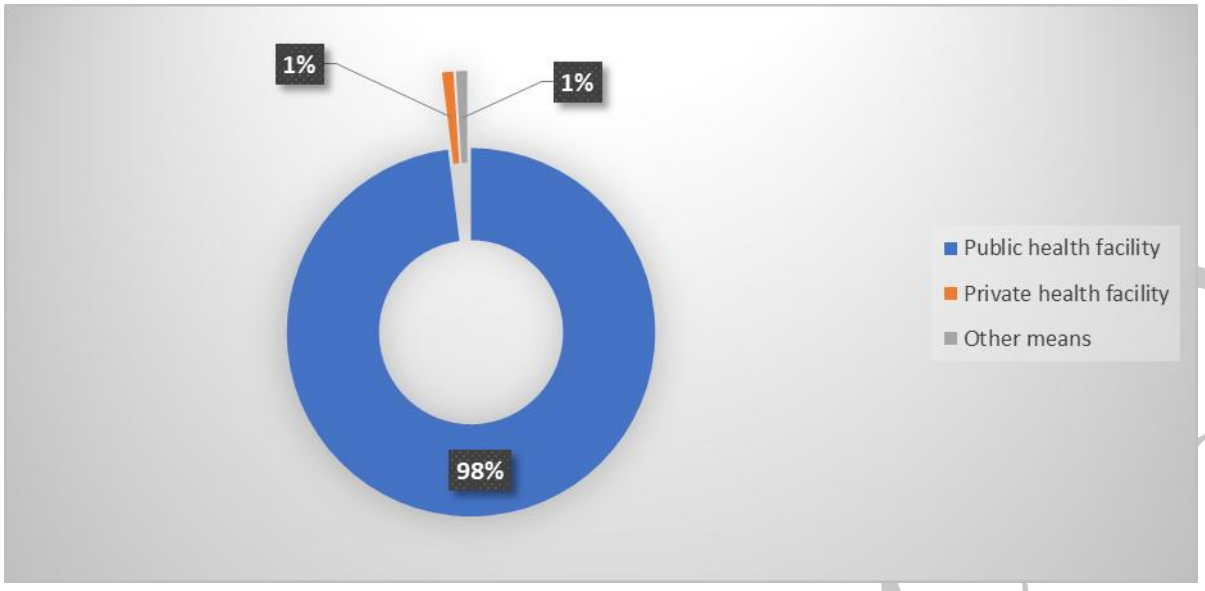


Figure 5- 1: Access to treatment

The majority of the residents can access health facilities within a distance of 2 kilometres. 33% access health facilities within 1km, 45% within 2km, 20% within 2–5 km, 1% within 5–10 km, and 1% more than 10km away. The figure below indicates the distances to access health facilities.

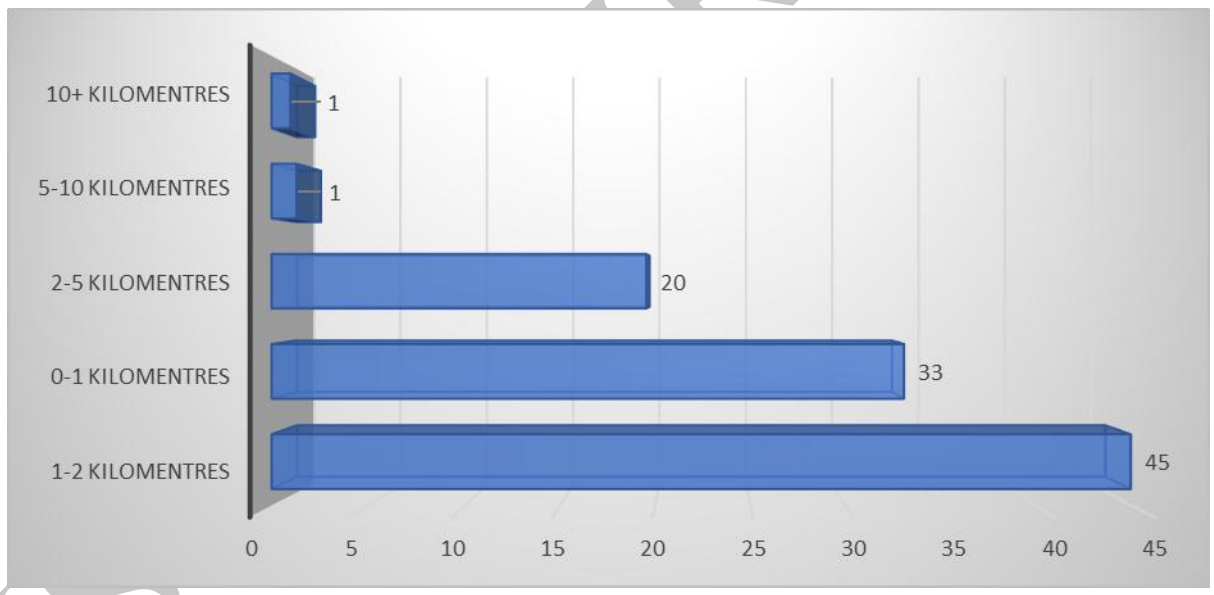


Figure 5- 1: Distance to access health facilities

CHAPTER 6: PUBLIC AND STAKEHOLDER CONSULTATIONS

6.1 Legal and Policy Provisions for Stakeholder Consultations

6.1.1 EMCA 1999 Cap 385 through the Legal Notice No. 101: The Environmental (Impact, Audit and Strategic Assessment) Regulations, 2003

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

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

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

6.1.2 World Bank Group (WBG) Environmental Assessment Policy (OP 4.01)

The **World Bank Group's Environmental Assessment Policy (OP 4.01, January 1999)** requires that project-affected groups and local non-governmental organizations (NGOs) be consulted during the impact assessments process about the project's potential environmental and social impacts.

The purpose of this consultation is to take local views into account in designing the environmental and social management plans as well as in project design. For complex projects where the environmental impacts and risks are high, the policy requires public

consultation at least twice: first, shortly after Environmental Screening and before the terms of reference for the EIA are finalized and secondly, once a draft EIA Report is prepared. Consultation during project execution is also required. Section 5 summarizes the consultation programme for the EIAs and confirms that the project meets and indeed exceeds these requirements.

6.2 Schedule of Stakeholder Consultations

Table 6- 1: Schedule of Public Consultation

Date	Settlement	Stakeholder Consulted	Meeting Attendance
27TH October 2023	Keroka Block B Informal Settlement	Settlement Executive Committee members (SEC) for Keroka Block B Informal Settlement, Environment and Social Safeguards Team, Keroka Assistant chief, Rigoma Ward administrator, Rigoma Ward MCA, Overseer PAG Church Keroka and members of the community	Total 21 Male 16 Female 5

In Summary, issues discussed is presented are summarized below

- **Project Commencement Date** – Poor State of Infrastructure within the Settlements makes the residents appreciate the Project, the residents were informed that the Project will be implemented after completion of all relevant studies, including Engineering Designs and Environment and Social Assessment.
- **State of Infrastructure** – The residents emphasized poor state of Infrastructure in the settlements including Roads, Drainage, Solid Waste, Security, water and Sewerage.
- **Labour issues**; Local unskilled and skilled labour should be sourced from the local communities as much as possible
- **Water connection**; Residents requested for improved water supply and connection to the network that serves their area
- **Health and Safety;** Issues of occupational health and safety during construction period were emphasized, the community confirmed that they have an active first aid and public health and sanitation group and requested for involvement in the project during construction.

6.3 Grievance Redress Management Plan

This ESIA provides for a Grievance redress mechanism (GRM) includes instruments, methods, and processes by which a resolution to a grievance is sought and provided. The processes are as shown in the sections below.

(i) Local Residents Complaints Procedure

The purpose and scope of local resident's complaints procedure is to ensure all complaints from local residents are dealt with appropriately with corrective actions being implemented and the complainant being informed of the outcome. It will be applicable to all complaints received from any local within the project area. The communities have already established a

functional Settlement Executive Committee (SEC) and a Grievance Redress Committee (GRM) in all the target informal settlements. The contractor will employ a Community Liaison Officer and or sociologist who will be responsible for collating written complaints and co-coordinating responses to all complaints with the SEC and GRC

(ii) Procedure

All complaints shall be handled in accordance with the flowchart in **Figure 6.1** below. Both verbal and written complaints are to be entered a Grievance Complaint Log

When receiving a complaint all employees shall refer the complainant to the Community Liaison Officer (CLO) or the resident engineer. The person receiving a complaint shall ensure that the Grievance Complaint Log is completed. The form shall then be forwarded to the Community Liaison Officer who will assign it a number. The Community Liaison Officer shall ensure that all actions are made to close out the complaint in consultation with the SEC and GRC in the Settlements.

(iii) Grievance Complaint Log

Ensures that each complaint has an individual number and that tracking and recording actions are carried out. It also records who is responsible for an individual complaint and records dates for the following actions:

- Date the complaint was reported;
- Information on proposed corrective action sent to complainant (if appropriate);
- The date the complaint was closed out; and
- Date response sent to complainant.

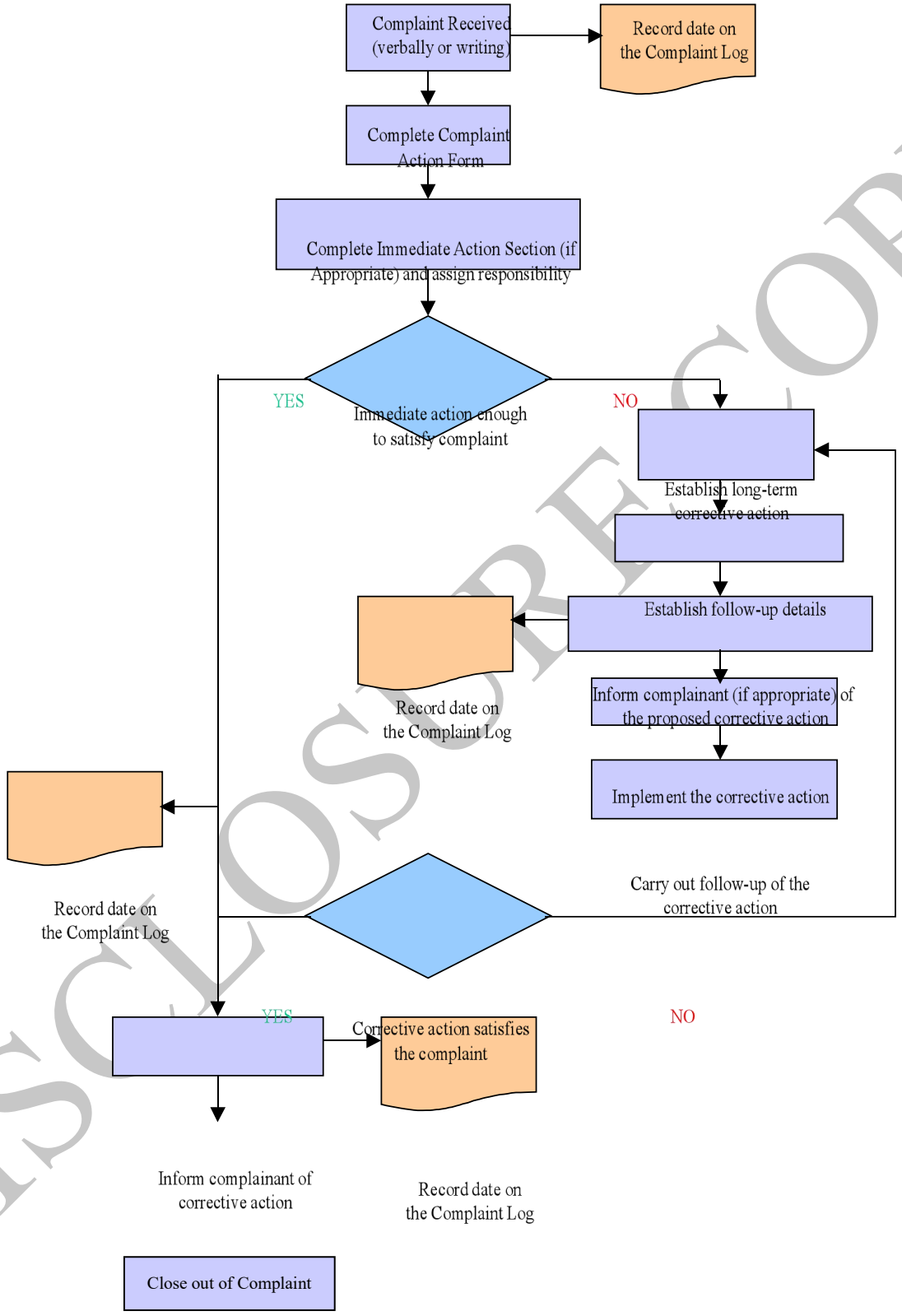
(iv) Responding to a Complaint

All complaints shall be responded to in writing, though a verbal response will be provided as well if this is more appropriate in the circumstances (e.g., where the complainant cannot read). All complaints must be responded to within two weeks of being received, even if the response is just a summary of what is planned and when it is likely to be implemented. Further correspondence should be given once the complaint is closed out.

(v) Monitoring Complaints

The CLO through the contractor will be responsible for providing MoLPWH&UD with a Monthly report detailing the level of complaints and any outstanding issues to be addressed. Monthly reports will include analysis of the type of complaints, levels of complaints and action taken to reduce complaints. The CLO shall file all documentation related to complaints in a file in his office.

Figure 6- 1: Grievance Resolution Flow Chart



CHAPTER 7: ENVIRONMENTAL AND SOCIAL IMPACTS ASSESSMENT AND MITIGATION MEASURES

7.1 Environment and Social Screening Findings

This Chapter presents an assessment of the issues likely to arise as a result of implementation of the proposed Projects in respective informal settlements.

The screening assessment was adopted from the Environmental and Social Screening Report (ESSR) prepared for the Project. The report provides that, to identify the impacts, the screening exercise adopted the standard Environmental and social screening template provided in the KISIP EMSF[2]. The screening template was used to assess potential KISIP projects impacts to natural and human environment within the settlements.

Annex 1 of this report provides summary of the Environmental and Social Screening findings for the settlement.

7.2 Anticipated Project Positive Impacts

The Project will result in both direct and indirect benefits to the residents of Keroka Block as summarized below;

Benefits of Roads and Drainage Projects

(i) Creation of employment to people living within the informal settlements through improved access.
(ii) Improved living standard of people within the settlement through improved road infrastructure
(iii) Providing a linkage of the settlement to other parts of the city.
(iv) Provides alternative route to access the settlement, could be used during disaster times example by ambulances and fire engines.
(v) Enhanced access to social amenities like schools and health facilities within the settlement.
(vi) Improved road side drainage hence reduced risks of flooding.
(vii) The Project will improve the living standard and well-being of the local economy through provision of road and street lighting within the settlements.

Benefits of Water Sewerage Project

(i) The sewerage Project will lead to improved status of drainage system within the settlement, this will reduce incidences of flooding and stagnant water normally experienced during rain seasons.

(ii) Reduced Water and Sanitation Burden to Women
(iii) The water projects will lead to Improved Accessibility to Clean and Reliable Water Supply
(iv) Water and sewerage will Improve Hygiene and Sanitation in the Project Areas
(v) Reduced Cases of Water Related Diseases
(vi) Reduced Pollution of drainage channels within the project areas by Raw Sewerage.
(vii) Increased Land Values in the Project Area

Benefits of Flood Lights

(iii) The flood lights will lead to Improved Security within the settlement due to provision of floods within the settlement.
(iv) Improving the roads and street lighting infrastructure within the settlement will result to development of associate social services for example health facilities, learning institutions and recreational centre's which will eventually benefit the community.

Benefits of Social Amenities (Market, Public Park, Ablution Block)

- The amenities will facilitate community interaction and engagements since they will serve as gathering points.
- Encourage cultural promotion and diversity through the social halls.
- Increased the County revenue through paying of taxes by the market vendors and ablution block operators.
- Improve health, hygiene, and sanitation standards through having designated selling point and availability of washrooms within the settlement.
- Improvement of community livelihoods through increased trading in the new markets.

7.3 Risks on Biophysical Environment during construction

7.3.1 Impacts on Water Resources

The assessment identified that the main water resources within the settlements are shallow wells; also drain channels drain water directly into Keroka stream. Therefore, the assessment also identified that less significance impacts are anticipated on Water resource as discussed in **Table 7-1 below**.

Table 7- 1: Impacts on Water Resources

Impact Sources	Terrestrial and aquatic Ecosystem Pollution by effluents caused by construction activities and water losses through over abstraction, infiltration and evaporation	**Mitigation Efficiency**	**High**
Nature of impact	• Reduced availability of safe domestic water, water wastage, infiltration, and evaporation • pollution of existing water resources including aquifers by construction effluents • Increase water borne related illness due to consumption of unsafe water		
Reversibility of impact	Yes		

Mitigation	As summarized in table 7-7 below		
Affected stakeholders /areas	Aquatic and terrestrial ecosystems		
Magnitude	*Extent*	Site – 2	
	Intensity	Medium-3	
	Duration	Medium term-3	
	Probability	Likely – 3	
Significance	**Weighting**	(Extent+ Intensity +Duration + Probability)x WF(2+3+3+3) x1=11 (Low)	Low

7.3.2 Impacts on Soil Resources

The impacts that are likely to be triggered by the project activities in the settlements include;

(i) Destruction of Soil Structure due to blasting or rock breaking
(ii) Soil contamination caused by oils and fuel leaks from construction equipment.
(iii) Soil Erosion and mud slides due to clearing of vegetation cover and trenching activities.

The assessment also identified that less significance impacts are anticipated on Soil resource as discussed in **Table 7-2** below.

Table 7- 2: Impacts on Soil Resources

Impact Sources	Construction activities which could lead to soil compacting and interference with soil structure hence making topsoils loose and susceptible to agents of erosion.		**Mitigation Efficiency**	**High**
Nature of impact	• Movement of plant and equipment could result to soil compacting which inhibits soil aeration leading to death of soil microorganisms. • Soil contamination caused by oils and fuel leaks from construction equipment's leading to Oil Acidity increase. • Soil Erosion due to clearing of vegetation cover and trenching activities which results to death of soil microorganism and reduced soil productivity			
Reversibility of impact	Yes			
Mitigation	As discussed in table 7-7 below			
Affected stakeholders /areas	Terrestrial ecosystems			
Magnitude	*Extent*	Site – 2		
	Intensity	Medium-3		
	Duration	Medium term 3		
	Probability	Likely – 3		
Significance	**Weighting**	(Extent+ Intensity +Duration + Probability) x WF(2+3+3+3) x1=11 (Low)		Low

7.3.3 Biophysical Environment Risk Mitigation Measures

The preliminary Environment and Social Screening report proposes the below listed mitigation measures to identified biophysical environment setting as summarized in table 7-3 below.

Table 7- 3: Mitigation of Biophysical Environment Impacts

Impacts	Proposed Mitigation Measures
Destruction of Vegetation in the Project Areas	• Site Clearance and Construction activities will be limited to available reserves within the settlements, Projects will be implemented within existing reserves and wayleaves minimize destruction to vegetation cover • Reinstatement of the project sites to their original state to be carried out once construction works are completed to allow growth of vegetation. • Replant eco friendly grass and trees along the projects after completion of the civil works.
Contamination of Surface Water Sources by Effluents from Construction Plant and Equipment	• Ensure Construction Equipment is well maintained and serviced according to manufacturers' specifications to prevent oil leaks. • Cleaning / repair of Construction Plant and Equipment to be carried out at designated yards • Contractor to have designated storage areas for oils, fuels etc. that is protected from rain water and away from nearby surface water courses
Soil Erosion resulting to loss of top soil	• The risk of Soil Erosion will be lowered through provision of soil Erosion prevention structures i.e. gabions in areas susceptible to Soil Erosion
Solid Wastes Generation from Construction Activities	• Construction wastes (residual earth, debris and scrap materials) to be collected at designated points and Contractor to dispose to designated Solid Waste Dumping Sites approved by the Nyamira County Government • Contractor's Camps and Construction Sites to have designated waste collection points, • Environmental Management, Health and Safety Training Programmes to be conducted for Contractor's Staff to create awareness on proper solid wastes management

7.4 Workers, Community Health and Safety Risks

Workers, Community Health and Safety risks are often triggered by project activities during project construction phase. These risks often affect both workers on site as well as general community in close proximity to the work site.

Management of these risks is required to be as provided for by the Occupational Health and Safety Act (OSHA 2007) and World Bank Environment Health and Safety Guidelines discussed in chapter 3 of this assessment.

This assessment identified potential Environment, Health and Safety in the below listed context.

(i) Excessive noise and vibrations
(ii) Air Pollution and Dust Generation.
(iii) Risk of Accidents at Work Sites

7.4.1 Excessive noise and vibrations

This risk often affect both workers on site and community at large, common sources noise and excessive vibrations are as a result of use of un-serviced plant and equipment as well as activities associated with blasting and rock breaking. As required by OSHA 2007 and EMCA1999 Noise and Excessive Vibration 2009 as well as World Bank EHS Guidelines.

7.4.2 Air Pollution and Dust Generation.

The risk of air pollution often affects both workers on site and community at large, common sources air pollution include use of un serviced plant and equipment which emit hydrocarbons through equipment exhaust system. Poor workmanship example failure to use water sprays during dry season could also result to air pollution.

As required by OSHA 2007 and EMCA 1999 (Air Quality Regulations 2014) as well as World Bank EHS Guidelines.

7.4.3 Risk of Accidents at Work Sites

The risk of accidents at worksites often affects both workers on site and community at large, these risks at times can be fatal as they could lead to death or permanent disability of victims. The risks are commonly caused by failure to observe safety requirements as provided for by as required by OSHA 2007 and the World Bank EHS Guidelines

Table 7-4 presents Environment, Health and Safety Impact Identification and Ranking assessment while table 7-5 presents a summary of mitigation of potential EHS risks.

Table 7- 4: Impacts on Workers, Community Health and Safety

Impact Sources	**Failure to comply to provisions of OSHA 2007 and World Bank EHS Guidelines**		**Mitigation Efficiency**	**High**
Nature of impact	- noise and excessive vibrations due to un-serviced plant and equipment and Activities associated with blasting and rock breaking. - Open trenches within the settlement which pose health hazards to workers and community. - Failure to use required correct signage and safety marshal on site - Un-serviced plant and equipment which emit hydrocarbons through equipment exhaust system. - Poor workmanship & failure to use water sprays during dry season could also result to air pollution. - Failure to observe safe work environment requirements like use of PPEs, Warning Taps, site labelling. - Hearing impairment and respiratory related illness - Can cause death or permanent disability of victims			
Reversibility of impact	Yes			
Affected stakeholders /areas	Workers and Community			
Magnitude	*Extent*	Site – 2		
	Intensity	Medium-5		
	Duration	Medium term-4		
	Probability	Likely – 4		
Significance	**Weighting**	(Extent+ Intensity +Duration + Probability)x WF(2+5+4+4) x4=60 (Medium to High)		Medium to high

7.4.4 Environment Health and Safety Risk Mitigation Measures

The Environment and Social Screening report proposes the below listed mitigation measures to identified workers, Community Health and Safety risks as summarized in table 7-5 below.

Table 7- 5: Mitigation Measure to Workers, Community Health and Safety Risks

Impact	Proposed Mitigation Measures
Noise and Excessive Vibrations.	• Contractor will comply with provisions of EMCA 1999 (Noise and Excessive Vibrations Regulations of 2009) • The Contractor will keep noise level within acceptable limits (60 Decibels during the day and 35 Decibels during the night) and construction activities shall, where possible, be confined to normal working hours in the residential areas • Hospitals and other noise sensitive areas such as schools shall be notified by the Contractor at least 5 days before construction is due to commence in their vicinity
Air Pollution and Dust Generation.	• The contractor will comply to the provisions of EMCA 1999 (Air Quality Regulations 2014) • 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 contractor's specifications • Water sprays shall be used on all earthworks areas within 200 metres of human settlement especially during the dry season.
Risk of Accidents at Work Sites	• Contractor to provide a Healthy and Safety Plan prior to the commencement of works to be approved by the Supervising Engineer. • Provide Personal Protective Equipment including gloves, gum boots, overalls and helmets to workers. 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
Risk of Traffic Accidents along the Pipeline Route	• Strict use of warning signage and tapes where the trenches are open and at other active construction sites • Contractor to Employ and train Road Safety Marshalls who will be responsible for management of traffic on site • Contractor to provide a Traffic Management Plan during construction to be approved by the Supervising Engineer

7.5 Traffic Management Plan

This ESIA provides for the below listed key management principles that will be complied by the Contractor when dealing with traffic on Site during the construction of the identified infrastructure Project in the Informal Settlements with the understanding that the Works will be constructed within Informal Settlements which are densely populated and roads encroached.

(i) Keeping Pedestrians and Vehicles Apart
(ii) Minimizing vehicles movement
(iii) People on Site
(iv) Turing of Vehicles
(v) Visibility
(vi) Signs and Instructions.

Table 7-6 below provides details on how traffic will be managed on site under the above discussed principles

Table 7- 6: Traffic Management Plan

TRAFFIC MANAGEMENT PLAN
Keeping Pedestrians and Vehicles Apart on Site
- **Entrances and exits-** provide separate entry and exit gateways for pedestrians and vehicles; - **Walkways-** provide firm, level, well-drained pedestrian walkways that take a direct route where possible; - **Crossings**- where walkways cross roadways, provide a clearly signed and lit crossing point where drivers and pedestrians can see each other clearly; - **Visibility-** make sure drivers driving out onto public roads can see both ways along the footway before they move on to it; - **Obstructions**– do not block walkways so that pedestrians have to step onto the vehicle route; and - **Barriers**- think about installing a barrier between the roadway and walkway
Minimizing vehicles movement
- Limit the number of vehicles on site - Provide car and van parking for the workforce and visitors away from the work area; - Control entry to the work area; and - Plan storage areas so that delivery vehicles do not have to cross the site.
People on Site

- Contractor will take steps to make sure that all workers are fit and competent to operate the vehicles, machines and attachments they use on site by, for example:
  - checks when recruiting drivers/operators or hiring contractors;
  - training drivers and operators;
  - managing the activities of visiting drivers
- Accidents can also occur when untrained or inexperienced workers drive construction vehicles without authority.
- Access to vehicles will be managed and people alerted to the risk

Turning of Vehicles
The need for vehicles to reverse will be avoided where possible as reversing is a major cause of fatal accidents. - One-way systems will be adopted by the contractor as this can reduce the risk, especially in storage areas. - A turning circle could be installed so that vehicles can turn without reversing
Visibility
If vehicles reverse in areas where pedestrians cannot be excluded the risk is elevated and visibility becomes a vital consideration. This ESIA provides for: - **Aids for drivers-** mirrors, CCTV cameras or reversing alarms that can help drivers can see movement all round the vehicle; - **Signallers**- who can be appointed to control manoeuvres and who are trained in the task; - **Lighting**- so that drivers and pedestrians on shared routes can see each other easily. Lighting may be needed after sunset or in bad weather; - **Clothing**- pedestrians on site should wear high-visibility clothing.
Signs and Instructions
- Make sure that all drivers and pedestrians know and understand the routes and traffic rules on site. Use standard road signs where appropriate including the Heavy Vehicles turning sign - Provide induction training for drivers, workers and visitors and send instructions out to visitors before their visit

7.6 Social Risks

The Project activities as described in the report have the potential of triggering various social risks both at both Project construction phase and operation phase.

This assessment has identified potential social risks associated with the Project as listed below

(i) Loss of Temporal Assets and disruption of sources of Livelihood
(ii) Disruption of Public Utilities like cables, access culverts,
(iii) Labour Influx and sexual offences including minor abuse
(iv) Human Rights and gender inclusivity
(v) Increased Transmission of communicable diseases including HIV/AIDS
(vi) Increased Crime and Insecurity

7.6.1 Disruption of Public Utilities

This impact is likely to be triggered during Project construction phase whereby contractors often damage infrastructure installations such as access culverts to homes, drainage channels, communication cables and power lines power lines. Disruptions of public utility infrastructure often trigger grievances from the users if not promptly mitigated.

7.6.2 Labour Influx Effects

This impact is triggered during Project construction phase due to the Project attracting various categories of workers from local, national and international markets. This therefore leads to concentration of people in one area drawn from diverse social and cultural background often results to a number of issues as listed below;

(i) Strain on various resources (example water, sewerage and accommodation services)
(ii) Grievances from local community members over job opportunities.
(iii) Sexual Offences
(iv) Teenage Pregnancies

Table 7-9 provides Social Impact Identification and ranking that includes labour influx management while Table 7-10 presents possible mitigation measures of the identified social risks

7.6.3 Human Right and Gender Inclusivity

This impact is triggered during Project construction phase due to the potential of the contractor failure to comply with the following provisions;

(i) Gender Inclusivity requirements in hiring of workers and entire Project Management as required by Gender Policy 2011 and 2/3 gender rule.
(ii) failure to protect Human Risk areas Associated with, Disadvantaged Groups, Interfering with Participation Rights, and interfering with Labour Rights

7.6.4 Increase in prevalence of communicable diseases

This impact is triggered during Project construction phase due to the Project attracting various categories of workers from local, national and international markets. This therefore leads to concentration of people in one area drawn from diverse social and cultural background often results to people engaging in risky sexual activities.

Table 7-7 below provide Social Impact Identification and ranking that includes HIV/AIDS management while table 7-8 presents possible mitigation measures of the identified social risks

Table 7- 7: Impacts on Social Setting

Impact Sources	**Project Impacts to people's assets and sources of livelihood and concentration of people with diverse cultural and social background in one location**		**Mitigation Efficiency**	**High**
Nature of impact	(i) Loss land Assets and Sources of Livelihood including trees and crops (ii) Disruption of Public Utilities like cables, access culverts, (iii) Labour Influx and sexual offences including minor abuse (iv) Human Rights and gender inclusivity (v) Increased Transmission of communicable diseases including HIV/AIDS and other communicable diseases			
Reversibility of impact	Yes			
Mitigation Measures	As detailed in table 7-11 below			
Affected stakeholders	Workers and Community			
Magnitude	*Extent*	Site – 2		
	Intensity	Medium-5		
	Duration	Medium term-4		
	Probability	Likely – 4		
Significance	**Weighting**	(Extent+ Intensity +Duration + Probability)x WF(2+3+3+3) x1=11 (Low)		Low

7.6.5 Social Risks Mitigation Measures

The Environment and Social Screening report proposes the below listed mitigation measures to identified Social risks as summarized in Table 7-8 below.

Table 7- 8: Mitigation of Social Impacts

Impacts	**Proposed Mitigation Measures**
Loss of Temporal Assets and Sources of Livelihood	• Prepare a detailed Resettlement Action Plan (RAP) report which documents the nature and magnitude of project impact to people's assets and sources of livelihood, the report should also propose adequate compensation and livelihood restoration measures to affected Project Persons.
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. • The relevant Services Providers and Agencies to be notified prior to commencement of Works so that any relocation works can be carried out before the Pipeline Construction Works begin. • Length of excavation to be restricted to sections that can be reinstated

Impacts	Proposed Mitigation Measures
	within the shortest period possible to minimize time of disruption of services
Increased Transmission of HIV/AIDS	• HIV/AIDS Awareness Program to be instituted and implemented as part of the Contractor's Health and Safety Management Plan to be enforced by the Supervising. This will involve periodic HIV/AIDS Awareness Workshops for Contractor's Staff • Access to Contractor's Workforce Camps by outsiders to be controlled • Contractor to provide standard quality condoms to personnel on site
Labour Influx and sexual offences	• 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. • Comply to provisions of WIBA 2007 and IFC PS 2 on labour and Working Conditions, and ILO Conventions 87, 98, 29,105,138,182,100,111 • Develop and implement a children Protection Strategy
Human Rights 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. • Protecting Human Risk areas Associated with, Disadvantaged Groups, Interfering with Participation Rights, and interfering with Labour Rights
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

7.7 Labour Management During Construction Stage

This ESIA provides that implementation stage the contractor will prepare a Labor Management Plan (LMP) that includes mandatory requirement to procure all unskilled (and as much as possible, semi-skilled) labor as well as locally available materials from the local community while ensuring equal pay for equal work for men, women and people with disability. Measures listed below will be implemented:

- The contractors will reduce labor influx by tapping into the local workforce. Depending on the size and the skill level of the local workforce, a share of the workers required for the project may be recruited locally. This may be easier for unskilled workmen. Specialized workmen may be hired from elsewhere. Local workers may also be trained especially if they are required for the operation of the project.
- The contractor will ensure effective community engagement and strong grievance mechanisms on matters related to labor with a discrete mechanism for safely and confidentially reporting issues of SEA and GBV at the community level triggered by the Sub Project
- Effective contractual obligations for the contractor to adhere to the mitigation of risks against labor influx, the contractor should engage a local community liaison person
- The contractor will ensure proper records of labor force on site while avoiding child and forced labor
- The works contractor should be required, under its contract, to prepare and enforce a No Sexual Harassment and Non-Discrimination Policy, in accordance with national law as well as to the World Bank Code of Conduct guidelines where applicable.
- The contractor will ensure comply to provisions of Work Place Injuries and Benefits Act (WIBA) 2007
- The contractor will develop and implement a children Protection Strategy, this

strategy will ensure that no child under the legal age of 18years is employed to the Project.

- The contractor will ensure SEA is addressed in all employment contracts and a COC is signed by all workers;
- The contractors will develop training and sensitization of workers on SEA and ensure specific signage on SEA zero tolerance in all work sites;

7.8 Specific Project Risks during Operation

This sub chapter discusses specific Project risks associated with the Projects during operation phase as summarized below.

Table 7- 9: Mitigation of Impacts During Operations

impact	Mitigation measure
Risk of electrocution	• Ensuring that all the wires are appropriately insulated and are safe from causing harm to humans Creation of awareness to the locals to avoid getting into contact with dangerous electrical current
May cause eye problem when there is bad lighting	• Ensure that the lighting system is proper to avoid flipping that can result to eye problems for people

CHAPTER 8: ENVIRONMENT AND SOCIAL MANAGEMENT AND MONITORING PLAN

8.1 Management Plan Principles

This Project is geared towards enhancing social and economic benefits to the people living in the Project area who will directly improving infrastructure in the settlements.

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

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

8.2 Specific Management Issues

8.2.1 Management Responsibilities

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

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

Project Specific Sub Plans to be developed by the Contractor.

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

8.2.2 Environmental Management Guidelines

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

Basically, the guidelines should cover among other areas

- ✓ Environmental management progammes
- ✓ Standard Operation Procedures (SOP) Environment, Health and Safety
- ✓ Compliance monitoring schedule provided in the ESMMP
- ✓ Initial and Self Environmental audit schedules as required by EIA/EA Regulation of 2003
- ✓ Continued stakeholder engagement as discussed in chapter 6 of this assessment.

8.2.3 Environmental Education and Awareness Rising

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

Environmental Education and Awareness Rising

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

8.2.4 Decommissioning Process

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

- Contractor's camp and installations that will be removed without compromising on the safety and general welfare of the immediate residents. Special care to be given to associated wastes and dust emitted in the process,
- Materials stores that will comprise fresh materials and used items. Each category will be moved safely out of site ensuring minimal or no impacts to the related environment and social setting,
- Wastes and debris holding sites will be cleared with maximum re-use of the debris either on surfacing the passageways or other grounds such as schools and church compounds.

Table 8- 1: Construction Phase: Environmental and Social Management and Monitoring Plan

Activity	Associated Impacts	Impact Levels	Management Actions	Target Areas& Responsibilities	Monitoring Indicator	Budget
Seeking approvals from NEMA for ESIA, approval of campsite by Directorate of Occupational Health and Safety (DOSH)	Delay in implementation of the Project due to objections and stop orders	Low	▪ The Contractor shall ensure that all pertinent permits, certificates and licences have been obtained prior to any activities commencing on site and are strictly enforced/ adhered to; ▪ The Contractor shall maintain a database of all pertinent permits and licences required for the contract as a whole and for pertinent activities for the duration of the contract	All the Project components Responsibility MoTIH & UD & Contractor	• Number of approvals / permits issued	~KShs.20,000
Environmental and Social Training and Awareness	Risks of Environmental and Social degradation risks and occupational health and safety related accidents	Medium	▪ The Contractor and sub-contractors shall be aware of the environmental requirements and constraints on construction activities contained in the provisions of the ESMMP ▪ The Contractor will be required to provide for the appropriate Environmental Training and Awareness as described in this ESMMP in his costs and programming ▪ An initial environmental awareness training session shall be held prior to any work commencing on site, with the target audience being all project	All Workers Responsibility Contractor(s)	• Number of Trainings Held • Availability of Training reports • Attendance list of participants during the trainings sessions	KShs. 20,000
HIV/AIDS awareness and prevention campaign	Risks of Increased HIV and Aids transmission in the area	Medium	▪ The Contractor shall institute HIV/AIDS awareness and prevention campaign amongst his workers for the duration of the contract, contracting an implementing organisation, with preference for an organisation already working on this issue in the Project area; ▪ The campaign shall include the training of facilitators within the workers, information posters in more frequented areas in the campsite and public areas, availability of	All Workers Responsibility Contractor(s)	• Number of Trainings Held • Availability of Training reports • Attendance list of participants during the training sessions	KShs. 25,000

Activity	Associated Impacts	Impact Levels	Management Actions	Target Areas& Responsibilities	Monitoring Indicator	Budget
			promotional material (T-shirts and caps), availability of condoms (free), and theatre groups			
Local Labour / Employment	Delay in Project implementation due to opposition from aggrieved community members	Medium	▪ Wherever possible, the Contractor shall use local labour, and women must be encouraged to be involved in construction work ▪ The contractor shall ensure compliance to the gender balance as required by the 2/3 gender rule ▪ Prioritize hire of locals for all unskilled labour. ▪ Implement a local recruitment plan that is fair and transparent (including recruitment processes that ensure inclusivity of both men and women, vulnerable individuals, minority clans, ethnic groups etc. ▪ Adhere to labour laws, and labour management practices (timely renumeration, equitable compensation for both genders for equal work etc.) ▪ Create awareness to workers and the community on worker and project grievance redress mechanisms.	All the Project Lots <u>Responsibility</u> Contractor	• Number of workforce employed from the local community • Number of female employed	No direct costs associated
Setting out and clearance of project routes and site	Delay in project implementation due to opposition from PAPs	High	▪ Implementation of Resettlement Action Plan (RAP) recommendations before commencement of civil works ▪ In the event that the contractor requires additional land, the contractor will apply the provisions of the RAP. ▪ if the respective land setting is not reflected in the RAP, to comply with WB OP 4.12; prior to the acquisition of any additional land, the contractor shall submit the respective plan for compensation and this plan has to be approved by the relevant authorities as well as by the PEA.	All the settlements <u>Responsibility</u> MoLIH&UD– Implement RAP Contractor – extra compensation on site	• Numbers of satisfied PAPS • Extend of route opened to the contractor	refer to RAP report

Activity	Associated Impacts	Impact Levels	Management Actions	Target Areas& Responsibilities	Monitoring Indicator	Budget
Earth moving and excavations (Vegetation clearance, channeling and site preparations)	Vegetation Cover destruction	Low to medium	▪ Construction activities will be limited to Project sites / routes which already exist therefore limited destruction to vegetation cover, ▪ Compensatory planting of trees i.e. plant at least twice the number of trees	All work areas Responsibility Contractor(s)	• Soil erosion extend and intensity on site	No direct cost
	Impacts on Water Resources - water pollution	Low to medium	• No grey water runoff or uncontrolled discharges from the site/working areas (including wash down areas) to adjacent storm water shall be permitted; • Water containing such pollutants as cements, concrete, lime, chemicals and fuels shall be discharged into a conservancy tank for removal from site where applicable • The Contractor shall also prevent runoff loaded with sediment and other suspended materials from the site/working areas from discharging to storm water channels	All work areas Responsibility Contractor(s)	• Water quality flowing through storm	No direct cost
	Siltation and Sedimentation Control	low	• Any work along storm water channels will be isolated to prevent silt propagating downstream; • Debris and other material will be prevented from entering Storm water channels ; contamination by other pollutants); • Sand/silt traps should be used so as to prevent silt and any other sediments from getting into storm water channels • Site compounds and stockpiles will be located away from shallow wells and storm water channels	civil works areas Responsibility Contractor(s)	• Silt load in storm water channels	No direct cost
	Soil Erosion Impacts	low	• Earthworks should be controlled so that land that is not required for the Project works is not disturbed;	civil works areas	• Extend of soil erosion on site	No direct cost

Activity	Associated Impacts	Impact Levels	Management Actions	Target Areas& Responsibilities	Monitoring Indicator	Budget
			• Wherever possible, earthworks should be carried out during the dry season to prevent soil from being washed away by the rain. • Excavated materials and excess earth should be kept at appropriate sites approved by the Supervising Engineer. • The contractor should adhere to specified cut and fill gradients and planting embankments with shrubs and grass to reduce erosion	Responsibility Contractor(s)		
Site Activities	Risk of Accidents at Work Sites	High	▪ Contractor to provide a Healthy and Safety Plan (HSP) prior to the commencement of works to be approved by the Supervising Engineer. ▪ Provide Personal Protective Equipment (PPE) including gloves, gum boots, overalls and helmets to workers. 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 ▪ Strict use of warning signage and tapes where the trenches are open and at other active construction sites ▪ Contractor to Employ and train Road Safety Marshalls who will be responsible for management of traffic on site	civil works areas Responsibility Contractor(s) Supervision	• Number of fatalities and accidents recorded in the incidence book	KShs.30,000
	Solid Wastes impacts	High	▪ The contractor shall develop a comprehensive Waste Management Plan (WMP) prior to commencement of works ▪ Properly labelled and strategically placed waste disposal containers shall be provided at all places of work ▪ Litter bins should have secured lids to prevent animals and birds from scavenging ▪ All personnel shall be instructed to dispose of all	civil works areas Responsibility Contractor(s) Supervision	• Quantity of solid Wastes Generated and appropriately disposed	KShs.25,000

Activity	Associated Impacts	Impact Levels	Management Actions	Target Areas& Responsibilities	Monitoring Indicator	Budget
			waste in a proper manner ▪ Recycling of construction material shall be practiced where feasible e.g. containers and cartons ▪ Earth spoils shall be disposed of in pre identified sites			
	Liquid Wastes Impacts	High	▪ Water containing pollutants such as concrete or chemicals should be directed to a conservancy tank for removal from the site where applicable ▪ Potential pollutants of any kind and form shall be kept, stored and used in such a manner that any escape can be contained ▪ In case of any form of pollution the contractor should notify the Resident Engineer (RE) ▪ Wash areas shall be placed and constructed in such a manner so as to ensure that the surrounding areas including groundwater are not polluted ▪ No grey water runoff or uncontrolled discharges from the site or working areas to any adjacent Storm water channels .	civil works areas Responsibility Contractor(s) Supervision	• Quantity of liquid Wastes Generated and appropriately disposed	KShs.25,000
	Sanitation issues resulting from both solid and liquid wastes on site Risks associated with water born diseases exposed to community and workforce	High	▪ The Contractor shall -laws relating to public health and sanitation ▪ All temporary/ portable toilets or pit latrines shall be secured to the ground to the satisfaction of the RE to prevent them from toppling over ▪ A wash basin with adequate clean water and soap shall be provided alongside each toilet. Staff shall be encouraged to wash their hands after use of the toilet, in order to minimise the spread of possible disease	All work areas Responsibility Contractor(s) Supervision	Incidence of reported cases of water related diseases among the workforce and neighbor community	No direct cost associated
	Fuels, Oils and other hydro-	High	▪ The contractor shall ensure that the machines and equipment are in good condition when on	civil works areas	• Quantity of waste fuels and	KShs.25,000

Activity	Associated Impacts	Impact Levels	Management Actions	Target Areas& Responsibilities	Monitoring Indicator	Budget
	carbons		site. ▪ Ensure proper handling of lubricants, fuels and solvents while maintaining the plant and equipment. ▪ Any chemical or fuel spills shall be cleaned up immediately. The spilt liquid and clean-up material shall be removed, treated and transported to an appropriate site licensed for its disposal.	Responsibility Contractor(s) Supervision	oils appropriately disposed	
	Storage of fuel oils, lubricants, chemicals and flammable materials Hazards of fire outbreak, oil and chemical spills.	High	▪ Follow specifications of the Occupational Health and Safety Act 2007, EMCA 1999 and others in the development and operation of stores.	All work areas Responsibility Contractor(s) Supervision	Incidence of reported cases of fuel leaks and fire incidences	No direct cost associated
	Noise and Vibration control from plant and equipment Risk to health and safety of community and workers	High	▪ The Contractor shall keep noise level within acceptable limits and construction activities shall, where possible, be confined to normal working hours in the residential areas ▪ hospitals and other noise sensitive areas shall be notified by the Contractor at least 5 days before construction is due to commence in their vicinity ▪ Any complaints received by the Contractor regarding noise will be recorded and communicated to the RE ▪ The Contractor must adhere to Noise Prevention and Control Rules of April 2005	civil works areas and access roads Responsibility Contractor(s) Supervision engineer	Reported complaints from neighbor community and institutions	No direct cost associated
	Air Quality Control Air pollution causing respiratory	High	▪ 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 contractor's specifications	All work areas Responsibility Contractor(s) Supervision	Cases of respiratory complication at nearby health centre	No direct costs (integrated in the works costs)

Activity	Associated Impacts	Impact Levels	Management Actions	Target Areas& Responsibilities	Monitoring Indicator	Budget
	disorders to human		▪ The removal of vegetation shall be avoided until such time as clearance is required and exposed surfaces shall be re-vegetated or stabilised 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 soil materials shall be covered to reduce spills and windblown dust ▪ Water sprays shall be used on all earthworks areas within 200metres of human settlement.			
Traffic management on site	Risks of Accidents, Injuries or death of workers or community member	high	▪ Strict use of warning signage and tapes where the trenches are open and active sites ▪ Employ and train road safety Marshalls who will be responsible for management of traffic on site ▪ Contractor to provide a traffic management plan during construction to be approved by the resident engineer	.civil works areas and access roads Responsibility Contractor(s) Supervision engineer	Accidents occurrence incidences	No direct cost
Materials sourcing, from burrow pits and quarries delivery and storage	Environmental and Safety risks associated with burrowing and opening up of new quarry sites	Medium to High	• Ensure that appropriate authorization to use the proposed borrows pits and quarries has been obtained before commencing , • This should be achieved through preparation of specific Environment and Social Impact Assessment for identified quarries and burrow pits to inspected and approved by NEMA. • Carry out inspection of each of the site's soil stability before excavation; • Borrow pits and quarries shall be located more than 20 meters from watercourses in a position that will facilitate the prevention of storm water runoff from the site from entering the watercourse; • The Contractor shall give a 14 day notice to	Burrow Pits and Quarry Site Responsibility Contractor(s) Supervision	• Environmental Status of reinstated burrow pits • Complains from the community on burrow pits and material transportation	Cost to be identified once the burrow areas are determined

Activity	Associated Impacts	Impact Levels	Management Actions	Target Areas& Responsibilities	Monitoring Indicator	Budget
			nearby communities of his intention to begin excavation in the borrow pits or quarries;			
	Labour Influx to Project settlements	Medium to High	• The contractor awarded the Project will develop a labour Management Plan (LMP) in consultation with local leaders. • The contractor will ensure 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 should engage a local community liaison person. • The contractor will ensure proper records of labour force on site while avoiding child and forced labour • The contractor will ensure comply to provisions of Work Place Injuries and Benefits Act (WIBA) 2007	Project Corridor Responsibility Contractor(s) Supervision	• Number of grievances recorded by disgruntled works force and community	No direct cost
	Gender Inclusivity in Project activities	Low	• The contractor will mainstream Gender Inclusivity in hiring of workers and entire Project Management as required by Gender Policy 2011 and 2/3 Gender Rule. • The existing community structures headed by location chiefs should be involved in local labour hire, emphasize the requirement of hiring women, youth and people with disability and VMGs • Protecting Human Risk areas Associated with, Disadvantaged Groups, Interfering with Participation Rights and interfering with Labour Rights	Project Corridor Responsibility Contractor(s) Supervision	• women and Men employed by the Project	No direct cost
	Children abuse impacts	High	• The contractor will develop and implement a Children Protection Strategy that will ensures minors are protected against negative impacts	Project Corridor	• Number of cases reported involving abuse	No direct cost

Activity	Associated Impacts	Impact Levels	Management Actions	Target Areas& Responsibilities	Monitoring Indicator	Budget
			associated by the Project. • 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 18years should be hired on site as provided by Child Rights Act (Amendment Bill) 2014	Responsibility Contractor(s) Supervision	of children • Develop a child protection Code of Conduct. • Number of staff who have signed the code of conduct. • Number of refresher trainings on child protection code. •	
	Ineffective Grievance Management	Medium to high	• Constitute a Local Grievances Committee in consultation with all community segments and incorporate the existing local dispute resolution mechanisms. • Implement a worker's grievances mechanism. • Create awareness on the culturally appropriate and accessible GRM to all community segments including vulnerable individuals and households and CSOs. • Log, date, process, resolve, and close-out all reported grievances in a timely manner. • Ensure proportionate representation of disadvantaged persons in the local grievances committee. • Enable the GRM to provide for confidential reporting of particularly sensitive social aspects such as GBV, as well as anonymity.	Project Corridor Responsibility Contractor(s) Supervision	• Local grievance Committees • Number of cases received and logged • Number of GRC meetings conducted • Number and type of facilitation done by SEC/GRC • Number of grievances timely resolved • Number of Grievances escalated to national court and WB Redress services	
	Gender-Based	Medium	• Develop and implement a plan to manage the	Project	• Number of	No direct

Activity	Associated Impacts	Impact Levels	Management Actions	Target Areas& Responsibilities	Monitoring Indicator	Budget
	Violence Sexual Exploitation and Abuse (SEA) and Sexual Harassment (SH)	to high	risk of SEA/SH. • Map the GBV referral pathways and create awareness among women and men on the risk of SEA/SH. • Ensure the GRM is SEA/SH-responsive. • Ensure all those with physical presence on site sign and understand the Code of Conduct. • Put in place measures for monitoring GBV/sexual harassment.	Corridor Responsibility Contractor(s) Supervision	Inductions sessions on SEA/SH and signed code of conduct • Number of SEA and SH cases reported and resolved. • Number of community sensitization sessions on SEA and SH • Number of continuous training and awareness done through tool boxes talks • Number of IEC material done to create awareness • Number of stakeholder engagements conducted. • Establishment of a grievance response GRM.	anticipated
	Child Exploitation and Abuse		•		•	
	Increase of	High	• HIV/AIDS Awareness Program and other	All Workers	• Number of	Budgeted

Activity	Associated Impacts	Impact Levels	Management Actions	Target Areas& Responsibilities	Monitoring Indicator	Budget
	communicable diseases including HIV and Aids		communicable diseases to be instituted and implemented as part of the Contractor's Health and Safety Management Plan to be enforced by the Supervising Engineer. • This will involve periodic HIV/AIDS and other communicable diseases Awareness Workshops for Contractor's Staff • Access to Contractor's Workforce Camps by outsiders to be controlled • Contractor to provide standard quality condoms to personnel on site	Responsibility Contractor(s)	• Trainings Held • Availability of Training reports • Attendance list of participants during the training sessions	above in row(5) on page 8.5
Contractor de-mobilization and site reinstatement	Associated risks of environmental degradation	Medium	▪ The site is to be cleared of all construction materials, including litter prior to hand over ▪ Fences, barriers and demarcations associated with the construction phase must be removed from the site ▪ Fences, barriers and demarcations associated with the construction phase must be removed from the site ▪ Rehabilitation Activities of Environmental Cases identified must continue throughout the defect liability period	All work areas Responsibility Contractor(s) Supervision	Closeout audit report findings	No direct anticipated
Total Estimated Cost for ESMMP					**EMP**	**Khs 170,000.00**

Table 8- 2: Operational Phase: Environmental and Social Management and Monitoring Plan

Roads and Drainage

No.	Issue	Action required	Responsibility	Provisional Budget
1	Loss of business associated with poor road condition during operation phase	• Develop a capacity building plan or program for road maintenance team who are mandated to operate and maintain the road • Regular maintenance and repair of the road by County Government, this should be through regular road marking, sealing of pot holes, ensure road signage is in place among other operations	Nyamira County Government	To be established at operation phase and included in the operation of the Projects
2	Loss of business associated with breakdown of flood lights	• Develop a capacity building plan or program for flood lights maintenance team who are mandated to operate and maintain the flood lights • Regular maintenance of the flood lights by County Government, this should be through regular replacement of bulbs	Nyamira County Government	To be established at operation phase and included in the operation of the Projects
2	Increased Accidents associated with motor cycles over speeding within the settlement due to good roads	• Develop a capacity building plan or program on road safety campaign that targets road users. • The County Government to enlighten motorist and cyclist on importance of obeying traffic rules especially in residential areas. • The County Government to enlighten residents and school children on the importance of adhering to provisions of road safety rules • Regular inspection and maintenances of the road by County Government of Nyamirato ensure the speed control parameters and signage are in good condition. • Regular crackdown, arrest and prosecution of motorists and cyclist who disobey road safety directions.	Nyamira County Government	To be established at operation phase and included in the operation of the Projects

Flood Mast and Street Lights

No.	Issue	Action required	Responsibility	Monitoring Indicator	Provisional Budget
1	Risk of encroachment and construction of Flood Mast	• Mapping and installation of beacons to which illustrate the width and extent of land for Flood mast • Conduct public sensitization programs on importance not interfering with way leaves and public reserve land	Nyamira County	Number of encroachment cases reported	To be established at operation phase and included in the operation of the projects
2	Risk of Flood mast falling due to heavy wind	• Regular check, repair and maintenance of the Flood mast • Proper designs and construction of the base • Activate a community watch group for information sharing on the status of the pipeline	Nyamira County	Properly build Base Number of inspections on the flood mast	To be established at operation phase and included in the operation of the projects
3	Risk of illegal power connection to the flood mast	• This will require constant inspection by Nakuru County • Conduct public sensitization programs on importance not interfering with power for flood mast	Nyamira County	Number of illegal connection cases reported	To be established at operation phase and included in the operation of the projects
4	Interference with sleep on locals at night	• Regular inspections, repair and maintenance of the required lights • Use lights that are not too bright to affect the locals	Nyamira County	Number of complains recorded over lighting	To be established at operation phase and included in the operation of the projects

No.	Issue	Action required	Responsibility	Monitoring Indicator	Provisional Budget
5	Improved business	• The Flood lights to work effectively the moment the darkness comes in and switch off in the morning	Nyamira County	Number of business operating till late night Number Reported security issues in the area	To be established at operation phase and included in the operation of the projects
6	Energy use	• Proposed and scheduled time for on and off of the flood mast	Nyamira County	Amount of bills paid to Kenya power monthly	Operation budget for the County.

8.3 Decommissioning Flow Chart

The project has been designed to operate effectively for over 20years. In the event that the infrastructure will be required to be overhauled, then the following steps should be considered in order to undertake the procedure in a structured manner with minimum impact to both human and natural environment.

Table 8- 3: 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**

CHAPTER 9: CONCLUSION

9.1 Conclusion

Key findings of the Environment and Social Impact assessment of the proposed KISIP investments in Keroka Block B Informal settlement are as follows:

(i) The Project has an overall positive impact on the informal settlements as it will improve the living conditions of people living and working in the informal settlements, through improving accessibility, drainage, waste, and security.

(ii) The Project does not have significant and potentially irreversible negative impacts on the environment and people. The few identified negative impacts associated with construction Projects can easily be mitigated, and an Environmental and Social Impact Management Plan has been prepared as part of this report, whose implementation will be monitored to ensure compliance and protection of the environment. A monitoring plan to ensure this happens has also been developed.

(v) The Projects will have no impact on land; this is because the planned investments in the informal settlements will be implemented within road reserves, water and sewerage wayleaves and open public grounds that is free from encroachment.

(vi) The Projects will have no impact on land; this is because the planned investments in the informal settlements will be implemented within road reserves. However, an abbreviated RAP prepared for the settlement identified 6PAPS Keroka Block B comprising of 3 business shed owners and 3 PAPs losing Shop Verandas. (asset register of the PAPs is presented as annex to this report)

(vii) The total budgetary requirements for compensating the affected PAPs is provided as KSH. 111,665 (One Hundred and eleven thousand, six hundred and sixty-five shillings only).

(iii) The EMP should be fully implemented and should form part of the contract with the selected contractors who will undertake the works. The implementation of the EMP should be monitored in accordance with the monitoring plan in this report. The Resident engineer should supervise and report on the implementation regularly as provided.

(iv) Provisional Budget of Kenya Shilling One hundred and Seventy thousand should be included in the bidding documents for implementation of mitigation measures of potential negative impacts.

ANNEXES

ANNEX 1 ENVIRONMENT AND SOCIAL SCREENING MATRIX

Annex 1: Environment and Social Screening Matrix

Criteria	Yes/No	Comments	Other GoK/ WB Policies applicable	Recommended scale of Environmental Assessment
Part A: Triggers to EMCA				
Applicability of Second Schedule of EMCA	Yes (all settlements)	Project activities fall within provisions of EMCA schedule 2	Applicable as discussed in chapter (4)	As discussed in sub chapter (7.4, 7.5 and 7.6) below
Part B: Details of Site location	**Yes/No**	**Description**	**GoK/ WB Policies applicable**	**Proposed Mitigations or Enhancements**
Site of ecological importance as described in environment screening checklist	No (all settlements)	Sites located within human urban settlements	Applicable as discussed in chapter (4)	As discussed in sub chapter (7.4) below
Are there vulnerable or endangered species (terrestrial or aquatic) in the area?	No (all settlements)	Sites located within human urban settlements	Applicable as discussed in chapter (4)	As discussed in sub chapter (7.4) below
Are there natural habitats in the site? Or in its proximity	No (all settlements)	Sites located within human urban settlements	Applicable as discussed in chapter (4)	As discussed in sub chapter (7.4) below
If there are natural habitats, are they fragile, unique, limited in size? Are these world heritage / Ramsar sites	No (all settlements)	Sites located within human urban settlements	Applicable as discussed in chapter (4)	As discussed in sub chapter (7.4) below
Are there wetlands, areas of saturated soils (permanent or temporary), or evidence of ponding (cracks, high clay content in soils, dead vegetation, water marks)?	No (all settlements)	Sites located within human urban settlements	Applicable as discussed in chapter (4)	As discussed in sub chapter (7.4, 7.5 and 7.6) below
Is the site already degraded (low groundwater, poor soil quality)?	No (all settlements)	Sites located within human urban settlements	Applicable as discussed in chapter (4)	As discussed in sub chapter (7.4) below
Are there steep slopes in the proximity of the investment site?	No (all settlements)	Sites located within human urban settlements	Applicable as discussed in chapter (4)	As discussed in sub chapter (7.4) below
Do people live on the proposed site?	Yes (all settlements)	Sites located within human urban settlements	Applicable as discussed in chapter (4)	As discussed in sub chapter (7.4) below
List existing land uses (ranching, farming)?	All Settlements	Human Urban Settlement	N/A	N/A
Is there existing site access (roads)?	All Settlements	Human Urban Settlement	N/A	N/A
Is the site vulnerable to natural hazards (in floodplain, near volcano, on seismic fault, near coastline in hurricane zone)?	No (all settlements)	Sites located within human urban settlements	Applicable as discussed in chapter (4)	As discussed in sub chapter (7.4) below
Are there land title conflicts?	No (all settlements)	No conflict – KISIP component 2 has addressed land tenure	N/A	N/A

Criteria	Yes/No	Comments	Other GoK/ WB Policies applicable	Recommended scale of Environmental Assessment
		issues		
Are there known archaeological, historical or other cultural property? Are any of these world heritage/ UNESCO designated etc	No (all settlements)	Sites located within human urban settlements no archeological site indentified	Applicable as discussed in chapter (4)	As discussed in sub chapter (7.4) below
Do indigenous peoples live on or near the site?	No (all settlements)	No indigenous people indentified on site	Applicable as discussed in chapter (4)	As discussed in sub chapter (7.4) below
Part C: Analysis of likely physical Impacts				
(i) Scope of proposed activities				
Will the investment generate an increase in solid wastes or machine wastes (oil, etc)?	Yes (All settlements)	Wastes from construction activities including plant and equipment and materials on site	Applicable as discussed in chapter (4)	As discussed in sub chapter (7.4 and 7.5) below
(ii) Water Resource Impacts				
Could the investment result in a modification of groundwater levels by altering flows, paving surfaces or increasing water extraction?	No (All settlements)	Nature of anticipated project activities are small and less adverse to ground water resources	Applicable as discussed in chapter (4)	As discussed in sub chapter (7.4 and 7.5) below
Could it affect groundwater quality?	No (All settlements)	Nature of anticipated project activities small and less adverse to ground water resources	Applicable as discussed in chapter (4)	As discussed in sub chapter (7.4 and 7.5) below
Could it affect quality (through sediment, wastewater, storm discharge or solid waste) of nearby surface waters (lake, rivers, streams)?	yes(All settlements)	This impact is anticipated during construction (siltation, increase in turbidity), however this impact can be mitigated as discussed in 4.4 and 4.5 below.	Applicable as discussed in chapter (4)	As discussed in sub chapter (7.4 and 7.5) below
Will it affect water quantity in nearby water bodies (lake, river, stream)?	yes(All settlements)	During construction, the contract will be expected to abstract water for construction activities from nearby water resources, the contractor	Applicable as discussed in chapter (4)	As discussed in sub chapter (7.4 and 7.5) below

Criteria	Yes/No	Comments	Other GoK/ WB Policies applicable	Recommended scale of Environmental Assessment
		will be required to obtain water abstraction permits from sub regional WRMA offices. (the nearest water body is the Sabaki River which the contractor might abstract water from)		
Are there nearby potable water sources that need to be protected?	No (All settlements)	Settlements located in humans settlements with no natural habitat	Applicable as discussed in chapter (4)	As discussed in sub chapter (7.4 and 7.5) below
(iii) Ecosystem Impacts				
Could the investment affect natural habitats or areas of high ecological value?	No (All settlements)	Settlements located in humans settlements with no natural habitat.	Applicable as discussed in chapter (4)	As discussed in sub chapter (7.4 and 7.5) below
Could it affect natural characteristics of adjacent or nearby sites?	No (All settlements)	Settlements located in humans settlements with no natural habitat, .	Applicable as discussed in chapter (4)	As discussed in sub chapter (7.4 and 7.5) below
Could it affect wildlife or natural vegetation?	No (All settlements)	No game parks and reserves in the settlements	Applicable as discussed in chapter (4)	As discussed in sub chapter (7.4 and 7.5) below
(iv) Drainage Impacts				
Will the investment in storm water drainage affect existing drainage patterns?	Yes (All settlements)	The settlements have challenges in storm water as discussed in chapter 2, investing in storm water drainage will resolve the problem. However, during construction minor impacts on existing storm water drainage will be experienced	Applicable as discussed in chapter (4)	As discussed in sub chapter (7.4 and 7.5) below

Criteria	Yes/No	Comments	Other GoK/ WB Policies applicable	Recommended scale of Environmental Assessment
Will it cause standing water, which could cause public health risks?	yes (All settlements)	Storm water drainage will help drain stagnant water existing in the settlements However, during construction minor impacts on existing storm water drainage will be experienced	Applicable as discussed in chapter (4)	As discussed in sub chapter (7.4 and 7.5) below
Will erosion result in sediment discharge to nearby water bodies?	Yes (all settlement)	However less significant erosion which can be mitigated	Applicable as discussed in chapter (4)	As discussed in sub chapter (7.4 and 7.5) below
Will surface drainage patterns be affected in borrow pits and quarries?	Yes (All settlements)	Project activities will not directly lead to burrow pits and quarries within the settlement, however on the areas where burrow pits will be opened, drainage patterns of likely to be impacted.	Applicable as discussed in chapter (4)	As discussed in sub chapter (7.4 and 7.5) below
Will infiltration patterns be affected?	No (All settlements)	The settlement pattern is dense, less impact is anticipated on infiltration patterns	Applicable as discussed in chapter (4)	As discussed in sub chapter (7.4 and 7.5) below
Socio-economic impacts				
Will the project entail resettlement of population?	No (All settlements)	No persons will be physical resettled, however, the project will trigger partial impacts to structures encroaching into road reserves, business and other sources of livelihood	Applicable as discussed in chapter (4))	As discussed in sub chapter (7.4 and 7.5) below

Criteria	Yes/No	Comments	Other GoK/ WB Policies applicable	Recommended scale of Environmental Assessment
		encroaching on the reserve will be affected		
Will the project affect indigenous peoples?	No (all settlements)	No indigenous people identified on site	Applicable as discussed in chapter (4)	As discussed in sub chapter (7.4) below
Will it limit access to natural resources to local populations?	No (all settlements)	No natural resources were identified with the target settlements	Applicable as discussed in chapter (4)	As discussed in sub chapter (7.4) below
Will it have an impact on land use?	Yes (all settlements)	Once upgrading of infrastructure in the settlements is completed, the land use in the settlements will improve with better housing, attraction of other social amenities such as schools, hospitals, shops.	Applicable as discussed in chapter (4)	As discussed in sub chapter (7.6) below
Will it induce further encroachment of nearby areas?	No (all settlements)	The projects will in fact help to clear road reserves and water / sewerage wayleaves in the settlement which are encroached	Applicable as discussed in chapter (4)	As discussed in sub chapter (7.6) below
Will it cause any health impacts?	No (all settlements)	Minor construction activities related impacts will be mitigated	Applicable as discussed in chapter (4)	As discussed in sub chapter (7.5) below
Will it disturb nearby communities during construction?	Yes (all settlements)	Minor disturbance during construction which can be mitigated	Applicable as discussed in chapter (4)	As discussed in sub chapter (7.5) below
Could cultural resources be affected?	No (all settlements)	No cultural resources were identified	Applicable as discussed in chapter (4)	As discussed in sub chapter (7.5) below
Could it affect nearby properties?	Yes (all settlements)	Less significant impacts to people's assets and sources of livelihood as discussed above which will be appropriately	Applicable as discussed in chapter (4)	As discussed in sub chapter (7.5) below

Criteria	Yes/No	Comments	Other GoK/ WB Policies applicable	Recommended scale of Environmental Assessment
		compensated as presented in the RAP assessments for the Project		

ANNEX 2 PUBLIC PARTICIPATION MINUTES AND LIST OF PARTICIPANTS

MINUTES OF KISIP 2 ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT REPORT (ESIA) AND RESETTLEMENT ACTION PLAN (RAP) FOR KEROKA BLOCK B SETTLEMENT IN NYAMIRA COUNTY HELD ON 27TH OCTOBER 2023 FROM 10.00 AM AT KEROKA AFC

Attendance:

(Attendance list attached)

Agenda

1. INTRODUCTION AND OPENING REMARKS
2. PROJECT INFORMATION AND PROPOSED SCOPE
3. ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT
4. RESSETTLEMNT ACTION PLAN
5. PLENARY
6. CLOSING REMARKS

MINUTES NO.	DISCUSSIONS	ACTORS
Min. 01/26/10/2023	**INTRODUCTION AND OPENING REMARKS** The meeting was called to order by the chair person at 10.00 AM. A resident of Keroka Block B opened the meeting by a word of prayer. The chair welcomed all members present. He urged them to be attentive, orderly and raise any concerns they might have concerning the proposed project. Rigoma ward administrator welcomed all in attendance and informed them that it was very important to attend public participation forums as its enshrined in the constitution. He later welcomed the Environmentalist to proceed with the agenda of the day.	SEC Chairperson and Ward administrator
Min. 02/26/10/2023	**PROJECT INFORMATION AND PROPOSED SCOPE** The environmentalist informed those in attendance that the project is funded by the world bank and government of Kenya. He further informed them that KISIP is implemented through institutional arrangement that include National government and County government that comprises of County Project Coordination Team and Settlement Executive Committee. Residents were informed that proposed works for Keroka Block B include; • Upgrading selected roads within the settlement to R1 and R2 standards. • Construction of an Ablution block • Solar street light along the upgraded roads. • 2 NO High mast flood light. • Construction of Vending platform • 2NO Water kiosk	Safeguards Expert

<table>
<tr><th>MINUTES NO.</th><th>DISCUSSIONS</th><th>ACTORS</th></tr>
<tr><td>Min. 03/26/10/2023</td><td>ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT.
An Environmental and Social Impact Assessment will be done as guided by EMCA 1999 where the public will be informed about the project, their views gathered and incorporated in the project design, project impacts to the environment identified and mitigation measures provided. All this is done in order to achieve sustainable development.</td><td>Safeguards Expert</td></tr>
<tr><td>Min. 04/26/10/2023</td><td>RESETTLMENT ACTION PLAN
The environmental and social safeguards expert explained to those in attendance that the role of the Resettlement Action plan was to document all those Project Affected Persons (PAPs) whose assets are likely to be affected by the project. Information to be collected from the PAPs include
• Bio-data
• Vulnerability Status
• Nature of affected asset
He further informed members that no resident will be relocated out of the settlement, owners of affected structures are expected to push back their structures voluntarily to pave way for the proposed works.</td><td>Safeguards Expert</td></tr>
<tr><td>Min. 05/26/10/202</td><td>PLENARY
9.1.1 Questions
<table>
<tr><th>Questions/Concerns</th><th>Response</th></tr>
<tr><td>MR. Evans Obuga Wanted to know the extend of the project coverage</td><td>Residents were informred that the project has been selected to cover Keroka Block B. Maps indicating proposed works will be shared with residents.</td></tr>
<tr><td>Mr. Orwavo Wanted to know if youth from the settlement will get employment opportunities during project implementation phase.</td><td>Residents were informed that youth from the area will be given first priority for unskilled labour. They were. If opportunities for skilled labour is available those with relevant qualification from the settlement will be considered as well.</td></tr>
<tr><td>Joseph Moreka wanted to know if there will be compensation for the affected structures.</td><td>Those in attendance were informed that World Bank Operation Policy OP 4.12 on involuntary resettlement will apply. Those with encroaching structures will be given adequate time to push back their structures voluntarily,</td></tr>
</table></td><td>All</td></tr>
</table>

MINUTES NO.	DISCUSSIONS	ACTORS
	as well as collect salvage material from the structures.	
Min. 06/26/10/2023	**CLOSING REMARKS** Rigoma ward MCA thanked residents for conducting themselves in an orderly manner throughout the meeting. He urged the consultant to work hand in hand with all relevant stakeholders to ensure the project succeeds. Pastor Evans keroka PAG overseer encouraged residents to embrace the project so as not to miss out. They should cooperate in moving encroaching structures whenever they are called upon. SEC chair thanked KISIP for selecting Keroka as a beneficiary of the project. He proposed a borehole to be sunk in the area to address the challenge of water shortage that is frequent in the area, residents also proposed inclusion of drainage improvement and segregated solid waste collection bins.	Area MCA, SEC and Pastor.

There being no other business, the meeting was adjourned at 12.00 noon with a word of prayer from pastor Evans of Keroka PAG Church.

MINUTES CONFIRMED BY:

Settlement Executive Committee Representative

Name... EVANS ABUYA ... Signature... ... Date... 27/10/2023

Consultant's Representative.

Name... Obra Mmaitsi ... Signature... ... Date... 27/10/2023

PHOTO PLATE

SEC chairperson addressing residents of Keroka Block B

Rigoma Ward MCA addressing residents.

ATTENDANCE
LIST

ANNEX 3 CHANCE FIND PROCEDURES

CHANCE FIND PROCEDURES

KENYA INFORMAL SETTLEMENTS IMPROVEMENT

ENVIRONMENT AND SOCIAL IMPACT ASSESSMENT (ESIA) REPORT

Policy and Legal Provision

World Bank OP 4.11 on Physical Cultural Resource and National Museums and Heritage Act 2006 laws of Kenya provides for; *'if you believe that you may have encountered any archaeological materials or any material national importance stop work in the area and follow the procedure box below'*

Chance Find Procedures

(i) All construction activity in the vicinity of the remains is to cease immediately.
(ii) The Supervising engineer or Environment Officer shall contact Kenya National Museums Immediately

Public relations:
E-mail: publicrelations@museums.or.ke
Director General:-
Email: dg@museums.or.ke
Fax: +254 -20-3741424
Tel:+254-20-8164134/35/36

(iii) The find location will be recorded and all remains will be left in place.
(iv) Potential significance of the remains will be assessed and mitigative options will be identified.
(v) If the significance of the remains is judged to be sufficient to warrant further action and they cannot be avoided, then the Director of Kenya National Museums will determine the appropriate course of action
(vi) In the case of human remains, if the remains are assessed to be archaeological, then Director of Kenya National Museums will determine how to handle them.
(vii) Options could include avoidance or respectful removal and reburial.
(viii) If human remains are encountered and they are not archaeological, then Nyamira County Government will be contacted immediately for appropriate reburial.

ANNEX 4 Asset Register of 6 affected PAPs *(presented separately as an excel file)*

ANNEX 5 LEAD EXPERT 2023 LICENSE

FORM 7 (r.15(2))

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/18651
Application Reference No: NEMA/EIA/EL/24565

M/S **Godwin Lidahuli Sakwa**
(individual or firm) of address
P.O. Box 18075 - 00500 NAIROBI

is licensed to practice in the capacity of a (Lead Expert/Associate Expert/Firm of Experts) **Lead Expert General**

registration number **2492**

in accordance with the provision of the Environmental Management and Coordination Act Cap 387.

Issued Date: 1/23/2023

Expiry Date: 12/31/2023

Signature.....

(Seal)
Director General
The National Environment Management Authority

P.T.O.

ISO 9001:2015 Certified