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 HOMABAY, NYAMIRA, UASIN GISHU AND NANDI, CONTRACT NUMBER: KE-MOTI-298201-CS-QCBS

ENVIRONMENT AND SOCIAL IMPACT ASSESSMENT PROJECT REPORT FOR INFRASTRUCTURE UPGRADING OF SOFIA INFORMAL SETTLEMENTS LOCATED IN HOMA BAY COUNTY

APRIL 2024

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Client

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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
EHS	Environment Health and Safety
EIA	Environmental 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
HOMAWASCO	Homa Bay Water and Sewerage Company
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
MoLPWHUD	Ministry of Land, 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

KISIP - Infrastructure and Service Delivery for Homabay County is a project spearheaded by World Bank (WB) in collaboration with the Kenya Government (GK) through the Ministry of Lands, Public Works Housing and Urban Development (MoLPWHUD) to improve the civil works infrastructure within the six settlements of 1000 Street, Makongeni, Rusinga Old Town, Nyandiwa, Shauri yako and Sofia in Homabay County. It is driven by an inclusive participatory project formulation model through social interaction platform for a specific settlement dweller and incorporates multi-disciplinary expertise contribution to guide the expectation of the residents mostly by public forum workshops where the client and financier (WB) are heavily represented.

The stages are socio-survey, conceptual design report discussions, feasibility report discussions and final detailed engineering designs. The outcomes of these are compiled into a tender document to be rolled out to construction. 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**.**

E.2 Prioritized Interventions

Sofia settlement is located in the South West region of Homabay Town meters and is accessible from Mbita – Rusinga Road. See figure E-1

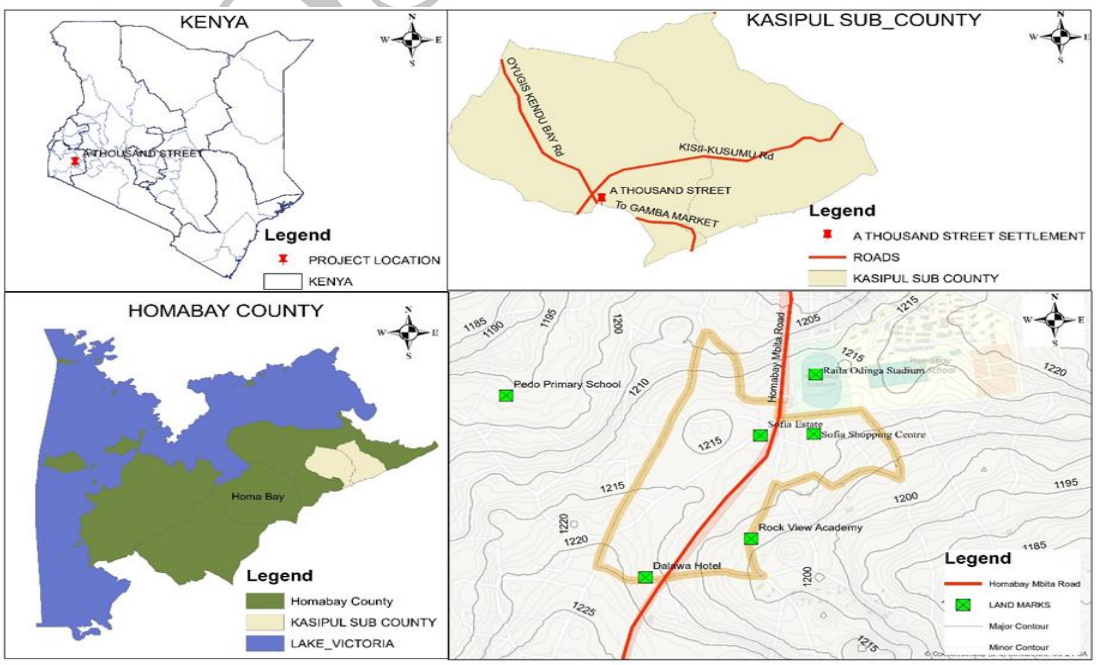


Figure E- 1: Map of Sofia Informal Settlement

The Project scope for Sofia informal settlement is as presented in the Project Design Report is summarized in table E.1 below.

Table E- 1: Project Scope of Works

PROPOSED INFRASTRUCTURE	CODE ON MAP	DESCRIPTION	QTY
R1 roads	R1 -012	6m carriage way, drainage and footpath on both side of the carriage way.	1771 m
	R1 -013	6m carriage way, drainage and footpath on both side of the carriage way.	771 m
Water and Sanitation	Scope include construction of water kiosks including a 10000-liter tank on top of the Kiosk, repair damaged sections of existing water pipes. An additional 250m extension of sewer line will be done.		2500 m
Street lighting	1 no. High mast flood lighting, solar street lighting, 8 high poles, along the proposed 2542 km roads, with 28 luminaires, 2 Control Pillars and 760 m main cable		
Ablution block	1 no. ablution block with 5 toilet.		
Total Road			**2542 m**
Total Footpath Length and Drainage Length			**5, 084 m**
Total Street lighting			**85 poles**

A Layout map of target Settlement is presented in figure E.2 below

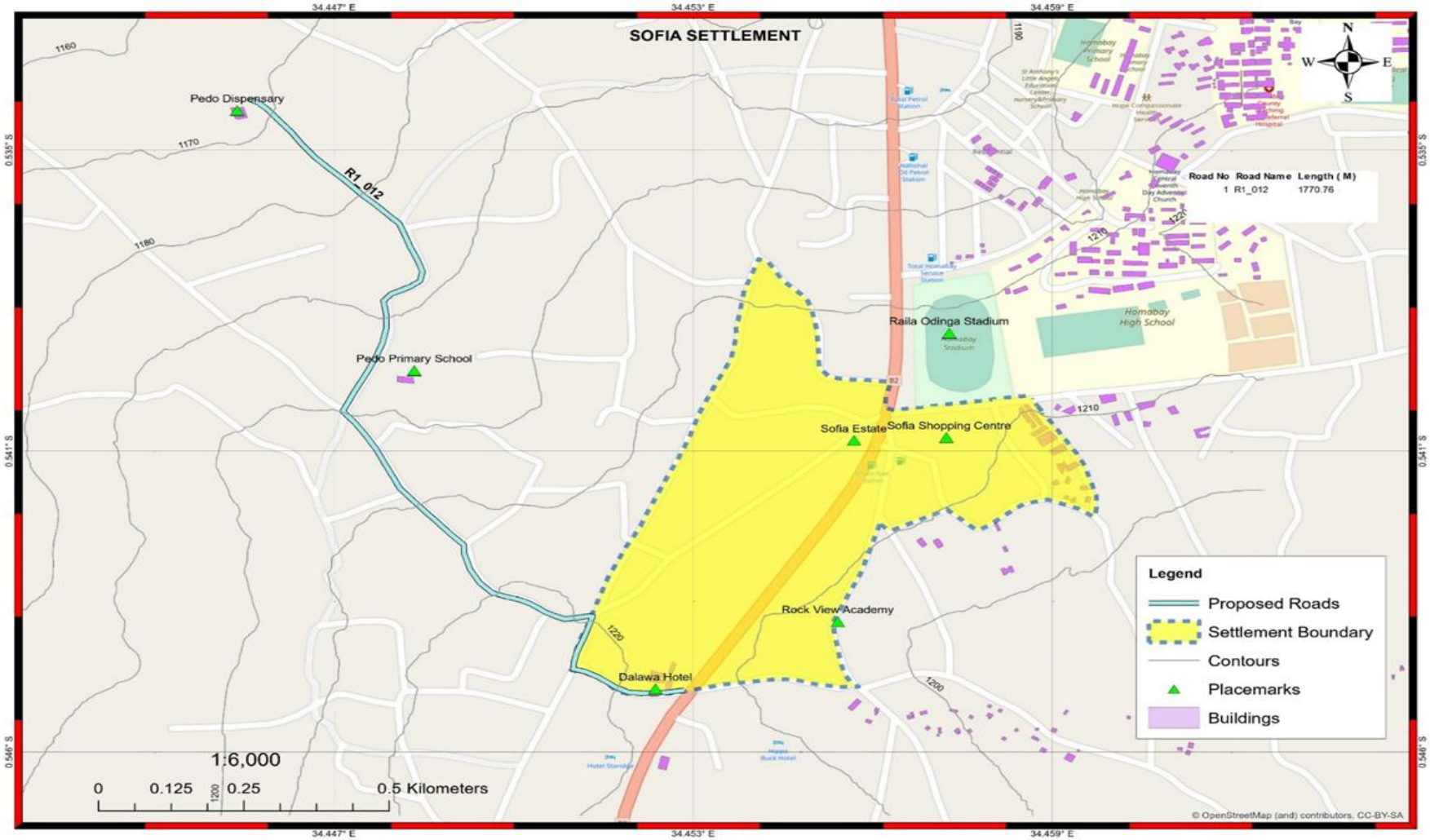


Figure E- 2: Layout Map of Interventions in Sofia Informal Settlement

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 and subsequent regulations
8. Water Act 2016 and subsequent regulations.
9. County Government Act no 17 of 2012
10. Urban Cities Act of 2011
11. Physical and Land Use Planning Act, 2019
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) revised October 2014
2. Resettlement Policy Framework (RPF) revised October 2014
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

Project Frameworks

8. KISIP 2- Environmental Management and Social Framework (EMSF) 2023
9. KISIP 2- Resettlement Policy Framework (RPF) 2023
10. KISIP 2 -Stakeholder Engagement Framework 2023

Operational Safeguards Policies

1. World Bank OP 4.01 on Environment Assessment
2. World Bank OP 4.12 on Involuntary Resettlement
3. World Bank OP 4.11 on Physical Cultural Resources
4. World Bank Access to Information Policy 2015

World Bank Environment Health and Safety Guidelines

World Bank Group Environment Health and Safety Guidelines on Water and Sanitation

Internation Conventions

1. United Nations Convention on Biological Diversity (1992)
2. Vienna Convention on the Protection of the Ozone Layer:

3. United Nations Convention to Combat Desertification (2002).
4. Rotterdam Convention
5. The 1992 United Nations Framework Convention on Climate Change (1992).

International Labour Organisations

1. Forced Labor Convention (1930/no. 29).
2. UN Convention on the Rights of the Child.
3. Freedom of Association and Protection of the Right to Organize Convention, 1948 (No.87):
4. Right to Organize and Collective Bargaining Convention, 1949 (No.98):
5. Discrimination (Employment and Occupation) Convention, 1958 (No.111)
6. Occupational Safety and Health Convention, 1981 (No.155):
7. Promotional Framework for Occupational Safety and Health Convention, 2006 (No. 187).
8. Worst Forms of Child Labor Convention, 1999 (No.182)

Sustainable Development Goals

1. SDG 6: Clean Water and Sanitation
2. SDG 9 Industry, Innovation and Infrastructure and
3. SDG 10 Reduced Inequalities
4. SDG 11: Sustainable Cities and Communities
5. SDG 13: Climate Action

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 on 30th 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

Institutional

STAKEHOLDER	VENUE	DATE	Matters Discussed
County Executive Committee Member Water and Environment	Homabay County Government Office	31st October 2023	• Project Scope • Safeguards Requirements • Strategy of public participation
Ward Manager	Homabay County Government Office	31st October 2023	• Project Scope • Safeguards Requirements • Strategy of public participation

Public

Date	Stakeholder Consulted	Meeting Attendance
30th October 2023	Settlement Executive Committee (SEC) Chairperson, Secretary and members for Sofia Informal Settlement (Pedo and Lala Village members).	Total: 24 Male: 18 Female: 6

In Summary, issues discussed is presented in **Box E-2**below

Table E- 2: Stakeholder Concerns

ISSUE	RESPONSE
Project Commencement Date.	Residents were informed that at the moment the consultant is currently undertaking design for the proposed works. Once design is done and a contractor selected, commencement and completion dates will be announced to them.
SEC Members Election	The residents were informed that SEC members were elected during the initial public forum that was organized for the project.
Labour issues.	Local unskilled and skilled labour should be sourced from the local communities as much as possible. 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.
Location of Sewer Lines.	Residents were informed that the sewer system will be located along the main roads, access roads and footpath so as to serve as many people as possible. They were further informed that the existing treatment plant will be used for treatment.
Compensation of affected structures.	Residents inquired of any compensation to be expected if their structures are taken down to pave way for the infrastructure. Those in attendance were informed that there will be no compensation. Those with encroaching structures will be given adequate time to push back their structures voluntarily, as well as collect salvage material from the structures.
Role of EIA in the project.	Residents were informed that the primary role of the environmental assessment was to identify impacts of the project to the environment and provide adequate mitigation measures.

E.5 Potential Project Impacts

E.5.1 Positive Impacts during Construction Stage

The Project is envisaged to have more positive impacts listed below after completion of the civil works and commissioning

(i) Employment- During the project planning and design, the project proponent has already employed consultants including engineers, hydrologists and ESIA consultants.

At construction stage workers will be deployed to help in construction and land preparation activities. This will include both skilled and unskilled personnel especially from the local population with approximately 100 direct and indirect jobs.

(ii) Income to Government - Income to government will be realized in terms of taxes generated during the acquisition of relevant statutory licenses. Materials to be used during construction will also be taxable (16% VAT). Through revenues generated, the government will be capable of financing its responsibility to her citizens.

(iii) Income to other Businesses - During implementation of the project, there will be need for transporters, suppliers of raw materials and other service providers who will benefit from the proposed development.

E.5.2 Positive Impacts during Operation stage

The Project will result to both direct and indirect benefits to the residents of Sofia informal Settlement in Homabay Town. These benefits are 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 he 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 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 Water Sewerage Project and Ablution Blocks

(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

E.5.3 Negative Impacts and Mitigation Measures during Project Construction Period

The Project Construction Phase will involve the following activities; delivery of construction materials to Project site, manual excavation of trenches, temporary stockpiling of soils, sub-soils and rock along the trenches, importing material for bedding and filling (e.g. red soils, marram, sand, cement, and concrete)

E.4.3.1 Pre-Construction Phase: Environmental and Social Management and Monitoring Plan

Table E- 4: Road and Drainage Works

Activity	Associated Impacts	Management Actions
Vegetation clearance, channeling and site preparations)	Setting out and clearance of project routes and site	▪ Delay in project implementation due to opposition from the 2 PAPs impacted by the Project (Roads and Drainage Works)
	Vegetation Cover destruction	▪ Construction activities will be limited to Project sites / routes which already exist therefore limited destruction to vegetation cover, ▪ Compensatory planting of trees along the road reserve i.e. plants at least twice the number of trees
	Soil erosion and Control of sedimentation	• 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
	Ineffective Grievance Management	• 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

Activity	Associated Impacts	Management Actions
		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.
	Gender-Based Violence Sexual Exploitation and Abuse (SEA) and Sexual Harassment (SH)	• Develop and implement a plan to manage the risk of SEA/SH. • Map the GBV referral pathways and create awareness among women and men on the risk of SEA/SH. • Ensure the GRM is SEA/SH-responsive. • Ensure all those with physical presence on site sign and understand the Code of Conduct. • Put in place measures for monitoring GBV/sexual harassment.

Table E- 5: Ablution Block Site

Activity	Associated Impacts	Management Actions
Site preparation	Soil erosion and Control of sedimentation	• 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
	Ineffective Grievance Management	• 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.
	Gender-Based Violence Sexual Exploitation and Abuse (SEA) and Sexual Harassment (SH)	• Develop and implement a plan to manage the risk of SEA/SH. • Map the GBV referral pathways and create awareness among women and men on the risk of SEA/SH. • Ensure the GRM is SEA/SH-responsive.

Activity	Associated Impacts	Management Actions
		• Ensure all those with physical presence on site sign and understand the Code of Conduct. • Put in place measures for monitoring GBV/sexual harassment.

Table E- 6: Flood Light Sites

Activity	Associated Impacts	Management Actions
Site preparation	Soil erosion and Control of sedimentation	• 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
	Ineffective Grievance Management	• 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.
	Gender-Based Violence Sexual Exploitation and Abuse (SEA) and Sexual Harassment (SH)	• Develop and implement a plan to manage the risk of SEA/SH. • Map the GBV referral pathways and create awareness among women and men on the risk of SEA/SH. • Ensure the GRM is SEA/SH-responsive. • Ensure all those with physical presence on site sign and understand the Code of Conduct. • Put in place measures for monitoring GBV/sexual harassment.

E.4.3.2 Construction Phase: Environmental and Social Management and Monitoring Plan

Table E- 7: Mitigation of Environment and Health and Safety Impacts

Activity	Associated Impacts	Management Actions
Construction Activities	Vegetation Cover destruction	▪ 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
	Impacts on Water Resources - water pollution	• 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
	Siltation and Sedimentation Control	• 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
	Soil Erosion Impacts	• Earthworks should be controlled so that land that is not required for the Project works is not disturbed; • 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
	Risk of Accidents at Work Sites	▪ 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.

Activity	Associated Impacts	Management Actions
		▪ 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
	Solid Wastes impacts	▪ 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 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	▪ 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 .
	Sanitation issues resulting from both solid and liquid wastes on site Risks associated with water born diseases exposed to community and workforce	▪ 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
	Fuels, Oils and other hydro-carbons	▪ The contractor shall ensure that the machines and equipment are in good condition when on site. ▪ Ensure proper handling of lubricants, fuels and solvents while maintaining the plant and equipment. • Any chemical or fuel spills shall be cleaned up

Activity	Associated Impacts	Management Actions
		immediately. The spilt liquid and clean-up material shall be removed, treated and transported to an appropriate site licensed for its disposal.
	Noise and Vibration control from plant and equipment Risk to health and safety of community and workers	▪ 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
	Air Quality Control Air pollution causing respiratory disorders to human	▪ 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 ▪ 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 earthwork's areas within 200metres of human settlement.
	Risks of Accidents, Injuries or death of workers or community member	▪ 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

Table E- 8: Mitigation of Social Impacts

Activity	Associated Impacts	Management Actions
Construction Works	Labour Influx to Project settlements	• 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
Construction Works	Gender Inclusivity, in Project activities	• 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
Construction Works	Children abuse impacts	• The contractor will develop and implement a Children Protection Strategy that will ensures minors are protected against negative impacts 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
Construction Works	Ineffective Grievance Management	• 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.
Construction Works	Gender-Based Violence Sexual Exploitation and Abuse (SEA) and Sexual Harassment (SH)	• Develop and implement a plan to manage the risk of SEA/SH. • Map the GBV referral pathways and create awareness among women and men on the risk of SEA/SH. • Ensure the GRM is SEA/SH-responsive. • Ensure all those with physical presence on site sign and understand the Code of Conduct. • Put in place measures for monitoring GBV/sexual harassment.
Construction Works	Increase of communicable	• HIV/AIDS Awareness Program and other communicable diseases to be instituted and

	diseases including HIV and Aids	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
Construction Works	The project could trigger risk of excluding some beneficiaries due to unfriendly infrastructure designs	-Apply universal designs to infrastructure, to ensure they can be accessed, understood and used by all people regardless of their age, size, ability or disability.

E.5.4 Project Specific Impacts during Project Operation

Table E- 9:Roads and Drainage

No.	Issue	Action required
1	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
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 Homabay 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.

Table E- 10: Ablution blocks

No.	Issue	Action required
1	Water borne diseases because of burst sewers from the ablution blocks	• Regular inspections, repair and maintenance of the sewer lines to be carried out by HOMAWASCO • Residents to be encouraged by HOMAWASCO to form Community Watch Groups for information sharing and reporting on the status of the sewer lines • HOMAWASCO to undertake awareness campaigns to educate community members not to dump solids in manholes. • HOMAWASCO to develop an inventory of system components, with information including age, construction materials, and drainage areas served for ease of identification and

No.	Issue	Action required
		maintenance of the sewers.
2	Land and Soil Contamination by Raw Sewage	• The HOMAWASCO to carry out regular patrols and attend to burst pipes promptly • HOMAWASCO to encourage land owners along sewer lines to maintain vegetated belts along the pipeline to control any overflows flows and trap soil. They will also be encouraged to take responsibilities at the lowest levels in regard to protecting the sewer line e.g. by promptly reporting to HOMAWASCO in case of bursts / blockages;

Table E- 11: Flood Mast and Street Lights

No.	Issue	Action required
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
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
3	Risk of illegal power connection to the flood mast	•This will require constant inspection by Homabay County •Conduct public sensitization programs on importance not interfering with power for flood mast
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
5	Improved business	The Flood lights to work effectively the moment the darkness comes in and switch off in the morning
6	Energy use	Proposed and scheduled time for on and off of the flood mast

E.5.5 Project Decommission Phase

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 E- 12: 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**	**Proponent**

	Conduct design review to validate elements of the design and ensure design features are incorporated in the decommissioning design. Public consultations	
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**

E.6 Environment and Social Assessment Finding

This report presents below listed findings.

(i) The environment and social assessment 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 assessment identified that the roads in the settlement will impact 2 PAPs who own business structures the encroach into the road reserve. The ARAP prepared for the settlement provide a budget of Kshs 2,256,750.00 (Two Million, Two Hundred and Fifty Six, Seven Hundred and Fifty for compensation of the PAPs as required by OP 4.12, the PAPs own a masonry wall, office block and 2nr toilets affected by R013 and Ro12 roads within the settlement.

E.7 The ESIA Make Provisions Listed below

- The Environment and Social Management Plan (ESMP) prepared under this ESIA assessment provides a budget of Kenya Shillings One Million, Two hundred Thousands Seven Hundred Fifty Thousand (Kshs 1,200,000.00) for mitigation of environment and social impacts identified in this Report. The Bid Documents to be prepared for the project should incorporates the Environment, Social provisions discussed under Chapter 7 and 8 (Environment and Social Impact Assessment and Mitigation Measures).
- Project Contract Document to include provisions for the contractor to prepare and

implement Construction Environment and Social Management Plan (C-EMSP). Annexes to the C-EMSP will include but not limited to:

- ✓ *Soil and Sedimentation Control Plan,*
- ✓ *Spoil Management Control Plan,*
- ✓ *Dust Management Plan,*
- ✓ *Health, Hygiene and Safety Plan,*
- ✓ *Labour Management Plan,*
- ✓ *Child Protection Strategy,*
- ✓ *Gender-based Violence Action Plan,*
- ✓ *Waste Management Plan,*
- ✓ *Contractors Code of Conduct,*
- ✓ *Gender Inclusivity Strategy,*
- ✓ *HIV/Aid Prevention Strategy.*

- The contractors will be required to engage services of a qualified Environment, Health and Safety Officers and Social Safeguards Officer at the time of Project implementation.
- At Project implementation stage, the contractor with approval of the supervising engineer will prepare periodic Environmental and Social Implementation Report. The reports will provide status of implementation of risks & impacts management measures to date from the project start to the end of the reporting period. From an Occupational Health and Safety approach, the contractors will ensure they undergo the following;
  - ✓ *OSH risk assessment, Registration of workplaces, Safety and Health (OSH) Audit, Fitness to work assessment of employees,*
  - ✓ *Training of all workers or workers' representatives in basic Occupational Safety and Health, Accident and incident reporting, Compensation of injured workers who die or get injured and disabled and*
  - ✓ *Examination of Safety Plants and Equipment.*
- At Project completion stage, within the Defects Liability Period, Homabay County Government will initiate an Initial Environment and Social Audit for the Project as required by EIA/EA Audit Regulations of the year 2003 amended in 2019 and subsequent annual self-audits. The Audit will develop an Environment and Social Audit Action Plan (ESAAP) that will be used to track Project Environment and Social Compliance during Operations Stage

MAIN REPORT

CHAPTER 1: INTRODUCTION

1.1 General Information

The Kenya Informal Settlement Improvement Project (KISIP) was initiated by the Government of Kenya supported by Development Partners that is the World Bank, the Swedish International Development Cooperation Agency (SIDA) and the Agence Française de Dévelopement (AFD) in 2011 with the key objective of improving living conditions and strengthening security of tenure in informal settlements in selected towns in Kenya. It complemented the national Kenya Slum Upgrading Program, established in 2003, and led by the State Department of Housing and Urban Development. KISIP I, implemented between 2011 and November 2019 in selected towns across 14 counties in Kenya, targeted Nairobi, Mombasa, Kisumu, Eldoret, Naivasha, Machakos, Malindi-Kilifi, Kakamega, Nyeri, Thika, Kericho, Kitui, Garissa and Embu Towns.

In order to consolidate the gains made under KISIP I and enhance the benefits of the project to more people in informal settlements, KISIP II was initiated by the Government of Kenya in conjunction with the World Bank. KISIP II has been structured to build on the successes and lessons learnt from KISIP I, and introduce new interventions to deepen its overall impact. It aims to support the interventions that were successful under KISIP I like tenure regularization, infrastructure upgrading, and institutional strengthening. Unlike KISIP I, however, the new project also aims to include new approaches and new activities to strengthen its impact on the participating communities. Component 1.2, that encompasses activities under this contract include the design and implementation of the upgrading plans in around 81 settlements in 23 counties.

The contract for the **"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 HomaBay, Nyamira, Uasin Gishu and Nandi, Contract Number: KE-MOTI-298201-CS-QCBS** is under the renewed KISIP Phase II framework, funded by credit from the World Bank through International Development Association (IDA) and Agence Française de Dévelopement (AFD) Group funds. The KISIP Phase II is an extension of the initial KISIP Phase I project, which as per the World Bank assessments, established immense success based on performance indicators.

The project has the following four components:

- **Component 1: Integrated Settlement Upgrading** which assists in Sub Component 1.1: tenure regularisation (Coordinating regularisation of tenure for people living on uncontested lands) and Sub Component 1.2: Infrastructure upgrading (Coordinating infrastructure investment portfolio). Therefore, upgrading of Sofia Informal Settlement Infrastructure falls under sub-Component 1.2
- **Component 2: Socioeconomic Inclusion Planning**: This involves supporting community development plans to enhance social and economic inclusion.

- **Component 3: Institutional Capacity Development for Slum Upgrading:** This supports institutional and policy development at national and county levels.
- **Component 4: Program Management and Coordination:** Supporting activities of the NPCT and the County Project Coordinating Team (CPCT) related to national and county level project management and coordination.

This ESIA has been prepared for the proposed infrastructure upgrading of Sofia informal settlements in Homa Bay County.

1.2 Scope of the ESIA Study

The NEMA regulations requires that all new projects, programs 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), 2015 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 Sofia 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 Sofia 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 Sofia 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 Sofia 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		Sig fo M (SI
Foot print	1	Short term	1	Low	1	Probable	1	Low	1	Low	0-19	High	0,2	Hi
Site	2	Short to medium	2			Possible	2	Low to Medium	2	Low to Medium	20-30	Medium to High	0,4	M to
Regional	3	Medium term	3	Medium	3	Likely	3	medium	3	medium	40-59	medium	0,6	m
National	4	Long term	4			Highly likely	4	Medium to high	4	Medium to high	60-79	Low to medium	0,8	Lo m
International	5	Permanent	5	High	5	High	5	High	5	High	80-100	low	1,0	lo

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 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 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 Desktop 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 Coordination Act (EMCA) 1999 Cap 387
(ii) Project Appraisal Document PAD for KISIP
(iii) Environmental Management and Social Framework (EMSF) KISIP – 2023
(iv) Stakeholder Engagement Framework - 2023
(v) Resettlement Policy Framework (RPF) KISIP -2023
(vi) Project Final Design Report (GA/Niche October 2023)
(vii) Project Draft Settlement Upgrading Plans.

Review of Applicable Operational Safeguards Policies and World Bank ESHS Guidelines

(i) World Bank OP 4.01 on Environment Assessment
(ii) World Bank OP 4.12 on Involuntary Resettlement
(iii) World Bank OP 4.11 on Physical Cultural Resources
(iv) World Bank Access to Information Policy 2015
(v) World Bank Environment Health and Safety Guidelines
(vi) World Bank Group Environment Health and Safety Guidelines on Water and Sanitation

Statutes Reviewed

(i) The Land Act, No. 6 of 2012
(ii) The Community Land Act, No. 27 of 2016
(iii) The Physical Planning Act, No. 26 of 1996
(iv) The Occupational Health and Safety Act, 2007
(v) The HIV and AIDS Prevention and Control Act, No. 14 of 2006
(vi) The Sexual Offences Act, No. 3 of 2006
(vii) The Children's Act, No. 8 of 2001
(viii) The County Governments Act, No. 17 of 2012
(ix) Republic of Kenya, Environmental Management and Coordination Act (EMCA, Cap 387), Government Printer, Nairobi
(x) Republic of Kenya, Water Act (2016), Government Printer, Nairobi
(xi) Republic of Kenya, Public Health Act, Cap 242, Government Printer, Nairobi.
(xii) Republic of Kenya, Environmental Impact Assessment/Audit Regulations 2003, (Legal Notice No.101) Government Printer, Nairobi

1.5.3 Field Assessment

The physical evaluation of the Project area was carried out within the month of 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 assessment involved consultations with relevant stakeholders in Sofia Informal settlements in Homa Bay. 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 meeting was held within the month of October; attendance of the meetings was from diverse sectors of the society as summarized in table 1-1 below

Table 1- 1: Schedule of Public Consultation

Date	Settlement	Stakeholder Consulted	Meeting Attendance
30th October 2023	Sofia Informal Settlement	Settlement Executive Committee (SEC) Chairperson, Secretary and members for Sofia Informal Settlement (Pedo and Lala Village members).	Total: 24 Male: 18 Female: 6

**Details of stakeholder consultations are presented in Chapter 6 of this Report.*

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

**A detailed Socio Economic Survey Report is presented as a separate report to this Project.*

1.5.6 Secondary Socio Economic Data

This information was largely drawn from the Kenya National Bureau of Statistic, The Kenya Population and Housing Census VII on Population and Household Distribution by Socio Economic Characteristic, August 2010, Homa Bay 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 target Informal Settlements of Homa Bay 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 Final Design Report (GA/Niche October 2023)

2.2 Existing Status of infrastructure in Sofia Informal Settlement

2.2.1 Roads and Footpath

Referring to Final Design Report prepared for the Project (GA/Niche October 2023), the below listed summary is presented as the status of road and foot path in Sofia informal settlement. The main roads within the settlement are tarmacked with a clear network of roads and footpaths within the settlement. The same, however, cannot be said of the remaining settlements, whose interior roads are murram/gravel surfaced, narrow and form an unclear network. These roads become impassable during rainy seasons

Table 2- 1: Status of Road and Foot Path in Sofia Informal Settlement

Settlement	Access Road	Status of Access Road	Interior Settlement Roads	Characteristic of Road Network
Sofia	-	Bitumen Surface	Earthen	Unclear Network

2.2.2 Drainage Infrastructures

Storm Water Drainage as observed in Sofia settlement was generally a haphazard network of open drains, characterized by overflow and in some cases. Existing status of drainage pattern is presented in table 2-2 below.

Table 2- 2: Status of Road and Foot Path in Sofia Informal Settlements

Settlement	Drainage Network	General Slope	Alternative Drainage
Sofia	Unclear network	Generally flat land	None

2.2.3 Solid Wastes Management

The table 2-3 below depicts a summary of the conditions of Solid Waste Management on the ground, within Sofia settlements:

Table 2- 3: Solid Waste Management in Sofia Settlement

Settlement	Designated Garbage Collection Points	Alternative Dumping Ground
Sofia	Several	Youth groups collect and deposit along settlement entrance for county collection

2.2.4 Sewerage Infrastructure

Settlements within the town are not connected to functional sewer lines, as is seen in a large section of Homa Bay County in general. Locals have dug up pit latrines for household use outside these settlements. These are not however, frequently seen within the settlements. A few individuals have their own flush system toilets, which are connected to their own septic tanks. A summary of these conditions is as table 2-4 below:

Table 2- 4: Sewerage Infrastructure

Settlement	Sewer Line Connection	Septic Tanks Available	Ablution Blocks Available	Pit Latrines Available	Additional Observations
Sofia	None	None	None	✓	None

2.2.5 Water Supply

Sofia informal Settlement has no access to county supplied water. Water are also not available in the settlement, leaving the residents stranded, residents have no access to water within their settlement boundaries and go out seeking water in neighbouring areas. Community water collection points are dry more often than not. Water supply situation is indicated in 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
Sofia	None	None	✓	✓

2.2.6 Lighting and Electric Network

Socio-economic study undertaken as part of this assignment, it was found that up to 35% of the residents in Sofia have no access to electricity through the main grid. A majority of residents in the settlements have access to connections, while, unfortunately, many households find the connection fees a hindrance to household connections.

Table 2- 6: Lighting and Electric Network

Settlement	Kenya Power Connections	Illegal Networks	Street Lighting	Light Masts/Flood Lighting
Sofia	✓	✓	None	None

2.3 Projects prioritization during the focused Group Discussions (FGD)

2.3.1 Sofia Informal Settlement:

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

Table 2- 7: Sofia Informal Infrastructural Prioritization

Settlement	**PRIORITY 1**	**PRIORITY 2**	**PRIORITY 3**
Homabay Town Settlements			
Sofia	Roads and Drainage	Water and Sanitation	Public Lighting
		Ablution Block	

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 Sofia informal settlements shall focus on the following priorities:

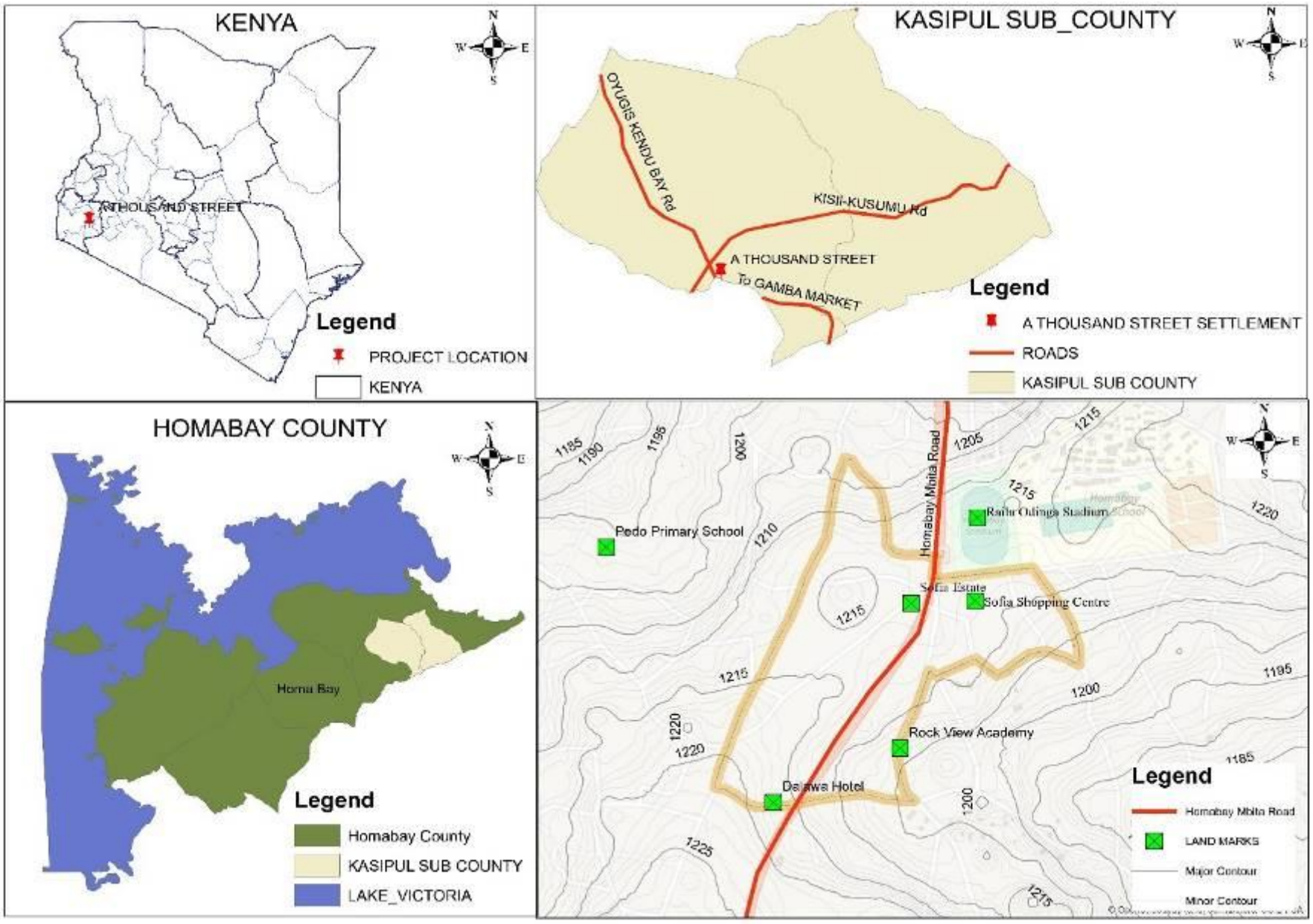
1. **Roads and drainage**: upgrade of the road network (main access roads and the interior network) in the target informal settlements to bitumen standards, and construction of storm water drains.
2. **Street lighting and Supply of Electrical Power**: Implementation of flood masts within the settlement. Adequate consideration shall be given to more sustainable measure of providing electricity within the household and cluster levels, including community charging points (refer to electrical works component) as well as implementation of renewable sources of electricity.

3. **Sanitation**: Evaluating the need to enforce proper sanitation in the area by building an ablution block with several toilets.

The Project scope for each informal settlement in Sofia as presented in the Project Design Report is summarized in table 2.13 below while layout plans are presented in the next page.

Table 2- 8: Project Scope of Works for Homa Bay Informal Settlements

PROPOSED INFRASTRUCTURE	CODE ON MAP	DESCRIPTION	QTY
R1 roads	R1 -012	6m carriage way, drainage and footpath on both side of the carriage way.	1771 m
	R1 -013	6m carriage way, drainage and footpath on both side of the carriage way.	771 m
Water and Sanitation	Scope include construction of water kiosks including a 10000-liter tank on top of the Kiosk, repair damaged sections of existing water pipes. An additional 250m extension of sewer line will be done.		2500 m
Street lighting	1 no. High mast flood lighting, solar street lighting, 8 high poles, along the proposed 2542 km roads, with 28 luminaires, 2 Control Pillars and 760 m main cable		
Ablution block	1 no. ablution block with 5 toilet.		
Total Road			**2542 m**
Total Footpath Length and Drainage Length			**5, 084 m**
Total Street lighting			**85 poles**



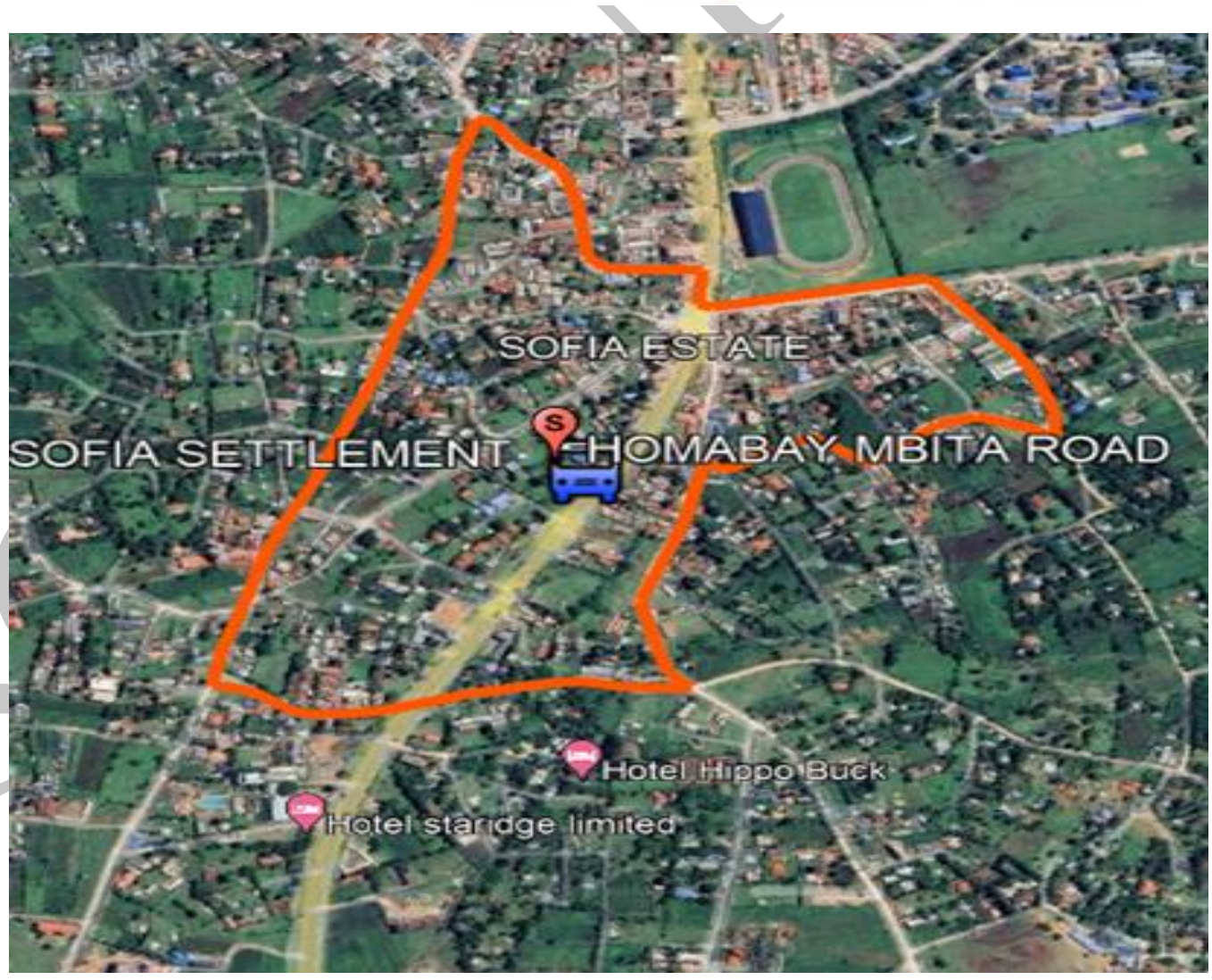


Figure 2- 1: Sofia Layout Plan

2.5 Design Engineering Design of Roadworks

2.5.1 Topographical Surveys

Topographic survey and GIS Mapping of the Informal Settlement Areas were carried out to check on the marked track points in order to establish the existing land area, areas with housing settlements, and pick coordinates / imaging of waypoints for all major existing features / infrastructure in the informal settlement areas. The features that were captured included existing villages, drainage, roads, street lighting, water supply systems, solid waste and wastewater facilities and community facilities among others. For locations with major drainage features a detailed longitudinal and cross-sectional survey was conducted in order to aid the design of appropriate drainage structures.

The topographic survey captured the existing embankment – for roads and foot paths - and picked out areas that have been deformed, marshy areas, low-lying ground and areas that require embankment upgrade. The survey also picked all existing and potential borrow pit locations.

2.5.2 Instruments and software

The Consultant used conventional ground survey methods and modern surveying equipment including a total station, Real Time Kinematic (RTK) Machine, Hand held GPS and laser levelling instrument to establish series of reference beacons and to produce a Digital Terrain Model (DTM) of the project area, and proposed alignments for roads, footpaths, drainages, sewer lines, and water systems.

2.5.3 References datum

The co-ordinates of all survey points were referenced to the National Survey Grid by a closed traverse and all levels were related to National Benchmarks.

2.5.4 Projection, grid, unit of measurement

The survey was connected to the National Grid System (U.T.M) by establishing a trigonometric and polygon network across the site. This network was connected to the Survey of Kenya data. To this end a secondary network of trigonometrical points (T.P) were established with side lengths of approximately 150 metres to the primary network.

2.5.5 Ground control and GPS measurements

Ground control included use of beacons driven into the ground to be used as reference points during construction supervision. Design of ground control points was done to confirm that what was designed is what is actually on site/project location.

2.5.6 Temporary Benchmarks and total station measurements

Temporary benchmarks involved use of beacons driven into ground. Each beacon consisted of a steel reinforced bar + 500 mm in length driven into the ground. The diameter of the steel bar used was 10 mm. All co-ordinate fixes were taken to these points. All beacons were encased in concrete approximately 300 mm in depth and 200 mm diameter.

2.5.7 Output presentations – scale, the width of corridors, DTM, survey report

The scale of output presentations was based on the available design which was checked to establish its adequacy or otherwise; it was adjusted accordingly to make it more legible where the previous scale did not satisfactorily display all the required details. From the available design report, road corridors for access roads generally range from 9-12 meters while internal settlement roads are about 6m wide. During design, the Consultant attempted to maintain the existing corridors to mitigate the need for relocation of persons unless it was unavoidable under the circumstances.

Data was obtained from the GNSS receiver using a Card reader, processed using Compass software for GNSS and Leica geo-office for the total station, and then transferred to spread sheet in comma delimited format saved in Point, Easting, Northing, Elevation and Description (PENZD) form. The data was then imported to AutoCAD Civil 3D and plotted.

A Digital Terrain Model (DTM) with 1m interval was generated on AUTOCAD Civil 3D. Contours were then be generated by direct linear interpolation method and smoothing of the contours done using cubic splines fitted though strings of interpolated points. The topographical surveying accuracy standards was with the error margin of surveying Act 299 and surveying regulations, with horizontal measurements accuracy = + /- 0.05 m; and vertical measurements accuracy = +/- 0.03 m.

The expected deliverables for the topographical surveying included survey plan for each settlement in DWG format showing the location of ground features, elevations and contours at an interval of 1 m; a list of survey points in csv format; and a list of established controls for every settlement in csv format.

The survey report highlighted the details of the settlements surveyed and the details of corridors surveyed, the survey coordinate system used, details of the survey equipment, personnel and the exercise coordination structure, stakeholder engagement and safety management, pegging and output presentations.

2.5.8 Road geometric alignment design

Road geometric alignment defines the cross-sectional dimensional of the road; both the carriageway and related facilities like roadside drainage, footpaths among others.

Design of road geometrics was done on the available design based on the available corridors and respective design standards. As per the Design, the widths of access roads range from 9 to 12 metres whereas that for internal settlement roads is about 6 metres. The reserve width of footpaths is about 4 metres. Cases of encroachment are common in unplanned informal settlements and this was checked during Design.

Design parameters and standards are factors affecting geometric design and usually restrict the design not to go beyond specified limits. These include Design speed, cross section, horizontal alignment, vertical alignment, sight distances, and road safety among others.

2.5.9 Design Speed.

A design speed of 50km/hr was recommended during the design review.

2.5.10 Cross-section

Design of road cross-section was done based on the available road corridor and land use and respective standards. The major element of a cross-section is the lane whose width should be able to accommodate the design vehicle. The project roads in the 6 settlements in Homabay County are designed with a two way road of 6m carriage way, a 0.8m open drainages and 1.2m pedestrian walk path.

The other auxiliary lanes occur at bus bays which are 3m wide at the parking 13m long and 18m taper entry and exit tapers. The cross-section choice is basically controlled by function of the road, nature and volume of the traffic and the expected speed at use. The other elements of cross-section are; kerbing and shoulder.

Figure 2- 3:: Typical Cross-Section for R1 Roads

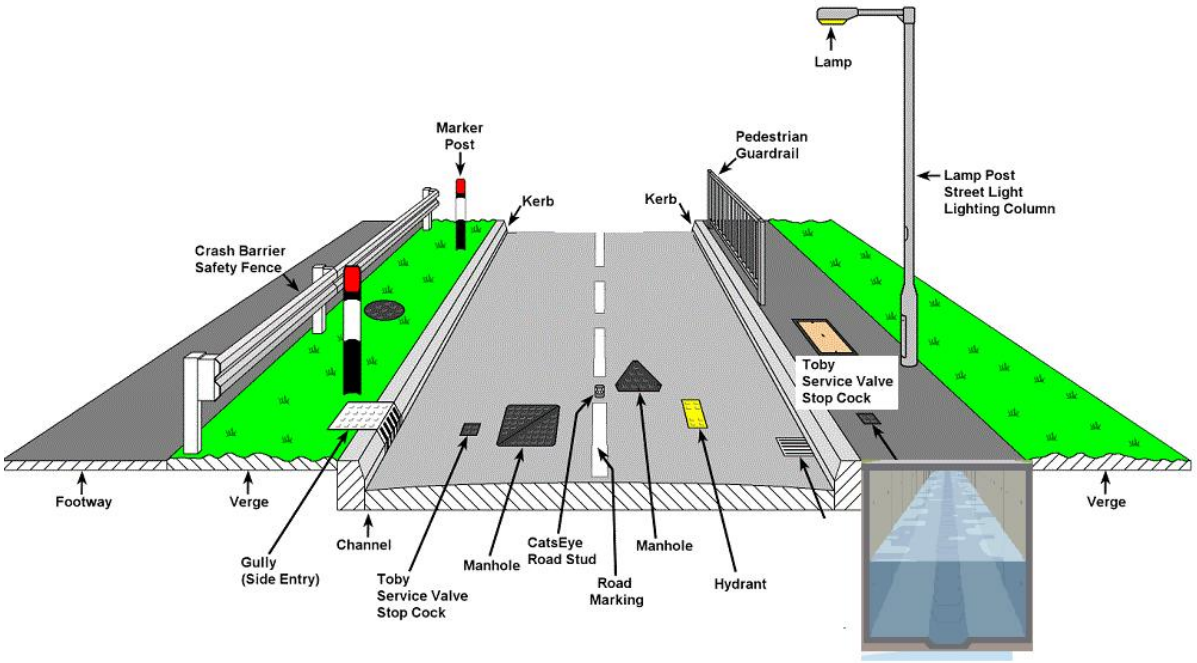


Figure 2- 4: Typical Cross-Section for R2 Roads

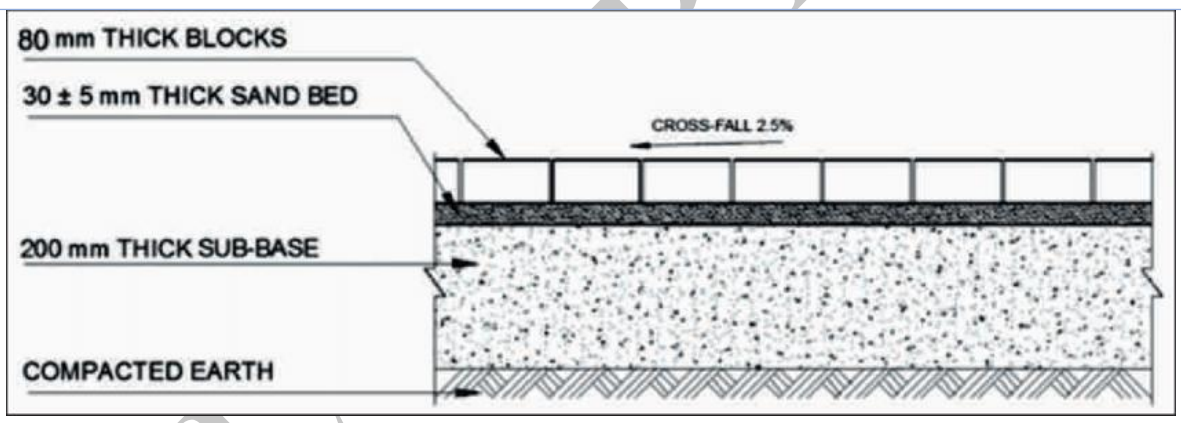


Figure 2- 5: Typical Cross-Section for Footpaths (R3)

2.5.11 Vertical alignment

Vertical alignment of a road refers to the longitudinal profile of that road under consideration. When undertaking vertical alignment design, the Consultant ensured that the earthworks will be minimised to save on cost except for road sections prone to flooding or those sections with high water table while at the same time satisfying safety requirements. The Consultant checked that sharp vertical curves were avoided as a safety measure in design as this enhances sight distances resulting in safe roads. Radii of vertical curves were obtained after ensuring that minimum requirements for stopping / passing sight distances have been addressed.

2.5.12 Sight distances

Sight distance is an essential criterion in design. It determines the ease with which drivers are able to perceive potential hazards ahead of them so as to take the necessary preventive action. The types of sight distances considered in this design were; stopping sight distance, passing sight distance, meeting sight distance. Both horizontal and vertical sight distances were evaluated during design.

2.5.13 Road safety features

Road safety features encompasses those on the carriageway and those that are off-carriageway. On-carriageway features include speed calming measures such as bumps which are important especially for informal settlements which are highly populated. The design ensured they have been provided for and that they meet the respective specifications.

Figure 2- 5: Typical Speed Bump Crosswalk

2.5.14 Footpaths, bus stops and road furniture

Footpaths are an important component in road design to separate human and vehicular traffic for safety purposes. Informal settlements are associated with a substantial amount of pedestrian traffic which is to be accommodated by design of footpaths. Designed footpaths confirmed suitability of aspects such as proposed widths versus the projected pedestrian traffic, cross falls ensured they were within the allowable tolerances to enable pedestrians to walk along them with comfort. The second draft of Road Design Guidelines for Urban roads gives specifications of minimum width = 1.25m which is to be estimated based on a provision of 0.6m for each 20-30 pedestrians per minute plus 0.5m dead space. The adequacy of designs was evaluated based on these and other specifications during design. Data for the number of pedestrians expected to use these footpaths were collected during traffic surveys and a projection made based on adopted growth rates of design study.

Bus stops are also important since they act as pick-up and drop off points for passengers. The location of bus stops are in such a way that they allow passengers to board or alight safely and conveniently and

with minimum disruption to other road users. The bus stops designed ensured they met respective design criteria.

Road furniture include items such as road reserve boundary posts, edge marker posts, permanent rod signs, road marking. Guardrails, rumble strips, kerbs among others. These were checked to comply with specifications or additional furniture be proposed in cases where they are necessary and have not been provided for in the design.

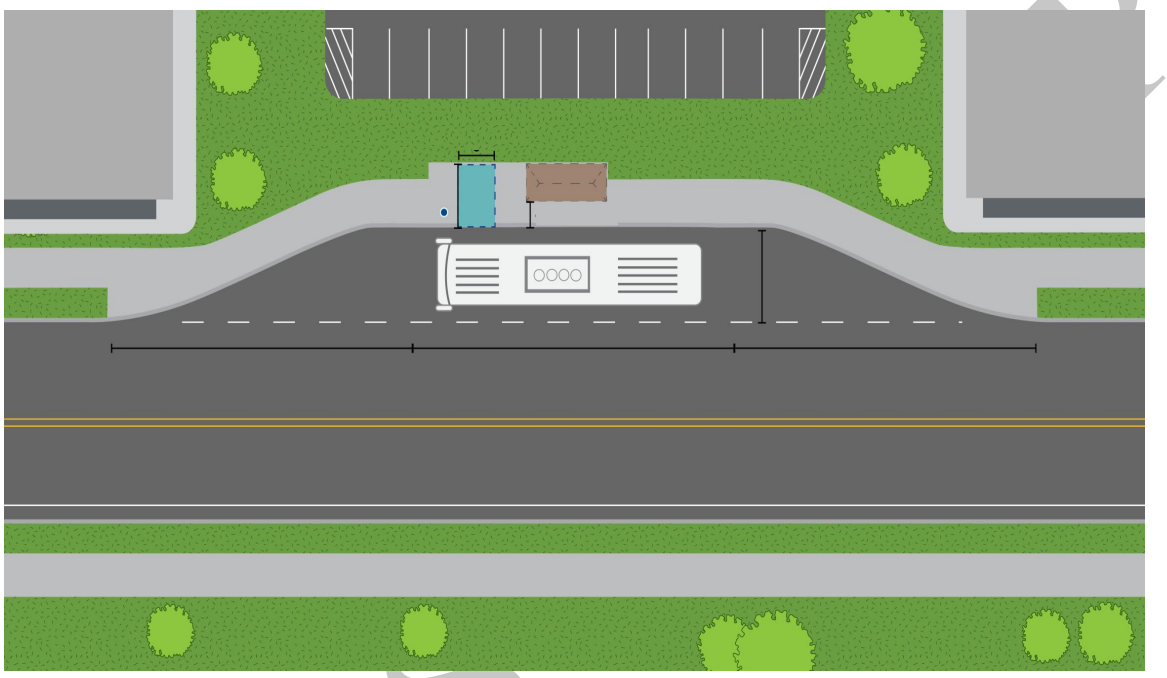


Figure 2- 7: Typical Bus Stop Parameters

2.6 Supply system design

2.6.1 Pipelines

Estimated velocity of 2 m/s was adopted for gravity mains while an optimum velocity of 0.8 m/s was adopted for pumping mains for the design as recommended by the Ministry of Water's practice manual. Pressure ratings incorporated dynamic pressures for all pipelines. Trench designs were prepared using the method given in National Annex NA to BS EN 1295-1:1998, using the following limiting deflections: 2% for steel pipes with elastomeric joints or with mortar linings; and 6% for welded steel pipes with flexible coatings and linings.

The Colebrook-White formula was recommended to be used in the hydraulic calculations to obtain frictional factor through iteration for pumping mains while Hazen Williams formula excel spreadsheets was used in the design of gravity mains.

The selection of pipe material was based on the analysis of steel pipes, glass reinforced polyester (GRP) unplasticised polyvinyl chloride (uPVC) and high-density polyethylene (HDPE). Need for corrosion protection, hydraulic characteristics, jointing, ease of handling, market availability, pressure rating, standards compliance, cost, and hazard classification were all analysed for prudent selection. Steel

pipes used in the project were recommended to have both internal protections in form of cement coating and external protection in form of epoxy coating.
The minimum pressure at design flow is 1 bar (10-metre water head) in pipe sections to which there may be made consumer connections and 0.4 bar (4m) in other cases. The static pressure in pipes with consumer connections is not more than 6 bar (60m). Higher pressure than 6 bars requires pressure relief valves for the consumer connections.

Water pipelines are positioned 3.00m to the right or left of a right of way centreline, or, where possible, in a dedicated utility corridor. Water pipelines located in a right of way were designed in the location authorised by a water county council/municipal engineer or planner, unless the location is precluded by the existence of other extenuating circumstances. Pipelines in road reserves are designed to be located whenever possible 1.5m from the edge of the road way.

2.6.2 Valves

Single orifice and double orifice Air relief valves was used to permit release of air which accumulated at high points and to prevent negative pressures from building up when lines are drained or to permit air flow into the systems when filling up.

In the design, Washouts are placed only at accentuated low points on raw water and clear water mains of inside diameter 80mm or larger. In this context, it may be considered that a low point is accentuated if the succeeding major high point is situated on a 10m higher level. All dead-end pipelines were designed with a blow-off valve assembly type flushing device.

Valve chambers are at least 1200 x 1200mm internally (or larger for larger pipes), made of reinforced concrete. The cover shall be lockable. The chamber shall be drained through the floor or through a drain pipe.

2.6.3 Appurtenances

Anchor or thrust blocks of appropriate detail as shown on the MoWI, 2005 Water Design Manual, and shall be provided for horizontal and vertical bends, capped ends, change of size and tees and for pipes laid in steep slopes.

Marker posts were provided along pipelines at every 200m, except where they follow permanent roads. Markers were placed at all bends, river and road crossings which cannot be easily found otherwise. The marker was square measuring 100 x 100mm; height 700mm lettered “MAJI”. The post is blue with white lettering.

2.6.4 Pumping devices,

Booster pumps and vertical lift pumps were considered for this project. Booster pumps were recommended for circumstances when pressure dynamics constricts water supply to some settlements. Vertical lift pumps were also recommended for circumstances when water is pumped to an elevated reservoir.

The pumps design supported for 24 hrs operation as per the manual's guideline. Sizing of the pumps considered the desired flow over the 24-hour period and the dynamic lift (static lift + friction loss head) given in metres. Electric driven centrifugal pumps are preferred over other pumps.

Liaison with the Kenya Power Company was established to ensure there is sufficient power supplied to all pumping stations. Design of switchboards, transmission conductors, and safety parameters were also taken to consideration.

During construction, the engineer will approve the contractor's shop drawings and inspect the proposed pump sets at the manufacturer's yard before installation.

2.6.5 Storage facilities

The purpose for storing water primarily aimed at balancing the variation in the water consumption during the day and to ensure there's steady water supply during break-downs and rationing. The number and location of the tanks was designed based on detailed engineering evaluations and stakeholder input. The capacity checks for the tank was based on the rationing schedule and demand, or 50% of the daily water demand of the area served by the tank (whichever is higher). Based on the designs, materials for the storage tanks considered was either masonry walled, reinforced concrete or galvanised pressed steel tanks.

The newly designed tanks or proposed design checks included covering and lockable manhole cover, internal and external ladder or steps, level indicator which can be read from outside, inlet pipe which ends not more than 0.5m above the floor to prevent air entrainment, an outlet at a level at least 0.2m above the floor, scour pipe which allows complete emptying, an overflow placed at least 50mm above the normal top water level which allows the overflowing water to be seen when in operation, designed so that the ball valve is above the highest water level and is easily accessible from the manhole, have ventilation pipes covered with nylon nets, and have outside walkway and handrail (only elevated steel tanks).

2.6.6 Distribution outlets (kiosks, standpipes and institutional connections)

Water kiosks are the preferred outlet point for public water points. Standpipes on the other hand will be installed at institutions' outlet points.

The design for water kiosks allocations depended on either the manuals directive of kiosks at intervals of 200 – 500m or as per the stakeholder's preference, depending on convenience. The kiosks was designed to contain a roof top tank of 10 m3 capacity, a water metre, sufficient seating space for one operator, pipes outlets and proper drainage occasioned by either a soak away pit, a soak away trench, or extension to road side drains. Minimum of 3 number 25 mm diameter outlet pipes was used in channelling water to the consumers, with commensurate stop corks used to cut-off flows.

Standpipes were positioned within secure institutions, fitted on 25 mm steel pipe and lockable taps. The point will be concreted so as to clamp the standpipe and improve on sanitation. Similar to the

kiosks, soak away pit, a soak away trench, or extension to road side drains were put in place for drainage improvement.

2.6.7 Sustainability considerations

Operations costs that capture cost of repairs, power costs and wages for staff, were be computed so as to pre-empt costs of running the system and the projected revenues from the sale of the utility.

2.7 Design Considerations for Flood Masts

2.7.1 Flood Masts Design Factors

The Consultant took the following design factors into consideration when conducting the designs for the High Mast Lighting:

- ✓ Wattage and light levels;
- ✓ Type of lighting;
- ✓ Lamps used;
- ✓ Street illumination level;
- ✓ Spacing between poles – for multiple lighting poles;
- ✓ Lighting luminaire calculations;
- ✓ Cable sizing;
- ✓ Power requirement estimation;
- ✓ Energy cost calculations;
- ✓ Pole arrangements – for multiple lighting poles
- ✓ Lighting bills of quantities;
- ✓ Wind design considerations

2.7.2 Design Standards and Specifications

The Consultant reviewed the following standards and specifications, and assessed whether they meet the requirements:

- ✓ Height of mast;
- ✓ No of sections;
- ✓ Materials proposed for construction;
- ✓ Cross-section of mast;
- ✓ Lighting protection;
- ✓ Control gear
- ✓ Lamps
- ✓ Power consumption

2.7.3 Light distribution angle

The light distribution angle and distribution were examined to ensure complete coverage of the study areas. This was done by calculating the circles of radius of the existing and proposed high mast flood

lights, to determine any spots which aren't covered that may need additional High Mast Lights or the design of new lighting system. A design of the following key items was done:

- ✓ Review of choice of light fitting;
- ✓ Review of Lumens calculation;
- ✓ Review of light fitting mounting height;
- ✓ Review of Charge controller size.

2.7.4 Lighting technology – LED, colour temperature

Various light technologies were valuated to ascertain that the proposed design is the most efficient and cost-effective design. The options for lamps included LED and CFL lamps which are recommended for High Mast Lighting.

2.7.5 Source of power

The Consultant reviewed the sources of power available for use. These included the following considerations:

- ✓ Ordinary grid fed power supply;
- ✓ Standalone solar power supply;
- ✓ Hybrid (solar and grid fed) power supply.

2.7.6 Power supply design

Detailed design of the power supply was undertaken and the following aspects of the design were done:

- ✓ Design of cable sizing and connection to grid – for Grid fed/Hybrid;
- ✓ Design of inverter sizing – for solar/hybrid;
- ✓ Design of battery bank sizing – for solar/hybrid;
- ✓ Design of solar array sizing – for solar/hybrid;
- ✓ Design of solar panels area size – for solar/hybrid;

2.7.7 Structural engineering design

The structural design of the high mast structure and civil works was done using the relevant Structural Concrete and Steel design codes and standards. The key areas that were examined included material selection, steel connections, concrete sub-structure, and steel member design.

2.7.8 Maintenance and sustainability considerations

The design process for the high mast placed a consistent focus on both sustainability and long-term maintenance. These included ease of maintenance, durability and cost effectiveness of the lighting among other factors.

2.8 Design interventions to improve infrastructure resilience.

Table 2-9 below presents Design interventions to improve infrastructure resilience.

Table 2- 9: 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.
5.	Mitigation efforts towards Greenhouse gases emission by motor vehicles	Homa Bay County KISIP Team has promised to introduce sustainable practices in the transport and mobility for example, use of electric vehicles for inter commute and capacity building in climate proofing through continuous mainstream of the facility.

2.9 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- 10: 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- 11: 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.

2.10 Project Cost

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

Table 2- 12:Project Cost

Component	**Amount (Kshs)**	
Settlement	**Sofia**	
	Contract 1	**Contract 2**
Roads, footpaths, drainage	197,799,397.24	79,218,142.53
Security Lighting	72,291,831.04	0
Water and Sanitation	14,043,372.73	-
Social Amenities	-	-
Sub-Total	284,134,601.01	79,218,142.53
Dayworks	-	1,020,024.16
Bill 1	32,971,920.41	14,797,525.68
Bill 28	7,548,416.11	3,387,666.84
Contract Total	324,654,937.53	98,423,359.21
Total	**423,078,296.75**	

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

<u>High mast lights alternatives</u>

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 1000 Street. However, they are prone to vandalism in the project areas within Homa Bay.

<u>Flood light Alternatives</u>

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.
- **Use 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: Utilizing concrete poles for the load mast or using Aluminium materials. Also using Iron is an option. Aluminium was chosen 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.

Table 5-1 below presents the scoring of priority interventions in the settlements

Table 5- 1: Scoring of Priority Interventions in the Settlements

Settlement	PRIORITY 1	PRIORITY 2	PRIORITY 3
Homabay Town Settlements			
Sofia	Roads and Drainage	Ablution Block	Public Lighting

**Source: Conceptual Study Report GA/Niche 2023*

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) The will be no improved accessibility and mobility within the settlements.
(ii) The will be no improved drainage system within the settlements.
(iii) The 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) The will be no creation of employment both during construction and operation phases of the projects.
(vi) The will be no increased Land Value within the settlements.
(vii) The 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	Applicability to the Project
1	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.	The Project will directly contribute towards achievement of objectives of vision under the environment and social pillar through improvement of infrastructure within the settlement
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.	The proposed project will contribute to achievement of this policy's mission through implementation of sustainable land management practices such as tree planting, terracing and storm water harvesting.
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.	Through the project, initiatives aimed at minimizing spread of the diseases will be implemented such as sensitization forums to workers and communities' members, HiV testing and Counselling and issuance of condoms
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	The project will provide employment opportunities to all gender both male and female for available skilled and unskilled labour
7	Kenya	The National Youth Policy 2006 aims at	The project will provide direct

No	Policy	Applicability	Applicability to the Project
	National Youth Policy 2006	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.	employment to the youth as required by the Policy.
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	The project shall not result to eviction of community members but rather implement provisions of RAP report prepared for the settlement
9	The National Land Use Policy (Sessional Paper No. 1 of 2017)	A National Land Use Policy that guides Kenya towards an environmentally and socially responsible use of land and land based resources for socio-economic transformation of the people of Kenya. The Policy promotes best land use practices for optimal utilization of the land resource in a productive, efficient, equitable and sustainable manner. Specifically, the Policy offer a framework of recommendations and Principles designed to ensure the maintenance of a land use system that will provide for: Environmental management and sustainable production in the utilization among other principles.	The proposed project will contribute to achievement of this policy's mission through implementation of sustainable settlement development priorities including roads, drainage, water and sanitation and provisions of flood lights
10	Economic Recovery for Wealth and Employment Creation Strategy 2006	The overall goal of the strategy is to ensure clear improvement in the social and economic wellbeing of all Kenyans; thereby giving Kenyans a better deal in their lives, and in their struggle to build a modern and prosperous nation	The key areas covered in the strategy are: Expanding and improving infrastructure and Safeguarding environment and natural resources among others which the settlement will attain after implementation of KISIP project
11	The National Environmental Sanitation and Hygiene Policy-July 2007:	The Policy is devoted to environmental sanitation and hygiene in Kenya as a major contribution to the dignity, health, welfare, social well-being and prosperity of all Kenyan residents. The Policy recognizes that healthy and hygienic behavior and practices begin with the individual. The implementation of the Policy will greatly increase the demand for sanitation, hygiene, food safety,	KISIP water and sanitation improvement initiatives will result to achievement of policy goals with regards to sanitation and hygiene

No	Policy	Applicability	Applicability to the Project
		improved housing, use of safe drinking water, waste management, vector control at the household level and encourage communities to take responsibility for improving the sanitary conditions of their immediate environment.	
12	National Policy on Water Resources Management and Development (Sessional Paper No.1 of 1999)	The management of water resources in Kenya is guided by four specific policy objectives, namely: ● Preserve, conserve, and protect available water resources and allocate it in a sustainable rational and economic way; ● Supply water of good quality in sufficient quantities to meet the various water needs, including poverty alleviation, while ensuring the safe disposal of wastewater and environmental protection; ● Establish an efficient and effective institutional framework to achieve a systematic development and management of the water sector; and Develop a sound and sustainable financing system for effective water resources management, water supply and sanitation development.	KISIP water and sanitation improvement initiatives will result to achievement of policy goals with regards to provision of clean safe water to the settlement

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	Relevance to the Project
1	Environmental Management and Coordination Act EMCA 1999 amended 2015	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	The proposed project is listed under legal notice 31 and 32 for project requiring to be subjected to an EIA

No	Policy	Applicability	Relevance to the Project
		No. 120; (iii) EMCA (Noise and Excessive Vibration Pollution) (Control) Regulations, 2009 Legal Notice No. 61; (iv) EMCA (Air Quality Regulations 2014)	
	The Environmental Management and Coordination Environmental (Impact Assessment and Audit) Regulations, 2003 amended in 2019	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…''	Provisions of the regulations apply during preparation of this report.
	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".	Provisions of the regulations apply during implementation of the project
	(Environmental Management and Coordination 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.	Provisions of the regulations apply during implementation of the project
	Environmental Management and Coordination 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 provide for a maximum of 60dcl during the day and 35 dcl during the night for a construction site.	Provisions of the regulations apply during implementation of the project

No	Policy	Applicability	Relevance to the Project
	Environmental Management and Coordination (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.	Provisions of the regulations apply during implementation of the project
	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.	Provisions of the regulations apply during implementation of the project
2	Land Act 2012 amended 2019	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.	The project will not result to resettlement of communities by rather a RAP has been prepared to address project impacts to peoples assets and sources of livelihood
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 ELDOWAS. This implies that during implementation of Water and Sewerage Project adequate collaboration between KISIP implementing unit and ELDOWAS will be required.	The project will comply to provision of this Act with regards to abstraction of water to use during civil works
3	County Government Act No. 17 of 2012	The proposed Projects will be implemented within Uasin Gishu 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	The project is being implemented in liaison with county government of Homabay as the main beneficiary of the project

No	Policy	Applicability	Relevance to the Project
		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 2011 amended 2019	This law passed in 2011 provides legal basis for classification of urban areas (City) when the population exceeds 500,000; a municipality when it 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 Homabay 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.	The Act will be complied with at implementation stage
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.
8	Sustainable Waste Management Act 2022	An Act of Parliament to establish the legal and institutional framework for the sustainable management of waste; ensure the realization of the constitutional provision on the right to a clean and healthy environment and for connected purposes. The objective of the Act among others is to promote sustainable waste management; (b) improve the health of all Kenyans by ensuring a clean and healthy environment	KISIP water and sanitation improvement initiatives will result to achievement of policy goals with regards to sanitation and hygiene
9	Energy Act 2019	PART VIII provided for energy efficiency and Conservation of energy resources, the Act provides that factories and buildings and energy appliances by types, quantities of energy use, or methods of energy utilization for purposes of energy efficiency and conservation, as provided	Requirements for dealing in energy handling including safety are enforced by the Energy and Petroleum Regulatory authority (EPRA). EPRA will be instrumental in licensing

No	Policy	Applicability	Relevance to the Project
		by the act safe handling of petroleum used by plant and equipment on site will be emphasized	the bulk storage of petroleum on site where necessary.
10	The Climate Change Act Revised In 2023	An Act of Parliament to provide for a regulatory framework for enhanced response to climate change; to provide for mechanism and measures to achieve low carbon climate development, and for connected purpose. The objective and purpose of the Act among others is to mainstream climate change responses into development planning, decision making and implementation; (b) build resilience and enhance adaptive capacity to the impacts of climate change; (c) formulate programmes and plans to enhance the resilience and adaptive capacity	This is the mandate resonates with KISIP development objective which is to improve access to basic services and land tenure security of residents in participating urban informal settlements and strengthen institutional capacity for slum upgrading in Kenya
11	Traffic Act 2015	PART V of the Act provides driving and other offences relating to the use of vehicles on roads. The act provides explicit measures related to; Speed of motor vehicles, Penalties in relation to speed, Driving under influence of drink, Driving on pavement, pedestrian walkway, Causing death by driving or obstruction, Reckless driving, Signals and signs to be obeyed, Condition of vehicles, Limitation of loads.	This Act will be cited in relation to operation of plant and equipment on site. This act is enforced by the Traffic Police Department and the National Transport and Safety Authority (NTSA)
12	Labour Relations Act 2012	An Act of Parliament to consolidate the law relating to trade unions and trade disputes, to provide for the registration, regulation, management and democratization of trade unions and employers organizations or federations, to promote sound labour relations through the protection and promotion of freedom of association.	This act will be applied by labour force on site in addressing disputes related to working conditions.
13	National Gender and Equality Commission Act 2011	The over-arching goal for NGEC is to contribute to the reduction of gender inequalities and the discrimination against all; women, men, persons with disabilities, the youth, children, the elderly, minorities and marginalized communities.	This Act will be applied during hiring of workforce on site especially during hiring of workers, the aim will be to ensure adequate representation of women in the Project.
14	Sexual Offences Act 2006	An Act of Parliament that makes provision about sexual offences aims at prevention	In an effort to comply to provisions of this Act, the

No	Policy	Applicability	Relevance to the Project
		and the protection of all persons from harm from unlawful sexual acts and for connected purposes. Section 15, 17 and 18 focuses mainly on sexual offenses on minor (children).	contractor will integrate SEA in job descriptions, employments contracts, performance appraisal systems,
15	Child Rights Act (Amendment Bill) 2014	This Act of Parliament makes provision for parental responsibility, fostering, adoption, custody, maintenance, guardianship, care and protection of children. It also makes provision for the administration of children's institutions, gives effect to the principles of the Convention on the Rights of the Child and the African Charter on the Rights and Welfare of the Child. Contractors implementing the various Project components envisaged under the Master Plan Study will be required to comply to provisions of the Act during Project implementation.	The contractor will under below listed measures among others; The contractor will develop and implement a Children Protection Strategy that will ensures minors are protected against negative impacts associated by the Project including SEA.
16	Labour Relations Act 2012	An Act of Parliament to consolidate the law relating to trade unions and trade disputes, to provide for the registration, regulation, management and democratization of trade unions and employers organizations or federations, to promote sound labour relations through the protection and promotion of freedom of association.	This act will be applied by labour force on site in addressing disputes related to working conditions.
17	National Gender and Equality Commission Act 2011	The over-arching goal for NGEC is to contribute to the reduction of gender inequalities and the discrimination against all; women, men, persons with disabilities, the youth, children, the elderly, minorities and marginalized communities.	This Act will be applied during hiring of workforce on site especially during hiring of workers, the aim will be to ensure adequate representation of women in the Project.

4.4 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 4-3

Table 4- 3: 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

4.5 World Bank Environmental, Health, and Safety General Guidelines

The Environmental, Health, and Safety (EHS) Guidelines are technical reference documents with general and industry-specific examples of Good International Industry Practice (GIIP). When one or more members of the World Bank Group are involved in a Project, these EHS Guidelines are applied as required by their respective policies and standards. The EHS Guidelines contain the performance levels and measures that are generally considered to be achievable in new facilities by existing technology at reasonable costs. The General EHS Guidelines are organized as summarized in Table 4.4 below.

Table 4.4: The General EHS Guidelines

Thematic Area	Parameters
Environmental	• Air Emissions and Ambient Air Quality • Energy Conservation • Wastewater and Ambient Water Quality • Water Conservation • Hazardous Materials Management • Waste Management • Noise

	• Contaminated Land
Occupational Health and Safety	• General Facility Design and Operation • Communication and Training • Physical Hazards • Chemical Hazards • Biological Hazards • Radiological Hazards • Personal Protective Equipment (PPE) • Special Hazard Environments • Monitoring
Community Health and Safety	• Water Quality and Availability • Structural Safety of Project Infrastructure • Life and Fire Safety (L&FS • Traffic Safety • Transport of Hazardous Materials • Disease Prevention • Emergency Preparedness and Response
Construction and Decommissioning	• Environment • Occupational Health & Safety • Community Health & Safety

These General EHS Guidelines will be applied in addition to other guidelines as discussed in this chapter with the aim of mitigation various environmental and social impacts that area likely to be triggered by the Project.

4.6 International Conventions Ratified by Kenya and Applicable to the Project

International conventions ratified by Republic of Kenay and applicable to the project are listed **Table 4.5** below.

Table 4.5: International Conventions

Convention	**Description**	**Relevance to the Project**
The 1992 United Nations Framework Convention on Climate Change (1992).	The primary purpose of the Convention is to establish methods to minimize global warming and in particular the emission of greenhouse gases. The Convention was adopted in 1992 and came into force in 1994.	The design provides for use of raw material that are all weather resistance, further provisions have been made for regular repair and maintenance by the County government as an adaptation strategy to climate change
United Nations Convention on Biological Diversity (1992)	The Convention has three main goals including which are, the conservation of biological diversity (or biodiversity); the sustainable use of its components; and the fair and equitable sharing of benefits arising from genetic resources.	An EIA is prepared separately to mitigate any adverse impacts that the project might have on environment within the settlement

Vienna Convention on the Protection of the Ozone Layer:	The Vienna Convention was an intergovernmental negotiation for an international agreement to phase out ozone depleting substance in March 1985. It ended in the adoption of the Vienna Convention for the Protection of the Ozone Layer. The Convention encourages intergovernmental cooperation on research, systematic observation of the ozone layer, monitoring of Chloro-floro Carbons (CFC) production, and the exchange of information.	Plant and equipments to be used during construction of the project will be services and maintained appropriately to mitigate against risk of emission of hydrocarbons
United Nations Convention to Combat Desertification (2002).	The Convention combats desertification in those countries that experience serious droughts and/or desertification.	The EIA has provided for planting of trees within the road reserves after construction of the roads as a contribution to tree cover
Rotterdam Convention	This is a multilateral treaty that came into effectiveness in 2004. The purpose is to promote shared responsibilities in relation to importation of hazardous chemicals. The convention promotes open exchange of information and calls on exporters of hazardous chemicals to use proper labelling, include directions on safe handling, and inform purchasers of any known restrictions or bans.	No hazardous materials prohibited under the convention will be utilized under the project

4.7 International Labour Organizations ILO Ratified by Kenya

Kenya has been a member of the International Labor Organization (ILO) since 1960. The country has ratified below listed fundamental conventions of ILO. International Conventions Ratified by Republic of Kenya are summarized in **Table 4.6** below.

Table 4.6: International Labor Organization (ILO) Conventions

International Labour Organization (ILO) Convention	Description	Relevance to the Project
Forced Labor Convention (1930/no. 29).	The key objective of the Convention is to suppress the use of forced labor in all its forms. It defines forced labor as 'all work or service which is exacted from any person under the menace of any penalty and for which the said person has not offered himself voluntarily'.	The project will comply to the provisions of this convention and forced labor will not be used
UN Convention on the Rights of the Child.	The Convention is a Human Rights treaty that sets out the civil, political, economic, social, health and cultural rights of children. It defines a child as any human being under the age of 18 unless the age of majority is attained earlier under national	Persons under the age of 18years will not be employed by the project

	legislation.	
Freedom of Association and Protection of the Right to Organize Convention, 1948 (No.87):	Article 2 of the convention provides that workers and employers, without distinction whatsoever, shall have the right to establish and, subject only to the rules of the organization concerned, to join organizations of their own choosing without previous authorization._Article 3 provides that workers' and employers' organizations shall have the right to draw up their constitutions and rules, to elect their representatives in full freedom, to organize their administration and activities and to formulate their programs.	Workers hired by the contractor will have freedom of association and assemble as provided for under this convention
Right to Organize and Collective Bargaining Convention, 1949 (No.98):	The convention provides under article 1 Workers shall enjoy adequate protection against acts of anti-union discrimination in respect of their employment. Article 2 provides that workers' and employers' organizations shall enjoy adequate protection against any acts of interference by each other or each other's agents or members in their establishment, functioning or administration.	No workers will be reprimanded on basis of highlighting grievances related to labor issues
Discrimination (Employment and Occupation) Convention, 1958 (No.111)	The convention provides that each Member for which this Convention is in force undertakes to declare and pursue a national policy designed to promote, by methods appropriate to national conditions and practice, equality of opportunity and treatment in respect of employment and occupation, with a view to eliminating any discrimination in respect thereof.	Employment under the project will not be discriminative further disadvantages groups will be given added advantage
Occupational Safety and Health Convention, 1981 (No.155):	The Conventions provides that each Member shall, in the light of national conditions and practice, and in consultation with the most representative organizations of employers and workers, formulate, implement and periodically review a coherent national policy on occupational safety, occupational health and the working environment. _The aim of the policy is to prevent accidents and injury to health arising out of, linked with or occurring in the course of work, by minimizing , so far as reasonably practicable, the causes of hazards inherent in the working environment.	Occupation Health and Safety provisions will be adhered to under the Project
Promotional Framework for Occupational Safety and Health Convention, 2006 (No. 187).	The Convention provides that each Member which ratifies this Convention shall promote continuous improvement of occupational safety and health to prevent occupational injuries, diseases and deaths, by the development, in consultation with the most representative organizations of employers and workers, of a national policy, national system and national program. Further, the convention provides that each Member shall take active steps towards achieving progressively a safe and healthy	Occupation Health and Safety provisions will be adhered to under the Project

	working environment through a national system and national programs on occupational safety and health by taking into account the principles set out in instruments of the International Labor Organization (ILO) relevant to the promotional framework for occupational safety and health. Each Member, in consultation with the most representative organizations of employers and workers, shall periodically consider what measures could be taken to ratify relevant occupational safety and health Conventions of the ILO.	
Worst Forms of Child Labor Convention, 1999 (No.182)	The convention provides worst forms of child Labor comprises: all forms of slavery or practices similar to slavery, The use, procuring or offering of a child for illicit activities or Work which, by its nature or the circumstances in which it is carried out, is likely to harm the health, safety or morals of children. The convention requires that each Member shall take all necessary measures to ensure the effective implementation and enforcement of the provisions giving effect to this Convention including the provision and application of penal sanctions or, as appropriate, other sanctions.	Child labor will not be permitted under the project

4.8 Sustainable Development Goals

The Sustainable Development Goals (SDGs), also known as the Global Goals, were adopted by the United Nations in 2015 as a universal call to action to end poverty, protect the planet, and ensure that by 2030 all people enjoy peace and prosperity. Applicable SDGs under the project are summarised in Table 4-7 below

Table 4- 7: Applicable Sustainable Development Goals (SDGS)

SDG	Provision	Applicability
SDG 6: Clean Water and Sanitation	By 2030, achieve access to adequate and equitable sanitation and hygiene for all and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations	The project has component of water and sanitation that is aimed to improve health, Sanitation and Hygiene of benefiting settlement
SGD 9: Industry, Innovation and Infrastructure	Develop quality, reliable, sustainable and resilient infrastructure, including regional and transborder infrastructure, to support economic development and human well-being, with a focus on affordable and equitable access for all	KISIP interventions in the settlements involve improvement of infrastructures within the settlements related to roads and drainage works, water and sanitation facilities, flood masts among others which align to the provisions of this SDG
SDG 10 Reduced Inequalities	By 2030, progressively achieve and sustain income growth of the bottom 40 per cent of	Improving living conditions of the peoples in the informal

	the population at a rate higher than the national average	settlements trough provision of better roads, drainage, water and sanitation and flood lights align well with provision of this SDG
SDG 11: Sustainable Cities and Communities	By 2030, provide access to safe, affordable, accessible and sustainable transport systems for all, improving road safety, notably by expanding public transport, with special attention to the needs of those in vulnerable situations, women, children, persons with disabilities and older persons	Improving roads and drainage infrastructure and provision of flood light in the settlement improve settlement infrastructure and enhances business among community members
SDG 13: Climate Action	Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries Integrate climate change measures into national policies, strategies and planning Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning	The design provides for use of raw material that are all weather resistance, further provisions have been made for regular repair and maintenance by the County government

4.9 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 4-8 below.

Table 4- 8: Institutions Assessment

No	Policy	Applicability
1.	MoLPWHUD	Ministry of Lands, Housing and Urban Development (MoLPWHUD), is the government ministry responsible for policy formations and implementation in matters related to Lands, 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 Homa Bay	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.	HOMAWASCO	Homa Bay Water and Sewerage Company (HOMAWASCO) are Water Service Providers (WSP) wholly owned by Homa Bay County, the (WSP) assists in developing water and sewerage designs as well as operating water and sewerage infrastructure after Project completion.
4.	Kenya Power	This is a government company charged with responsibility of destruction 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. WRA will be consulted regularly in situations where river crossing will be required or any water body is concerned during project implementation.
6.	KURA	Kenya Urban Roads Authority is a government parastatal under Ministry of Lands, Housing and Urban Development (MoLHUD). 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.

CHAPTER 5: BASELINE INFORMATION OF TARGET SETTLEMENTS

5.1 General Information

The Project target upgrading of infrastructure in Sofia informal settlement in Homabay Town, the target settlement is summarized in table 3-1 below.

Table 3- 1: Target Settlements

Location in Homa Bay County	Settlement
Homabay Town	Sofia Informal Settlement

Sofia settlement is located in the South West region of Homabay Town and is accessible from Mbita – Rusinga Road. Sofia is located behind Homabay Town. It has an area of 4.03 Ha and a population of 4,429 people.

5.2 Physical Environment

5.2.1 Climate

Homa Bay experiences two rainy seasons, the long and the short rains, which fall between March to May and between the months of October to December, respectively. The rainfall pattern ranges between 250 and 700 mm per annum.

Temperature typically varies with altitude and proximity to the lake and tends to increase towards the lowland with an average of 65-degree Fahrenheit to 85-degree Fahrenheit and it rarely goes below 62-degree Fahrenheit or above 90-degree Fahrenheit. Temperatures are highest between December and March with the hottest weather being experienced in February and the lowest in April and November.

5.2.2 Topography

The settlements in Homa Bay are located on the lakeshore lowland, which ranges between 1143 to 1220 meters above sea level and comprises of a narrow stretch bordering Lake Victoria. At the end of lakeshore lowland lies Homa Bay. The bay is skirted by a shoreline stretching for approximately 16.5 km covering parts of Homa Bay Sub County. The settlement area has a gently rolling terrain that flattens towards Lake Victoria. It is characterized by various hills standing separately.

5.2.3 Soils and Geology

Homa Bays' soil is black cotton soil, which is difficult to work upon with simple hand implements. It is also difficult to work on during heavy rains, making farming difficult. The lake shore lowland is dominated by alluvial soils, mainly the sandy loam type which is well drained and suitable for cotton, sunflower, maize, beans, cow peas and vegetable production. Other crops with potential are sugar cane and potatoes.

Homa Bay is underlain by various rock types, namely, agglomerates, conglomerates, tuff sandstone, granite and other deposits which are useful in the construction industry.

5.3 Biological Environment

The vegetation is largely of bush land growing over expansive black cotton. There is also an assortment of species of indigenous species of trees. A lot of trees are grown within the peri-urban areas for the conservation of the environment. However, since agriculture is still exercised in most parts of the Municipality, crops also form part of vegetation cover as do grass in open fields and homesteads and compounds or courtyards.

It is to be noted that the water hyacinth in the lake can also be considered available vegetation, but this is subject to winds as sometimes it is blown further into the lake, but mostly it covers a large tract of the shoreline. The area is located within human settlement in Homa Bay town with limited vegetation cover, the most common trees are from subsistence maize farming being done within the settlement. The settlement has no elaborate drainage system therefore runoff water follows the natural drainage system. The settlement faces challenges of blockage due to anthropogenic activities which result into flooding of the settlement during rain seasons. Also, Solid waste management systems are not well developed hence waste is often damped in the open. Photo plate 3-9 below illustrated environmental situation in Sofia Informal Settlement in Homa Bay.

Photo 3-9: Environmental Situation in Sofia Informal Settlement

Solid waste dumped in the area

Drainage situation of area.

A small scale maize farm in Sofia

Common trees within the area.

5.4 Existing Infrastructure

The common type of sewerage disposal infrastructure is use of pit latrine; this is because the area does not have a sewer system. Most structure within the settlement are made of cement wall, cement screed floor and galvanized corrugated iron sheet roof, a small number of houses are made of mud/clay walls. Electricity is readily available in the area. Majority of roads in the area are of earthen standards being maintained by the county government of Homa Bay. See photo plate 3-10 below.

Photo Plate 3-10: Existing Infrastructure in Sofia Informal Settlement

National Grid Energy access within Sofia

Road situation in the area

5.5 Social Amenities in Sofia Informal Settlement

The area is served by a number of public facilities which include but not limited to social halls as presented in photos 3-11 below

Photo Plate 3-11: Public Facilities in Sofia Informal Settlement

Pedo Centre Social Hall

5.6 Climate Change Impacts in Informal Settlements

The National Climate Change Response Strategy (2010)2 provides that that climate change is one of the greatest challenges facing humanity this century. In Kenya, this phenomenon is already unmistakable and intensifying at an alarming rate as is evident from countrywide temperature increases and rainfall irregularity and intensification

The strategy points out many ways to which climate change impact settlements directly or indirectly through extreme climate conditions such as high wind, heavy rainfall, heat and cold can result in a wide range of scenarios such as tropical storms, floods, landslides, droughts and sea-level rise. Climatic catastrophes displace populations and cause sudden deaths, which in turn can lead to conflicts and civil unrest.

Therefore, in order to mitigate climate change impacts above, the strategy advocates implementation of climate change adaptation strategies among them; proper planning of urban settlements which takes into consideration the expected high growth rate of urban population due to climate-induced migration from rural areas to urban centres. This will require urban planners and real-estate industry players to accordingly implement proper and adequate housing structures, waste disposal as well as piped water infrastructure. This is the mandate resonates with KISIP development objective which is to improve access to basic services and land tenure security of residents in participating urban informal settlements and strengthen institutional capacity for slum upgrading in Kenya.

5.7 Social Economic Baseline

Residents of Sofia settlement in Homabay town own plots with structures, own structures or are tenants. Figure below shows that 77% of residents of Sofia settlement are tenants, 12% are plot owners and 11% are structure owners.

5.7.1 Ownership/Tenancy

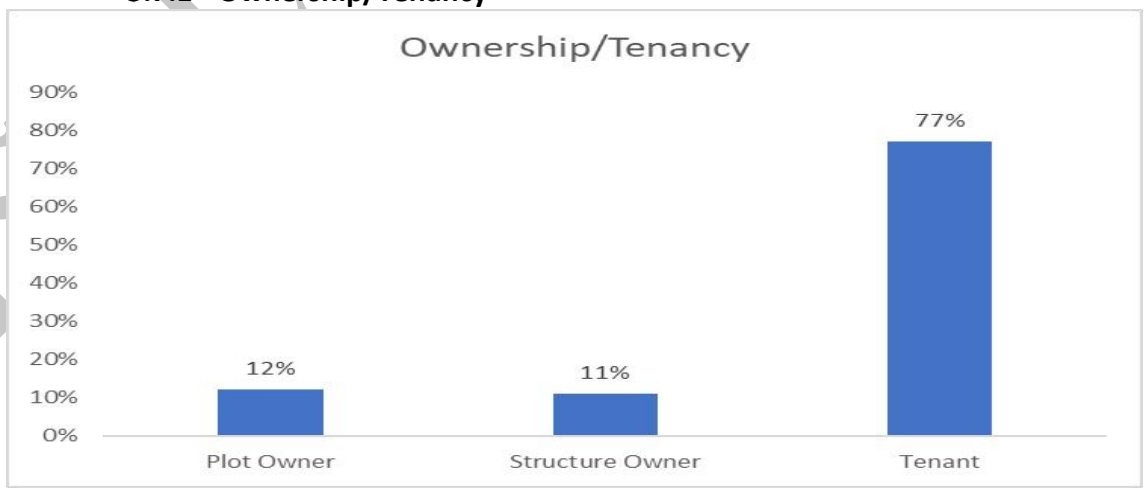


Figure 5- 1: Ownership/Tenancy

2 National Climate Change Response Strategy, Government of Kenya. April 2010,

5.7.2 Accessibility

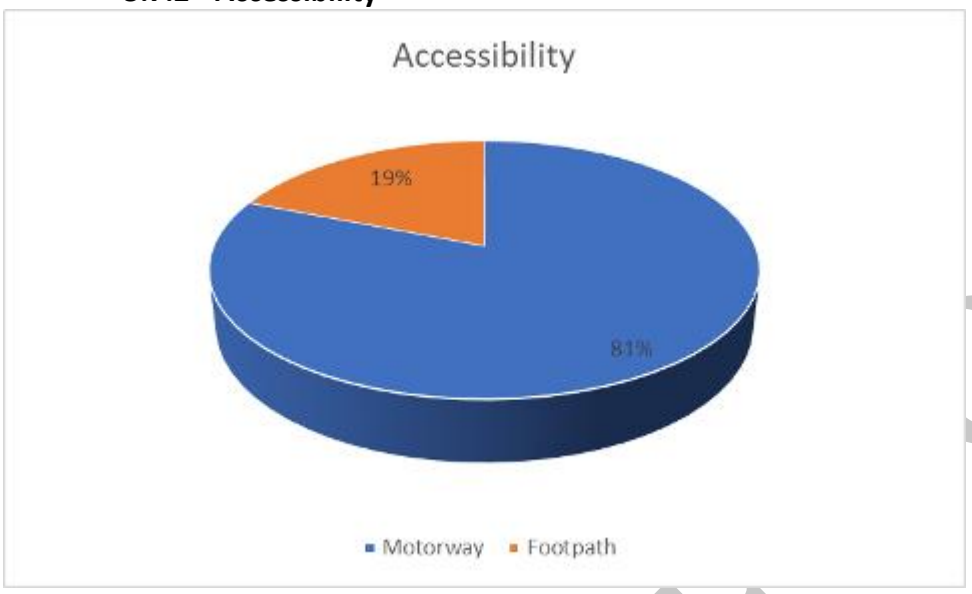


Figure 5- 1: Accessibility

Results in figure above indicates that 81% of households within Sofia settlement can be accessed using a motor vehicle while 19% can be accessed by walking.

5.7.3 Demographic Profile of Households

Age, Gender and Marital Status

The survey showed that the population of the settlement has significantly more females than males, as indicated below.

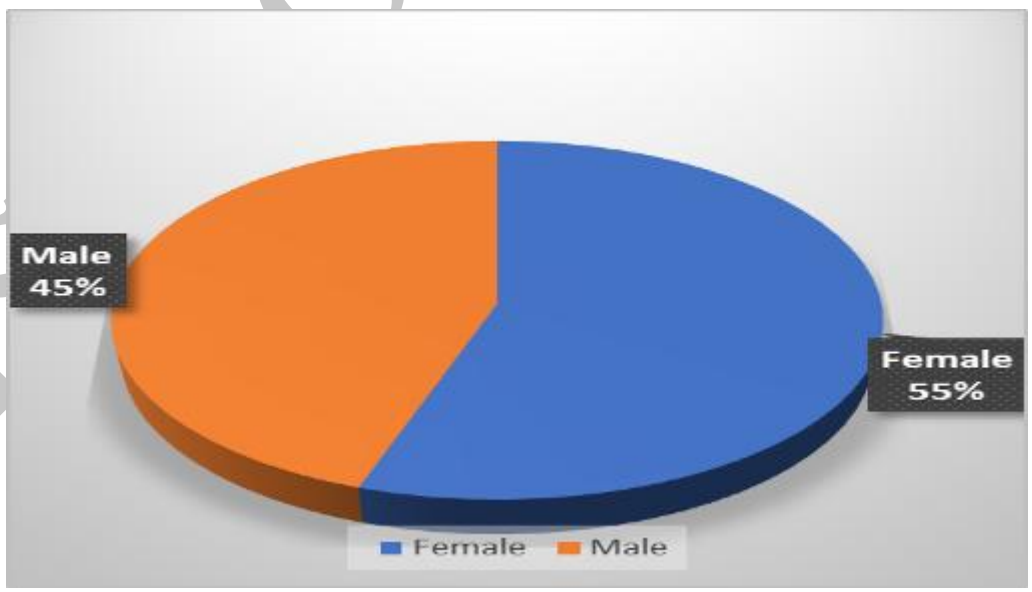


Figure 5- 1: Gender

The data from the Sofia settlement reveals that females constitute 55.3% of the population, while males represent 44.7%.

Table 3- 2: Age and Marital Status

Age	Married	Separated	Single	Widowed	Total
26-29	10.0%	0.0%	4.7%	0.0%	**14.7%**
30-34	15.3%	0.0%	4.7%	0.0%	**20.0%**
35-39	19.3%	4.7%	0.0%	0.0%	**24.0%**
40-44	15.3%	0.0%	0.0%	0.0%	**15.3%**
45-49	10.7%	0.0%	0.0%	0.0%	**10.7%**
50-54	4.7%	0.0%	0.0%	5.3%	**10.0%**
55-59	0.0%	0.0%	0.0%	5.3%	**5.3%**
% of Total	**75.3%**	**4.7%**	**9.3%**	**10.7%**	**100.0%**

On the other hand, the findings of the survey in Table above provide insights into the age distribution of its residents. Youths aged 25-34 make up 34.7% of the population while the middle age group 35-55 are the majority at 60% and older constitute 5.3%. From this distribution, it's evident that the Sofia settlement predominantly houses a middle-aged population. The lesser representation of the younger and older age groups might influence future planning in areas like education and elderly care.

In regards to marital status and citizenship, all residents are Kenyans, of which 75.3% are married. 10.7% are widowed, 9.3% are single and 4.7% are separated. The relatively high percentage of widowed individuals may indicate the need for support systems or services tailored to this group. The lower percentages of single and separated individuals can influence community dynamics, potential housing needs, and social services tailored to these demographics.

Disability or vulnerability

There were no members of Sofia community living with disabilities.

Education Levels

During the survey, the educational levels of residents were sought, and the results are presented in figure below.

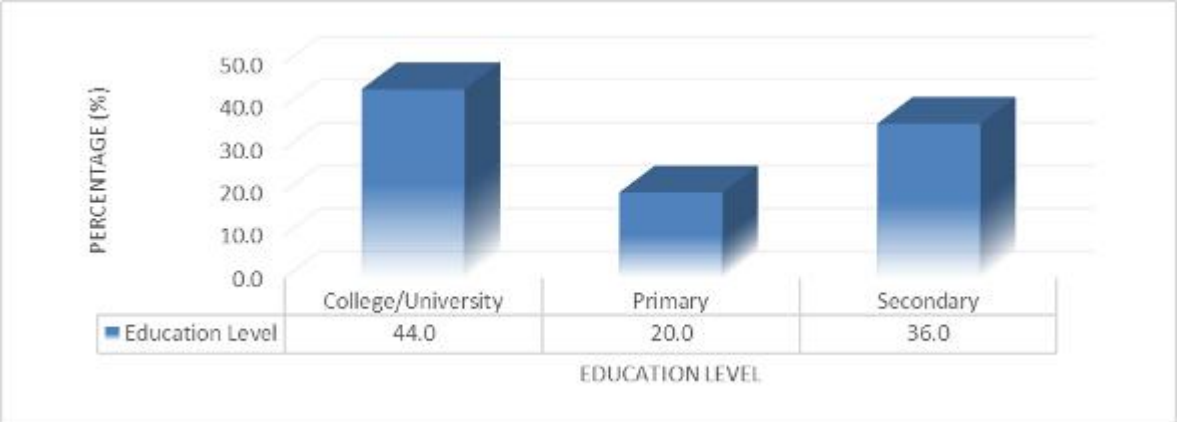


Figure 5- 1: Educational Levels

Nearly half, or specifically 44.0%, have pursued higher education, attaining a college or university degree. Those with secondary education, which could include high school or equivalent, form 36.0% of the population. Lastly, 20.0% have completed only primary education as shown in figure above.

5.7.4 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 employment was plotted against household members within the settlement and the result is posted below.

Figure 5- 1: Occupation

The findings of the survey in figure 4.5 provide an overview of the occupational landscape in the Sofia settlement. A substantial 60.0% of the population is self-employed, suggesting a strong entrepreneurial spirit or a community that relies heavily on individual ventures. Casual laborers, likely engaging in temporary or ad-hoc jobs, form 25.3% of the population. Civil servants, those working for government or public services, account for 9.3%. Lastly, the unemployment rate

stands at 5.3%, indicating the percentage of people actively seeking employment but currently without a job.

Income Levels

Residents were asked to state their monthly income, and below is the outcome:

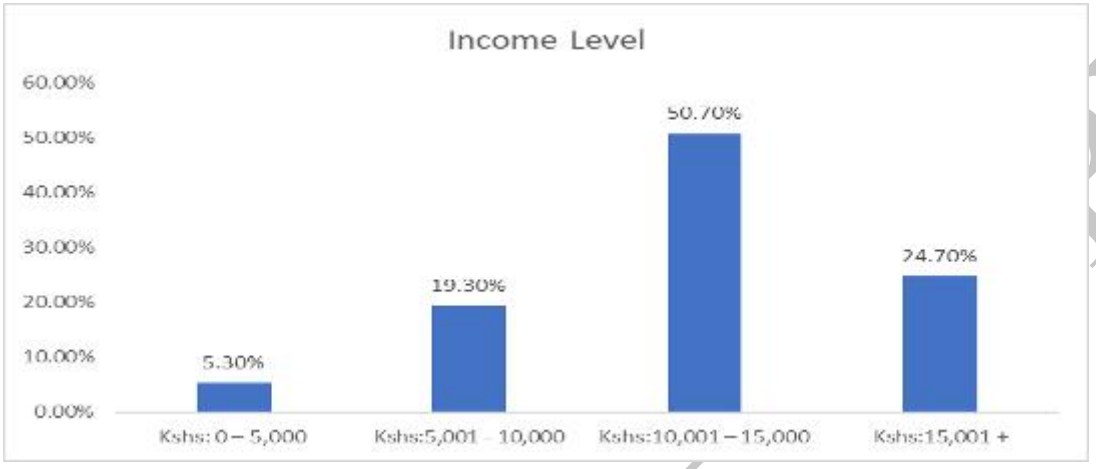


Figure 5- 1: Monthly Income

On income levels, 5.3% of the people earn Kshs: 5,000 or less per month. Those earning Kshs: 5,001 – 10,000 are 19.3% of the people. There is another 50.7% and 15.3% of the people earning Kshs: 10,001 – 15,000 and Kshs: 15,001 and above.

Expenditure on Food and Clothing

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

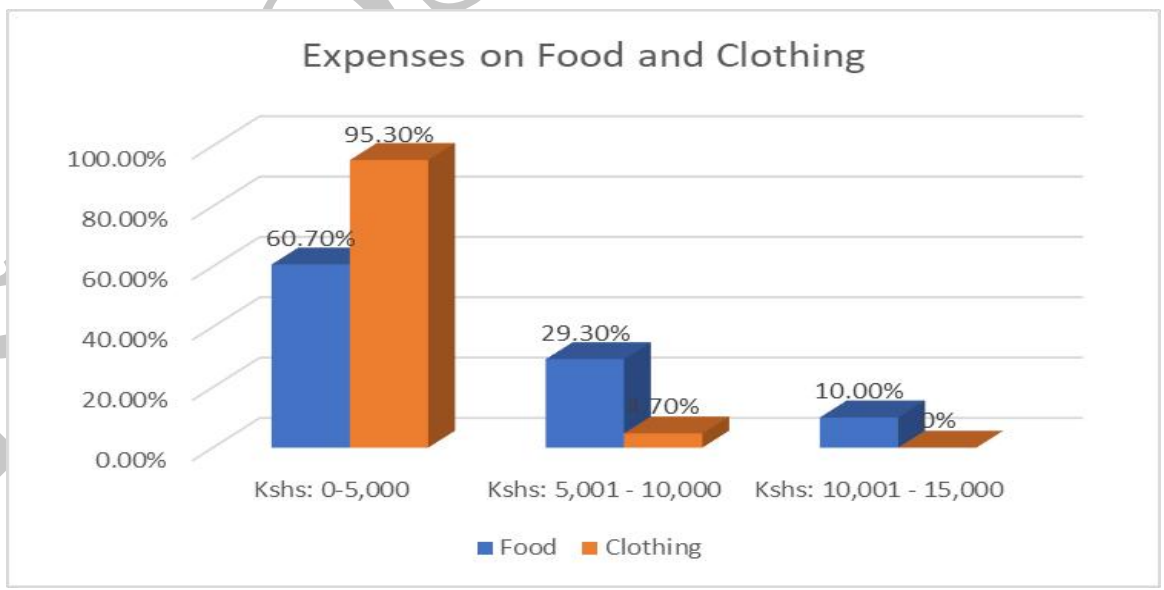


Figure 5- 1: Expenditure on Food and Clothing

As noted for food, 60.7% of the households spend Kshs: 5,000 or less and 29.3% spend Kshs: 5,001-10,000. For clothing, 95.3% of the households spend Kshs: 5,000 or less on food and 4.7% spend Kshs: 5,001-10,000.

5.7.5 Structures/Unit Details

Sofia settlement has a nucleated settlement pattern with a block structure.

Household Size

During the socio-economic survey, respondents were asked to indicate how many people they live with in the same household and results posted below.

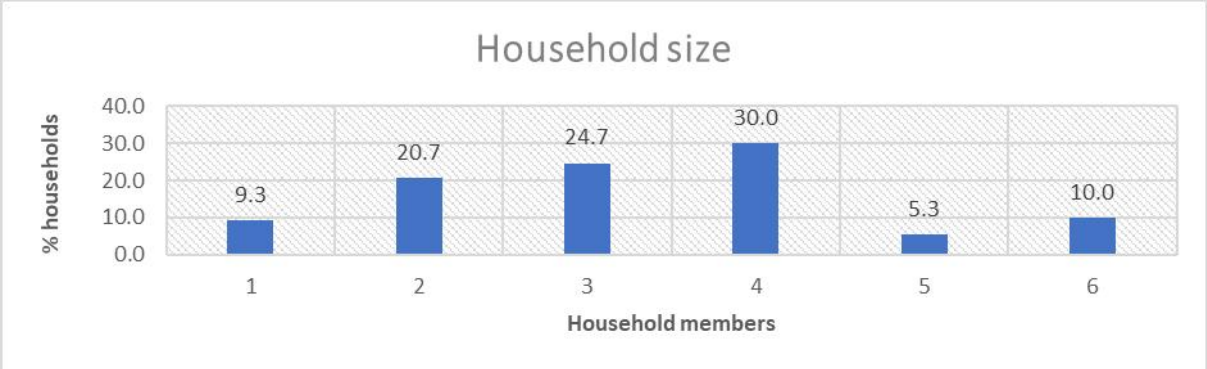


Figure 5- 1: Household Size

Majority of the households inhabited by five people is 30%. Followed by households with four persons (24.7%), household with three persons (20.7%), household with seven persons (10%), household with two people (9.3%) and household with six persons (5.3%).

Nature of Structure, Its wall, Floor and Roof

From settlement information earlier, it was indicated that the structure typology in the settlement varies, with the upper section predominantly comprised of bungalows. During the survey, residents were asked what type of structure they occupied, and the results are indicated below.

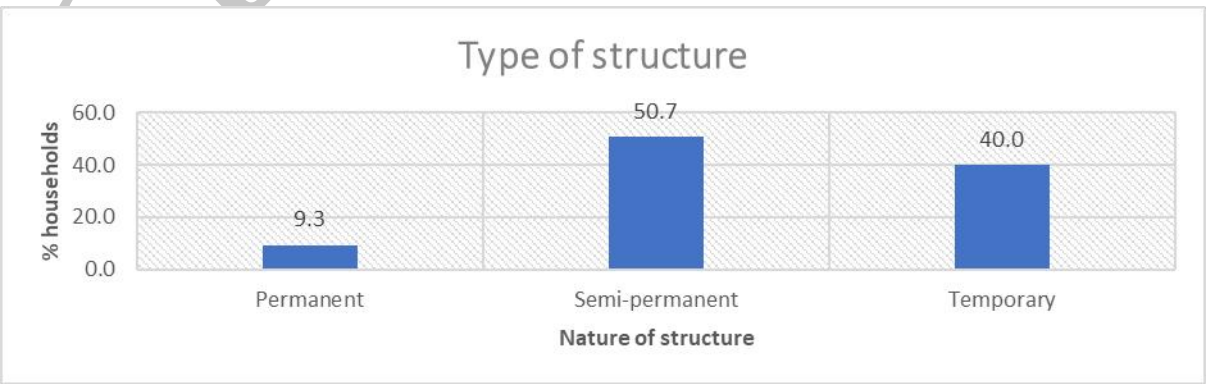


Figure 5- 1: Nature of Structures

The socio-economic survey revealed that 50.7% of the structures within the settlement are Semi-permanent, 40% are temporary and 9.3% are permanent structures. These are close in city

urbanized areas. In terms of structure material, it was established that all roofs were made of iron sheets within Sofia settlement. However, the materials for walls and floors are posted below

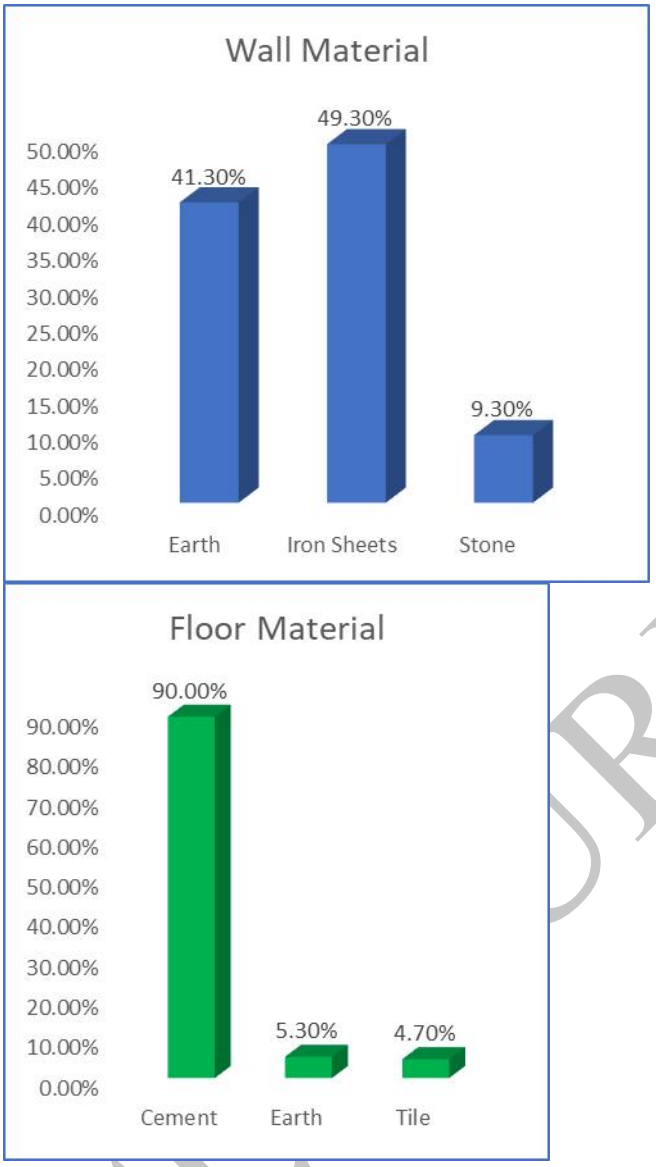


Figure 5- 1: Materials for Walls and Floors

Generally, the structures have iron sheet roofs (100%), the walls are mainly made of iron sheets (49.3%) but some are made of earth material (41.3%), and the floors are predominantly cement (90%), with 5.3% having earth floor and 4.7% being tiled. The disparity in the building materials is very evident. Iron sheets are the main construction material for semi-permanent building walls in the settlement. Some residential properties have concrete fences around them, which also act as the boundaries for plots.

5.7.6 Water Sanitation and Hygiene

Water Sources, Quality and Cost

The investigation on sanitation and hygiene in this study involved establishing the source and quality of water as well as its cost. The source of water in the settlement is posted below.

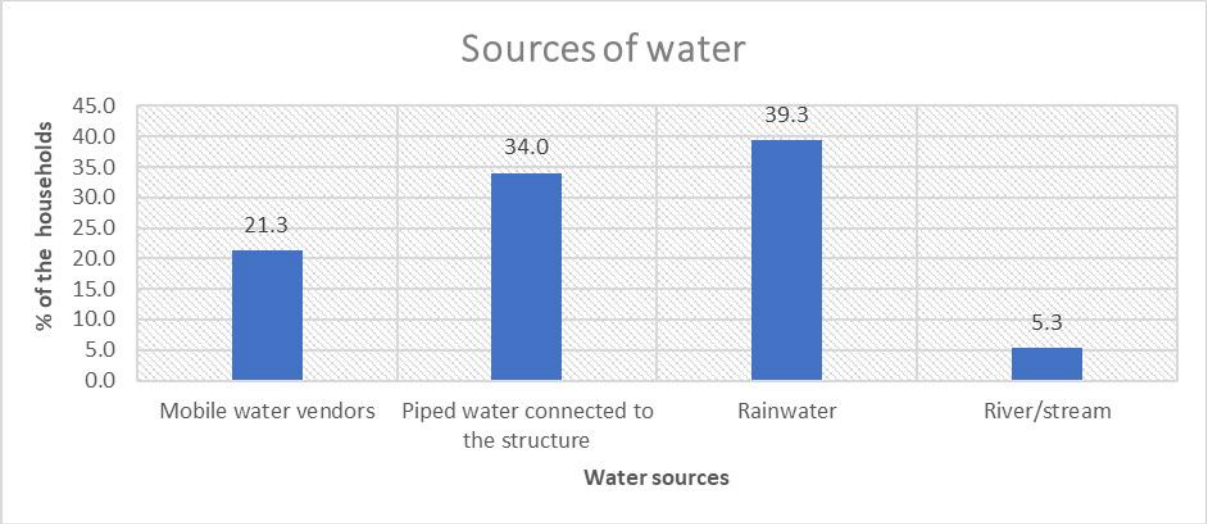


Figure 5- 1: Source of Water

Residents of Sofia mainly depend on rain water and piped water connected to structures which account for 39.3% and 34% respectively as shown above. However, piped water gives them a great alternative. In of terms of the quality of the water, 89.3% said it is fresh and 10.7% said the water is salty. Those who depend on piped water to respective structures were asked what they spend monthly, and the results are posted below.

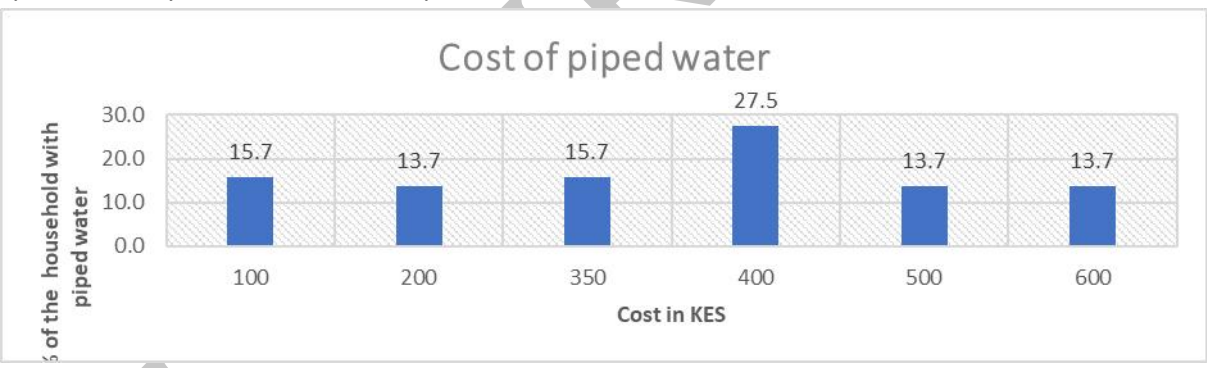


Figure 5- 1: Monthly Cost of Piped Water

Most residents with piped water spend KES 400 per month. According to figure 4.12, 15.7% of residents spend KES 100 and KES 350 while 13.7% spend KES 200, KES 500 and KES 600 monthly on water.

Bathroom Access and Cost

Residents were then asked if they have access to bathroom facilities and they all responded affirmatively as posted below.

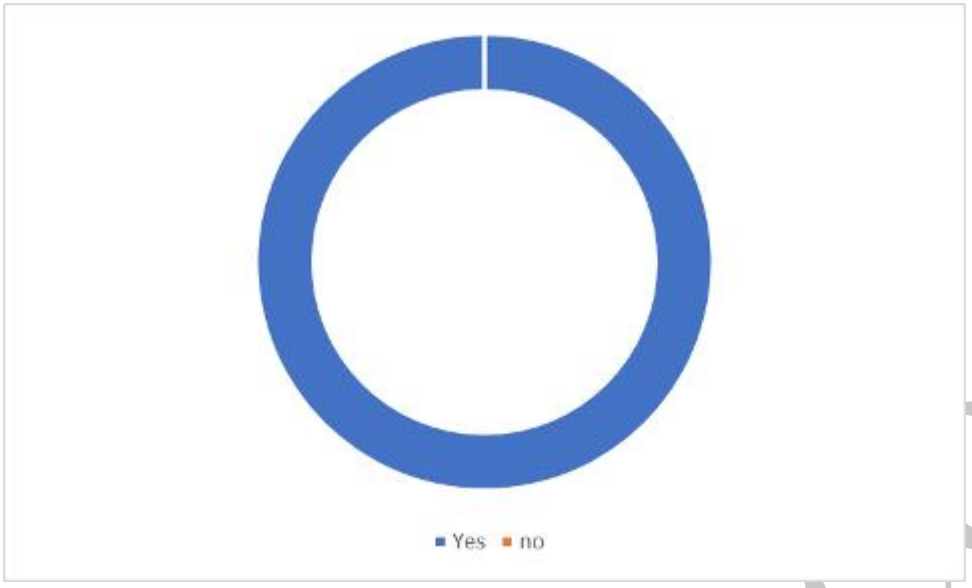


Figure 5- 1: Bathroom Access

It is indicative that the all of residents have access to bathrooms. On where the facilities are located, residents' and answers posted in figure below.

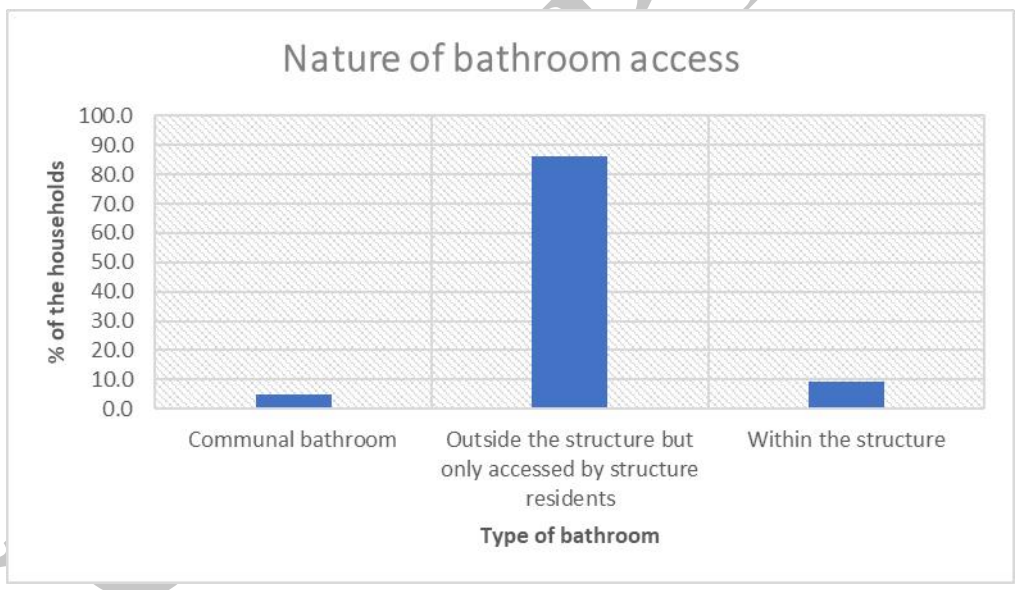


Figure 5- 1: Bathrooms Location

A majority of 86% of respondents as indicated above have bathroom facilities outside the structures for residents only, 4.7% access communal facilities and 9.3% have bathrooms within the structure.

Access to Toilet Facilities

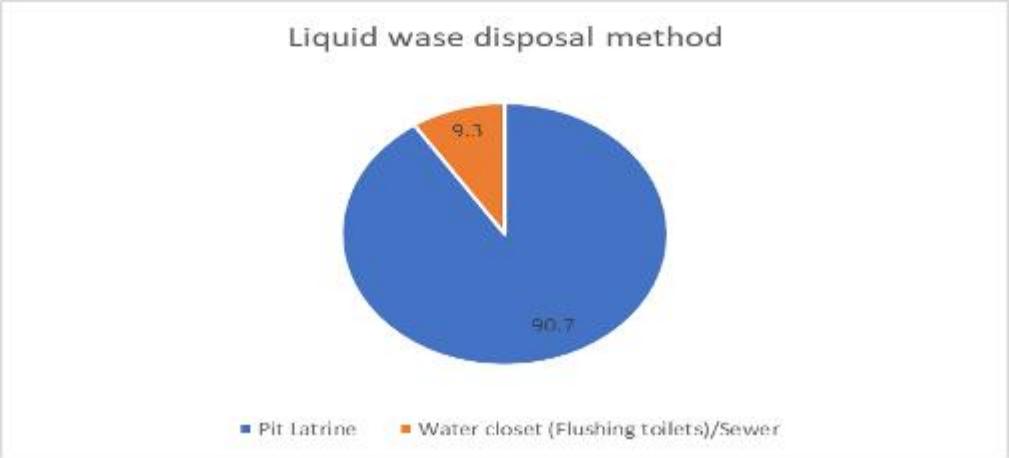


Figure 5- 1: Toilet Facilities

Most residents of Sofia as indicated above have access to pit latrines as toilet facilities in the settlement. It is indicated in figure 4.15 above that 90.7% access pit latrines and 9.3% use sewer/water closet.

5.7.7 Services

Solid Waste

Residents were asked how they dispose of solid waste and gave the responses posted below.

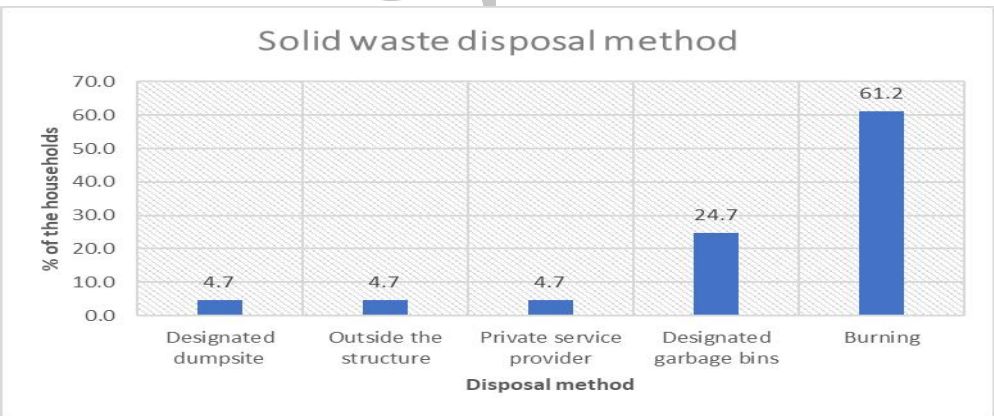


Figure 5- 1: Garbage Disposal

From above figure, it is shown that 61.2% of households dispose garbage by burning, 24.1% dispose in designated bins and each 4.7% dispose in designated dumpsites, outside the structure and private service providers. There is indiscriminate dumping done in areas with buildings under construction, open pit latrines, along the access roads, and even on open waste water drains, leading to clogging of the drains. The disposal sites in some areas are along open spaces bordering the main storm water collectors of the settlement and neighbouring areas. Solid waste is mainly composed of household refuse, which includes organic waste, plastics and glass. The

study revealed that all the residents indicated that they generate organic waste and plastic paper as garbage.

Waste Management Services

None of the respondents is involved is selling of the reusable or recyclable waste. Otherwise, there is limited waste management service because much of garbage is indiscriminately disposed or burnt. This is indicative of the poor waste management system. When asked how much they would be willing to pay if provided with solid waste management services, residents' responses were as given in figure below.

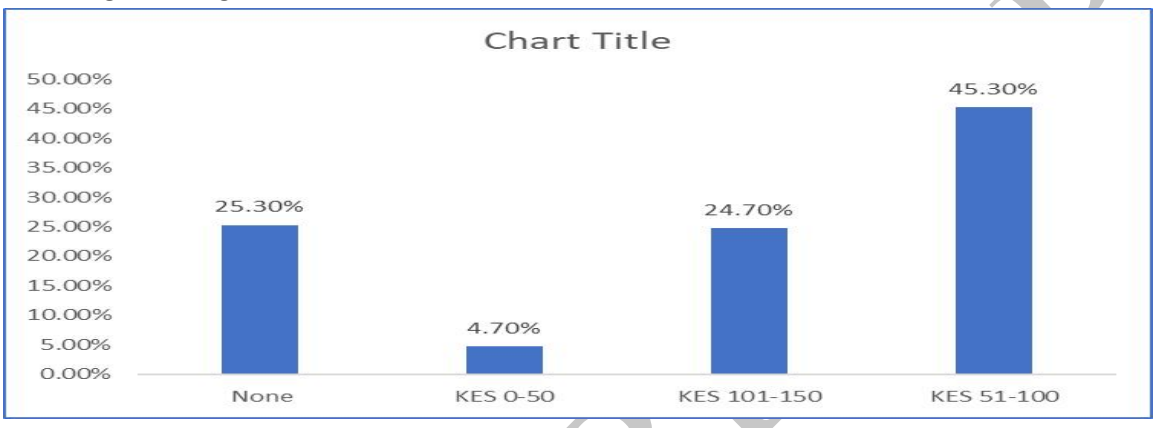


Figure 5- 1: Amount Residents willing to pay for Waste Management Services

Overwhelmingly, 25.3% of the residents suggested no monthly payment with thought of government facilitation followed by the suggestion of KES 51-100 for waste management at 45.3%.

Recommendations on Waste Management

Residents were asked how they would like solid waste management to be improved, and the response was as posted below.

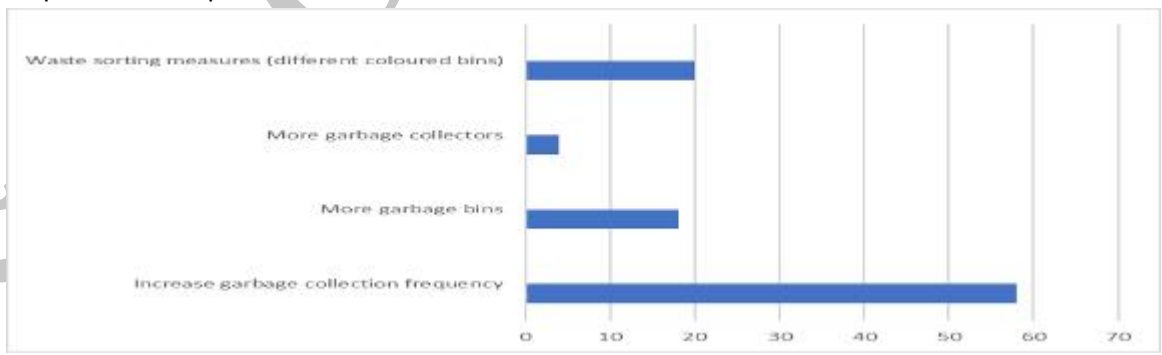


Figure 5- 1: Recommendations on Waste Management

For effective waste management in Sofia settlement, residents have put forward several suggestions. The most common recommendation, cited by 58% of respondents, is to increase the frequency of garbage collection, indicating a need for more regular waste pickup services. Additionally, 20% of respondents suggest implementing waste sorting measures, such as providing different-coloured bins for separating different types of waste, which can promote recycling and proper disposal practices. A smaller percentage, 18%, indicates the need for more

garbage bins in the area, and 4% recommend increasing the number of garbage collectors. These suggestions reflect the community's desire for more efficient and environmentally friendly waste management services, which can contribute to cleaner and healthier living conditions in the settlement.

5.7.8 Energy

Lighting Energy

During the survey, the residents were asked their main source of lighting energy. The main source of lighting energy in the settlement is electricity, as confirmed by 89.3% of the residents. 5.3% use candles. The remaining 5.3% depends on paraffin/kerosene.

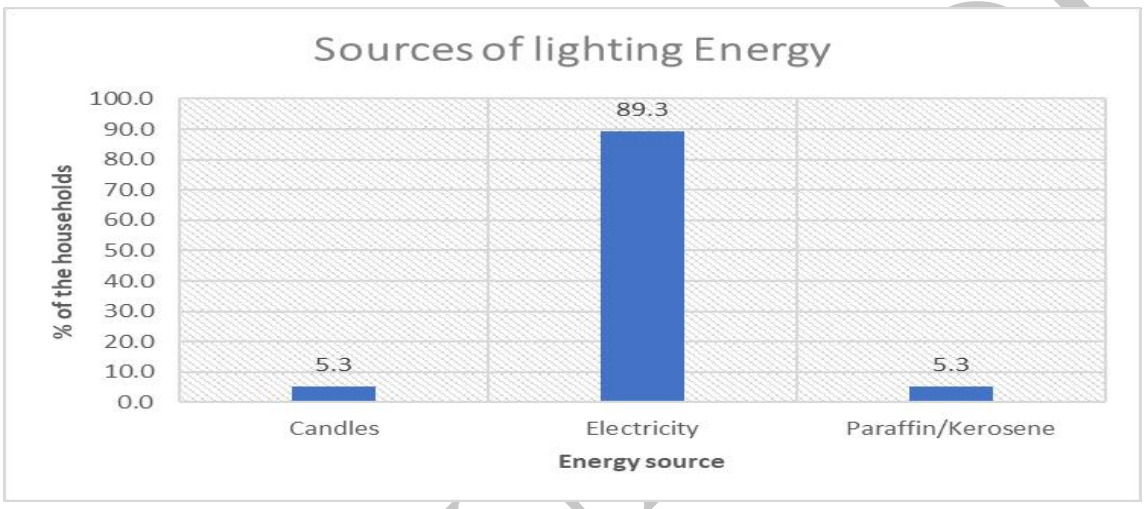


Figure 5- 1: Lighting Energy

When asked what they spend monthly on electricity, the responses were varied as follows:

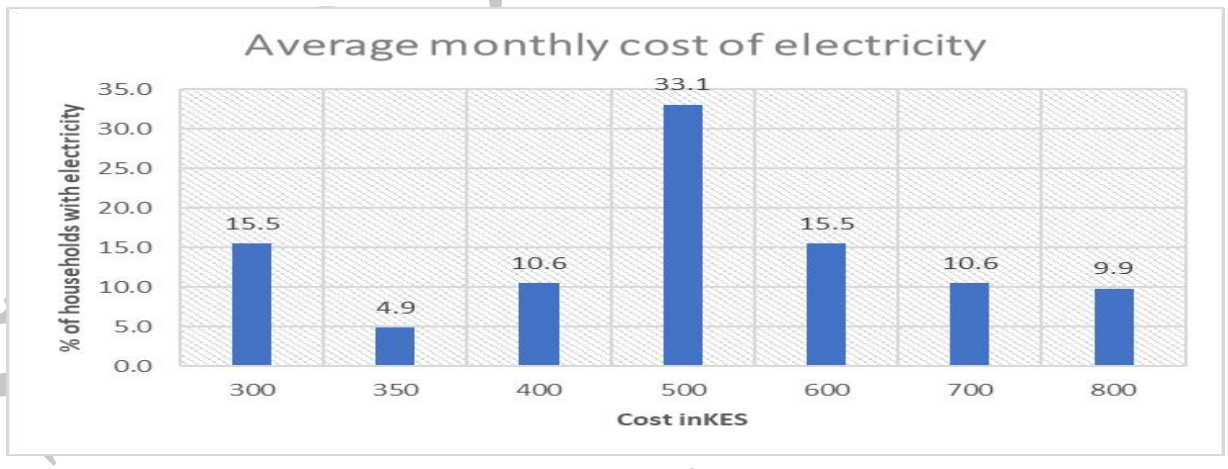


Figure 5- 1: Monthly Cost of Electricity

The 89.3% respondents of Sofia settlement depend on electricity with majority 33.1% of 89.3% spending KES 500. Those spending KES 300 and 600 contribute to 31% equally. Those spending KES 400 and KES 700 contribute to 21.2% equally. 10.6% and 9.9% spend KES 350 and KES 800 respectively.

Cooking Energy

Residents were asked to state the main source of cooking energy and gave responses as shown below.

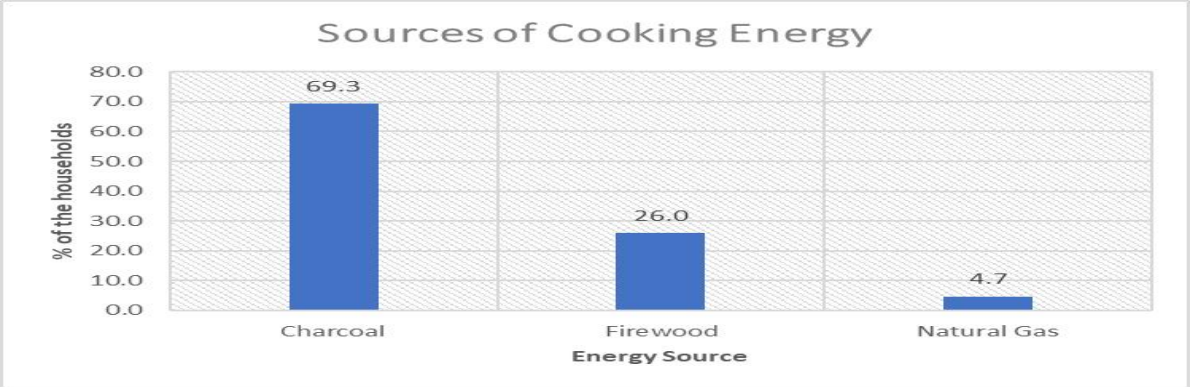


Figure 5- 1: Cooking Energy

When it comes to energy for cooking, residents depend mainly on charcoal (69.3%), as noted above. Other sources include 4.7% natural gas and 26% firewood for cooking.

5.7.9 Transport

On transportation, residents were asked the most common mode used, and responses are posted below.

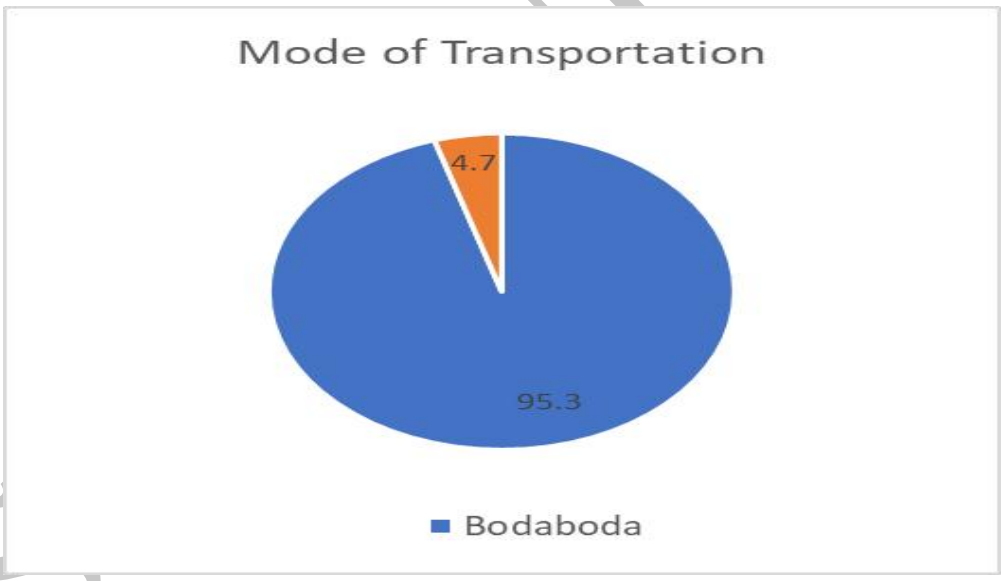


Figure 5- 1: Transport Services

Majorly, residents mostly use Bodaboda (95.3%) while the remaining 4.7% of the residents use private transport.

5.7.10 Mode of Communication

Residents primarily use mobile phones for communication, according to 100% of survey respondents. When asked for the preferred network provider, their response was given below.

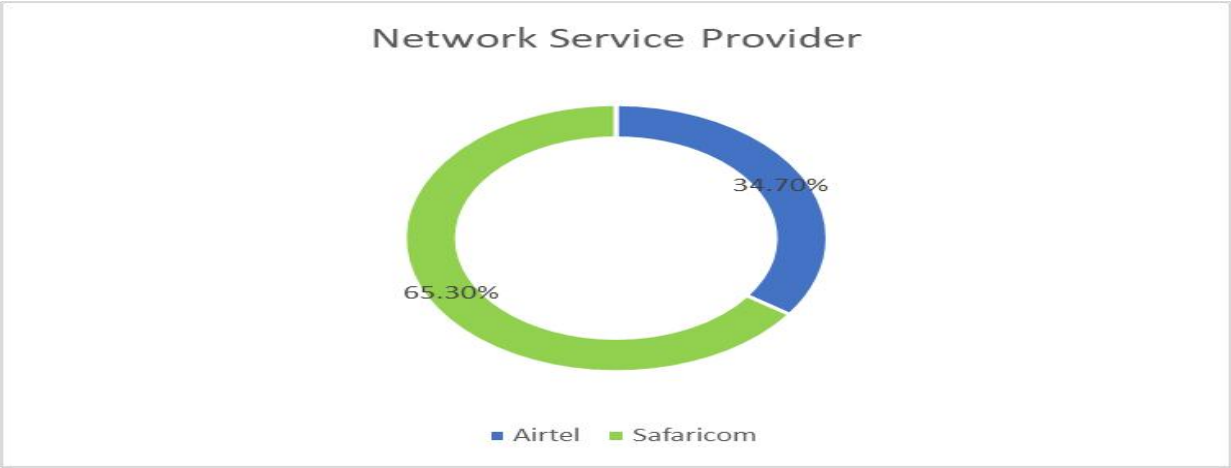


Figure 5- 1: Communication Services

The use of Safaricom as service providers is at 65.3.7% while Airtel is at 34.3% as shown above.

5.7.11 Health

The respondents overall receive medical treatment from health facilities.

Figure 5- 1: Health Facilities

Most respondents visit both private and public health facilities, which are mainly found outside the settlement. It is indicated that majority of 90.7% visit public facilities and 9.3% visit private ones. Residents were the required to state the nearest health facilities and responses indicated as given below.

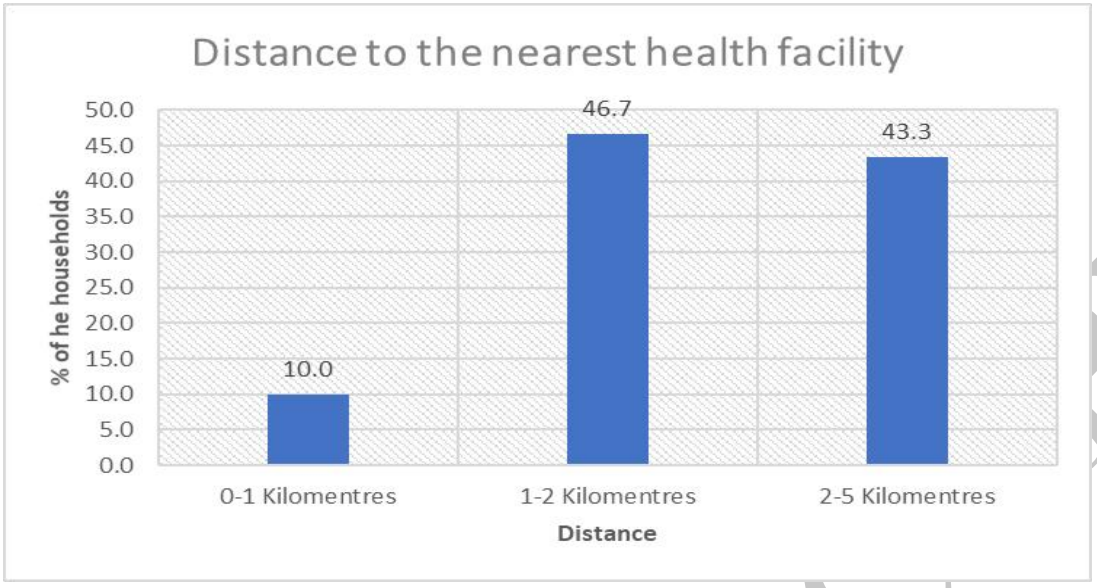


Figure 5- 1: Distance of Health facilities

As noted above, 43.3% of the respondents have any of the nearest health facility being 2-5 kilometres away while majority (46.7%) having any of the facilities 1-2 kilometres away. Those closest being at 1 kilometre or less as recorded by 10% of the respondents. The residents were required to name the nearest health facilities and their responses presented below.

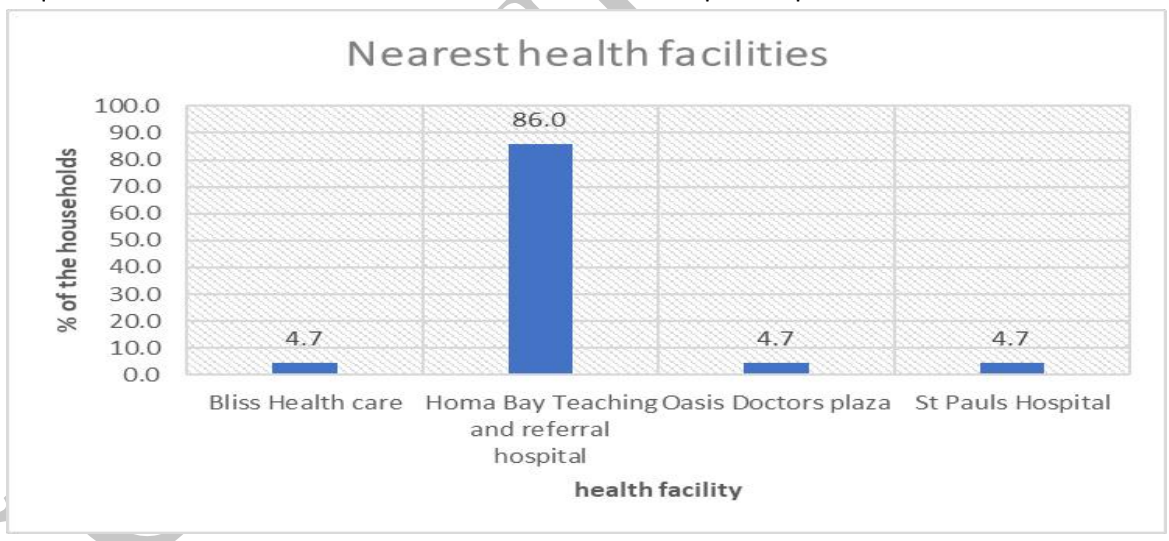


Figure 5- 1: Nearest Health Facility

Majority (86%) who were using the public health facilities were referring to the Homabay Teaching and referral Hospital as indicated in the chart. Those who use the private health facilities accessed services from either St Pauls Hospital (4.7%), Oasis doctors' plaza (4.7%) or Bliss healthcare (4.7%). Finally, residents were to name prevalent diseases in the period of four previous months which were stated as indicated.

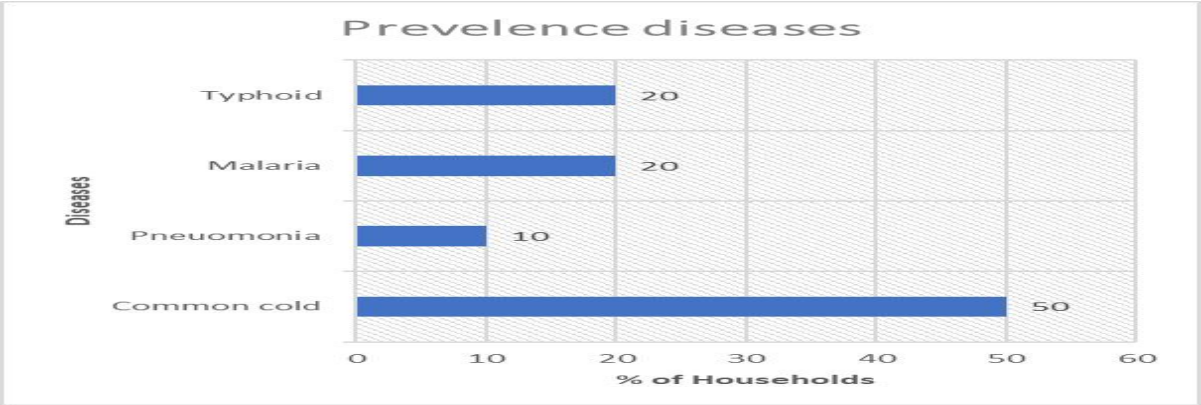


Figure 5- 1: Prevalent Diseases

From above figure, the most prevalent disease is common cold (50%) followed by typhoid (20%) and malaria (20%) and lastly pneumonia (10%).

5.7.12 4.5.6 Education

Educational services were investigated in from ECDE to tertiary institutions.

ECDE

Residents were asked to state the distance of the nearest ECDE Centre and results posted below.

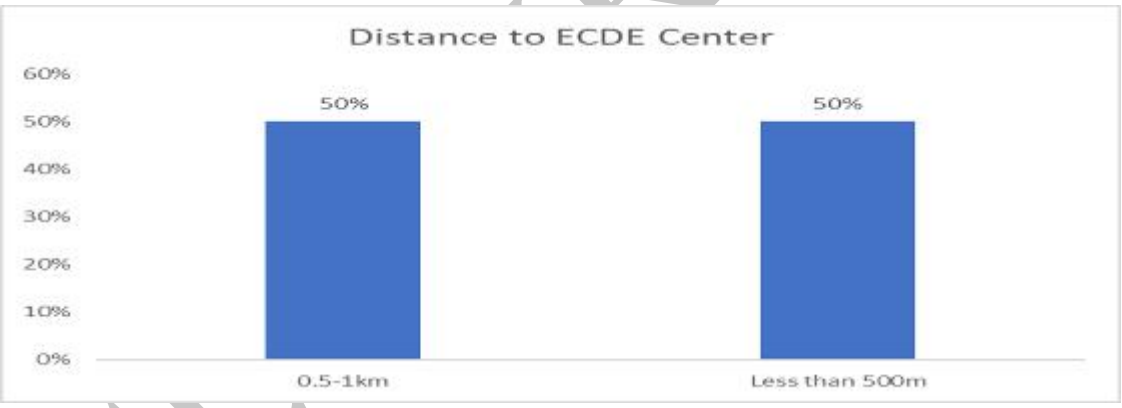


Figure 5- 1: ECDE Centres

ECDE schools are within proximity to the settlement as indicated in figure 4.25. Specifically, 50% of the residents stated that the nearest ECDE is 500m or less away and 50% noted they are about 0.5-1Km to nearest ECDE. Residents were then requested to list ECDE centre and their proximity as posted below.

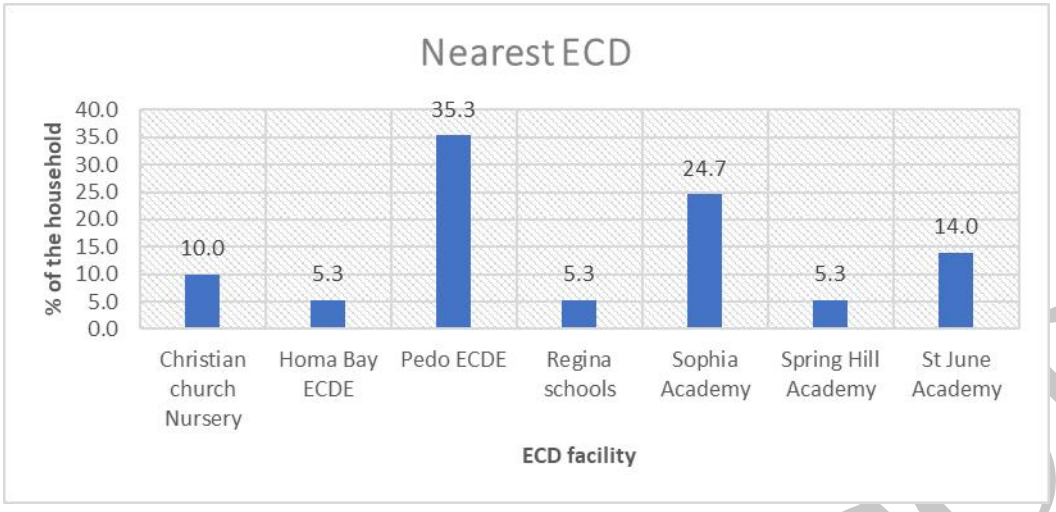


Figure 5- 1: Preferred ECDE Center

According to figure above, Pendo ECDE is the majorly (35.3%) accessed by the residents of Sofia. This is indicative of the preference of the residents to public schooling for their young ones. Those who preferred private ECDE schooling were accessing it through Sofia Academy, St June academy, Spring Hill academy and Regina schools at 24.7%, 14%, 5.3 and 5.3% respectively.

Primary Schools

Residents were asked to state the distance of the nearest primary schools and results posted below.

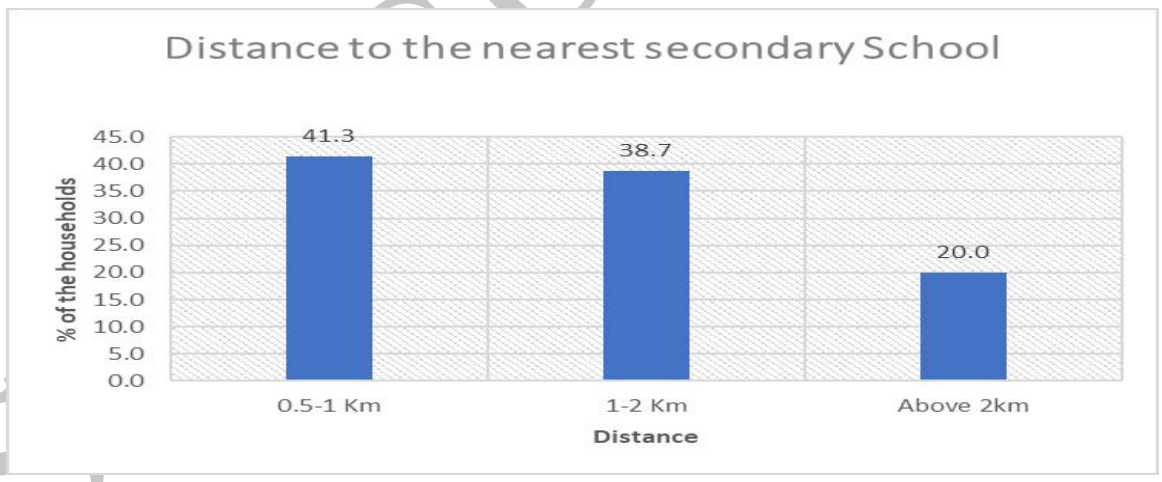


Figure 5- 1: Primary Schools

Most respondents (41.3%) stated that primary schools are 0.5 km or less from the settlement, 38.7% said they are just 1-2km to the nearest institution while 20% were 2km and above from the institution. Residents were then requested to list primary schools and their proximity as posted below.

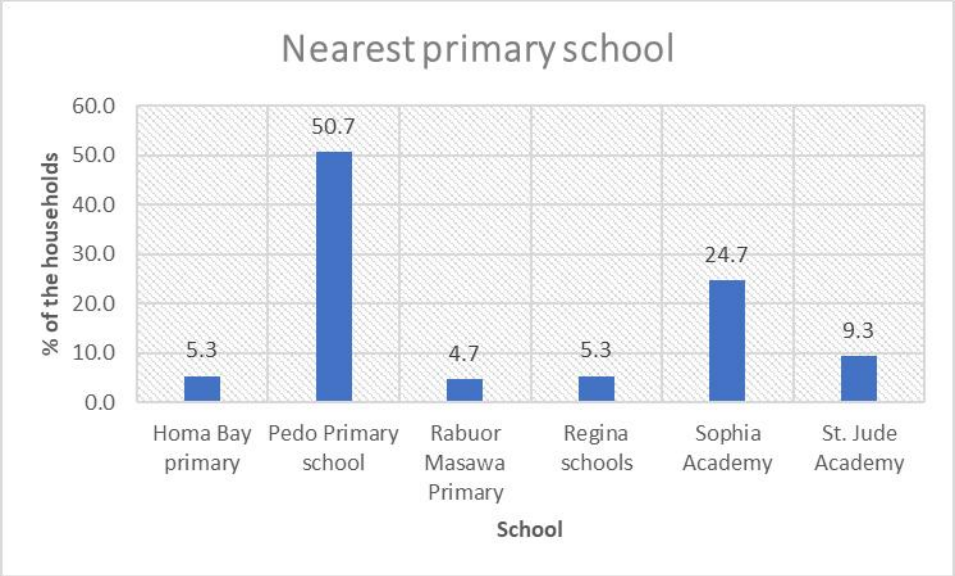


Figure 5- 1: Preferred Primary School

The preference just similar to ECDE centre with public school taking up to 60.7%, Homabay primary at 5.3%, Rabuor Masawa primary at 4.7% and Pendo primary at 50.7%. The 39.3% whose response was private sector preferred Regina schools, Sophia academy, St Jude academy with 5.3%, 24.7% and 9.3% respectively.

Secondary Schools

Residents were asked to state the distance of the nearest secondary schools and results posted below.

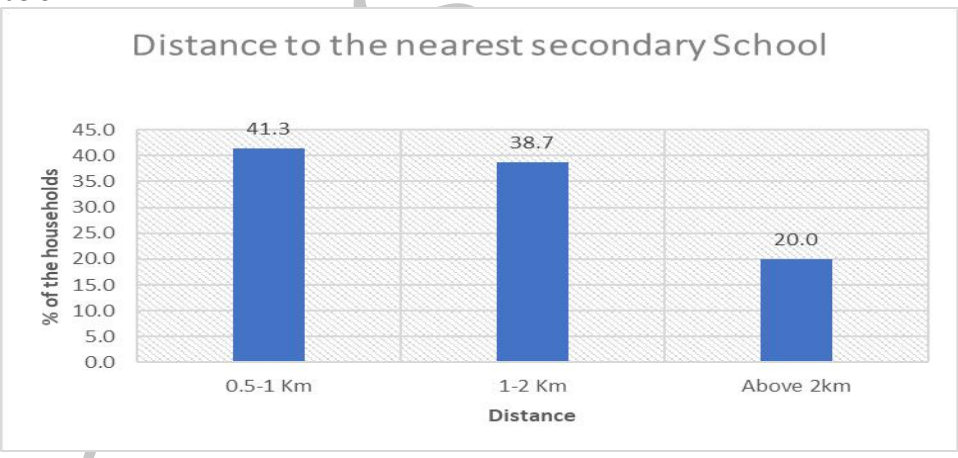


Figure 5- 1: Secondary Schools

Most secondary schools are more than 0.5-1kms away from 41.3% of households within settlement. However, as indicated in figure 4.27 least secondary schools are more than 2Km away from 20% of household and 1-2 Km to another 38.7% households within the settlement. Residents were then requested to list secondary schools and their proximity as posted below.

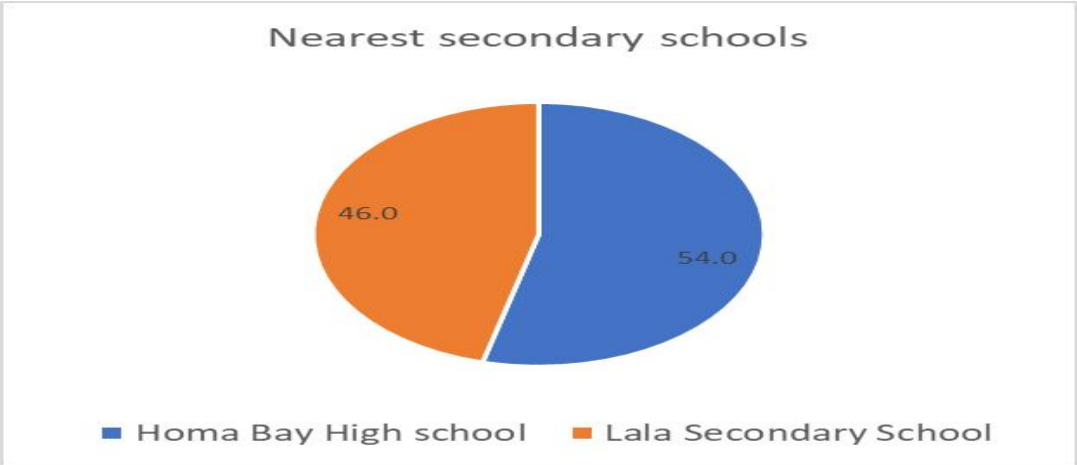


Figure 5- 1: nearest Secondary School

Homabay secondary school was closest to the majority (54%) of the residents. As indicated in figure above, Lala secondary school were closer to 46% of the residents of the settlements.

Tertiary Institutions

When asked about tertiary institutions, 100%responded that the nearest tertiary institution is located outside and the only tertiary is Homabay polytechnic located outside Sofia settlement.

Community Facilities

There exist empty spaces within the settlement mostly used by children as playgrounds which account for 84.7%, 10.7% holds cemetery area and built youth centre accounting for 4.7% as given below.

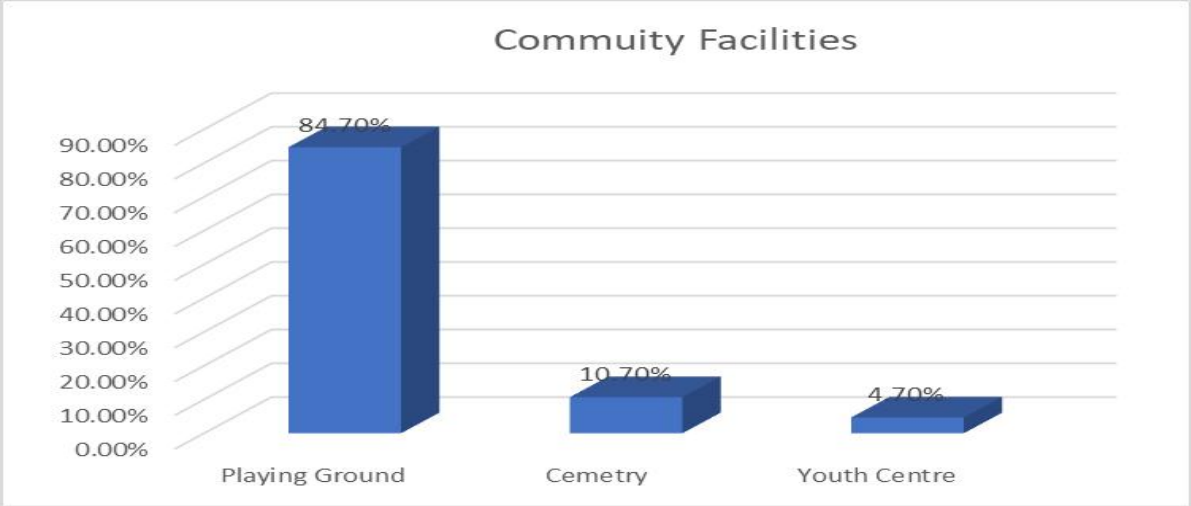


Figure 5- 1: Community Facilities

5.7.13 Disasters Experienced in the Settlement

Residents were requested to name three most recent disasters which are posted below.

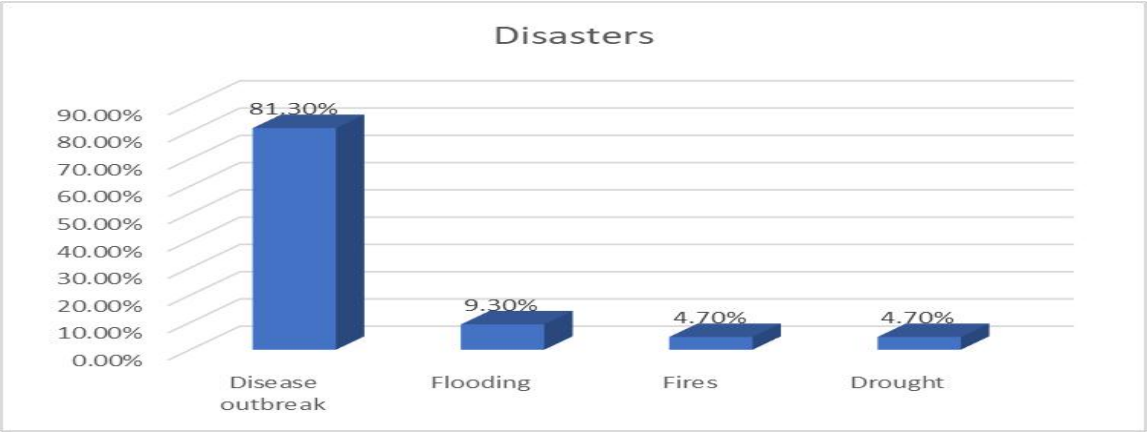


Figure 5- 1: Disasters Experience

From the figure above, the major disaster experienced is disease outbreak accounting for 81.3% of the residents followed by flooding accounting for 9.3%. Fire outbreak and draught accounts for 4.7% each.

CHAPTER 6: PUBLIC AND STAKEHOLDER CONSULTATIONS

6.1 Schedule of Stakeholder Consultations

The assessment involved consultations with relevant stakeholders' Sofia informal settlement in Homa Bay town. 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 6-1 below

Table 6- 1: Schedule of Public Consultation

Date	Settlement	Stakeholder Consulted	Meeting Attendance
30th October 2023	Sofia Informal Settlement	Settlement Executive Committee (SEC) Chairperson, Secretary and members for Sofia Informal Settlement (Pedo and Lala Village members).	Total: 24 Male: 18 Female: 6

Detailed Review of Issues discussed during public Participation forums is presented in table 6-2 below.

Table 6- 2: Detailed Issues Discussed during Public Consultations

NO	ISSUE	RESPONSE
1	**Project Commencement Date**.	Residents were informed that at the moment the consultant is currently undertaking design for the proposed works. Once design is done and a contractor selected, commencement and completion dates will be announced to them.
2	**SEC Members Election**	The residents were informed that SEC members were elected during the initial public forum that was organized for the project.
3	**Labour issues**.	Local unskilled and skilled labour should be sourced from the local communities as much as possible. 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.
4	**Location of Sewer Lines**.	Residents were informed that the sewer system will be located along the main roads, access roads and footpath so as to serve as many people as possible. They were further informed that the existing treatment plant will be used for treatment.
5	**Compensation of affected**	Residents inquired of any compensation to be expected if

	structures.	their structures are taken down to pave way for the infrastructure. Those in attendance were informed that there will be no compensation. Those with encroaching structures will be given adequate time to push back their structures voluntarily, as well as collect salvage material from the structures.
6	**Role of EIA in the project.**	Residents were informed that the primary role of the environmental assessment was to identify impacts of the project to the environment and provide adequate mitigation measures.

6.2 Inclusion of Outcomes of Stakeholder Engagement in the Design of the Project

6.2.1 Employment Opportunities for the Public

The Stakeholder Engagement identified the need to provide employment opportunities to the local community members during project implementation period as the main concern from the community.

The project will provide employment opportunities for the estimated number of people in the fields of Casual Labourers, Skilled Staff, Plant Operators / Drivers, Managerial Staff. The opportunities will be shared equally throughout the Project Areas and as provide by Gender Policy 2011 discussed in chapter 5.

6.3 Public Disclosure of ESIA, and Annual Monitoring Reports

This ESIA provides for the below listed provisions with regards to Public disclosure

(i) In accordance with EMCA 2015 and World Bank OP 4.01, the Project Proponent in this case MoLPWHUD will ensure that the Results of Public Consultations including ESIA area disclosed on Judiciary website.
(ii) The Reports will also be made available at Chiefs' Offices in the affected Settlements in Homa Bay towns for ease of access by the project interested parties at location level and Project site office,
(iii) The Reports and information will also be disclosed at the ESIA Stage by NEMA and during the sector ail ESIA review by NEMA.
(iv) At completion of the Project civil works EIA/EA Audit Regulations of 2003 requires the project proponent to undertake a closeout audit after completion of the project and also undertake and initial Environment Audit (EA) immediately after commissioning of the project in the 1st year, these audits are essential in determining the performance of the project in addressing issues related to environment and social safeguards, gaps identified are corrected through implementation of recommendation of the Environment and Social Audit Action Plan (ESAAP).

6.4 Construction, Operation and Decommissioning Phase Consultations

Stakeholder groups that may be affected by and/or interested in the implementation of the Project, as well as proposed communication methods and media for each group, have been identified and are presented in **Table 6-3** below.

Table 6- 3: Stakeholder Consultations during Project Construction and Operation Phase

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

6.5 Community Relations in Construction Phase

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

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

The objectives of the Community Relations Programme will be to:

(i) Provide local residents with regular information on the progress of work.
(ii) Inform the project/contractor of any community related issues that may impact

construction.
(iii) Monitor implementation of mitigation measures and the impact of construction via direct monitoring and feedback from Project area.
(iv) Identify any significant new issues that may arise during the construction period; and
(v) Manage any complaints against the project/contractors and local residents (i.e., provide a grievance mechanism).

6.5.1 Construction Contractor's Role in Community Liaison

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

The role and responsibilities of the Contractors Community liaison include:

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

6.5.2 Community Relations in Operational Phase

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

(i) maintain constructive relationships between local residents to assist in the operation of the facilities;
(ii) maintain awareness of safety issues among local residents in the project areas;
(iii) ensure compliance with land use constraints among land owners in the project areas;

6.5.3 Decommissioning

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

CHAPTER 7: ENVIRONMENTAL AND SOCIAL IMPACTS IDENTIFICATION MEASURES

7.1 Anticipated Project Positive Impacts

The Project will result in both direct and indirect benefits to the residents of Homa Bay town target Informal settlements 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 he 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

(viii) 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.
(ix) Reduced Water and Sanitation Burden to Women
(x) The water projects will lead to Improved Accessibility to Clean and Reliable Water Supply
(xi) Water and sewerage will Improve Hygiene and Sanitation in the Project Areas
(xii) Reduced Cases of Water Related Diseases
(xiii) Reduced Pollution of drainage channels within the project areas by Raw Sewerage.
(xiv) Increased Land Values in the Project Area

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.

7.2 Risks on Biophysical Environment during construction

Pre - Constructions Stage

Table 7.1: Environment and Social Risks at Pre- Construction Stage

Roads and Drainage Works

Activity	Associated Impacts	Impact Levels before mitigation	Impact Levels after mitigation
Vegetation clearance, channeling and site preparations)	Vegetation Cover destruction	Low to medium	Negligible
	Impacts on Water Resources - water pollution	Low to medium	Negligible
	Siltation and Sedimentation Control	low	Negligible
	Soil Erosion Impacts	low	Negligible

Ablution Block Site

Activity	Associated Impacts	Impact Levels before mitigation	Impact Levels after mitigation
Setting out and clearance of project site	No impact anticipated as the site is free from encroachment	Negligible	Negligible
Vegetation clearance, channeling and site preparations)	No impact as the site is cleared of vegetation Cover	Negligible	Negligible
	Impacts on Water Resources - water pollution	Negligible	Negligible
	Siltation and Sedimentation Control	low	Negligible
	Soil Erosion Impacts	low	Negligible

Flood Light Site

Activity	Associated Impacts	Impact Levels before mitigation	Impact Levels after mitigation
Setting out and clearance of project site	No impact anticipated as the site is free from encroachment	Negligible	Negligible
Vegetation clearance, channeling and site preparations)	No impact as the site is cleared of vegetation Cover	Negligible	Negligible
	Impacts on Water Resources - water pollution	Negligible	Negligible
	Siltation and Sedimentation Control	low	Negligible
	Soil Erosion Impacts	low	Negligible

7.3 Risks on Biophysical Environment during construction

Constructions Stage

Table 7.2: Environment and Social Risks at Construction Stage

Roads and Drainage Works

Environmental / Social Variable	Receptor In the settlement	Severity Rating	
		Before Mitigation	After Mitigation
Impact on Water Resources both surface and ground Water resource	No river or wetland was identified within close proximity to the settlement	Minor	Negligible
Impacts on Soil Resources within the settlement	The settlement has stable soil structure and no degraded areas within the settlement prone to land slides	Minor	Negligible
Impact on Air Quality within the settlement	The main receptor is the Sofia settlement and the busy Homabay – Mbita Highway that present commuters to the risk of exposure to PM2.5 and PM10	Moderate	Negligible
Noise and Vibration Impacts within the settlement			
Impacts on Flora and Vegetation Cover within the settlement	Settlement stripped of vegetation cover to provide space for housing development	Minor	Negligible
Community Health and Safety within the settlement	The main receptor is the Sofia settlement and the busy Homabay – Mbita Highway that present commuters to the risk of exposure to to health and safety risks	Moderate	Minor
Workers Health and Safety	Workers are likely to be exposed to Health and safety risks	Moderate	Minor
Impacts related to Gender Based violence (GBV) and Sexual Harassment (SH), Children Protection, Sexual Exploitation and Abuse (SEA)	The main receptor is the Sofia settlement and the busy Homabay – Mbita Highway that present commuters to the risk of exposure to exposed to SEA/ GBV risks	Moderate	Minor
Resettlement Impacts	The roads re free from encroachment and therefore RAP was not triggered	Minor	Negligible

Ablution Block Site

Environmental / Social Variable	Receptor In the settlement	Severity Rating	
		Before Mitigation	After Mitigation
Impact on Water Resources both surface and ground Water resource	No river or wetland was identified within close proximity to the settlement	Minor	Negligible
Impacts on Soil Resources within the settlement	The settlement has stable soil structure and no degraded areas within the settlement prone to land slides	Minor	Negligible
Impact on Air Quality within the settlement	The main receptor is the Sofia settlement and the busy Homabay – Mbita Highway that present commuters to the risk of exposure to PM2.5 and PM10	Moderate	Negligible
Noise and Vibration Impacts within the settlement			
Impacts on Flora and Vegetation Cover within the settlement	Settlement stripped of vegetation cover to provide space for housing development	Minor	Negligible
Community Health and Safety within the settlement	The main receptor is the Sofia settlement and the busy Homabay – Mbita Highway that present commuters to the risk of exposure to to health and safety risks	Moderate	Minor
Workers Health and Safety	Workers are likely to be exposed to Health and safety risks	Moderate	Minor
Impacts related to Gender Based violence (GBV) and Sexual Harassment (SH), Children Protection, Sexual Exploitation and Abuse (SEA)	The main receptor is the Sofia settlement and the busy Homabay – Mbita Highway that present commuters to the risk of exposure to exposed to SEA/ GBV risks	Moderate	Minor
Resettlement Impacts	The roads re free from encroachment and therefore RAP was not triggered	Minor	Negligible

Flood Light Sites

Environmental / Social Variable	Receptor In the settlement	Severity Rating	
		Before Mitigation	After Mitigation
Impact on Water Resources both surface and ground Water resource	No river or wetland was identified within close proximity to the settlement	Minor	Negligible
Impacts on Soil Resources within the settlement	The settlement has stable soil structure and no degraded areas within the settlement prone to land slides	Minor	Negligible
Impact on Air Quality within the settlement	The main receptor is the Sofia settlement and the busy Homabay – Mbita Highway that present commuters to the risk of exposure to	Moderate	Negligible
Noise and Vibration Impacts within the			

settlement	PM2.5 and PM10		
Impacts on Flora and Vegetation Cover within the settlement	Settlement stripped of vegetation cover to provide space for housing development	Minor	Negligible
Community Health and Safety within the settlement	The main receptor is the Sofia settlement and the busy Homabay – Mbita Highway that present commuters to the risk of exposure to to health and safety risks	Moderate	Minor
Workers Health and Safety	Workers are likely to be exposed to Health and safety risks	Moderate	Minor
Impacts related to Gender Based violence (GBV) and Sexual Harassment (SH), Children Protection, Sexual Exploitation and Abuse (SEA)	The main receptor is the Sofia settlement and the busy Homabay – Mbita Highway that present commuters to the risk of exposure to exposed to SEA/ GBV risks	Moderate	Minor
Resettlement Impacts	The roads re free from encroachment and therefore RAP was not triggered	Minor	Negligible

7.4 Risks on Biophysical Environment during Operation Stage

Roads and Drainage

Table 7.3: Environment and Social Risks during Operation Stage for Roads and Drainage

Environmental / Social Variable	Receptors	Severity Rating	
		Before Mitigation	After Mitigation
Increased Accidents associated with motorcycles over speeding within the settlement due to good roads	community members in the settlement	Moderate	Negligible
Pollution from fossil fuels from vehicles	Open drainage channels as discussed in table 4.3 above	Minor	Negligible
Flooding due to poor drainage channels	community members in the settlement	Moderate	Negligible

Ablutions Blocks

Table 7.4: Environment and Social Risks during Operation Stage for Ablutions Block

Environmental / Social Variable	Receptors	Severity Rating	
		Before Mitigation	After Mitigation
Water borne diseases because of burst sewers from the ablution blocks	community members in the settlement	Moderate	Negligible

Flood Lights

Table 7.5: Environment and Social Risks during Operation Stage – Flood Lights Drainage Infrastructures

Environmental / Social Variable	Receptors	Severity Rating	
		Before Mitigation	After Mitigation
Risk of electrocution	community members in the settlement	Minor	Negligible
May cause eye problem when there is bad lighting	community members in the settlement	Minor	Negligible
Flood lights affects households with windows directly facing the masts. This is due to high light intensity at night that might disrupt sleeping patterns.	community members in the settlement	Minor	
Collapse of tower masts is also a risk.	community members in the settlement	Minor	

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 worker's 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 programs
- ✓ 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 Homa Bay 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: Pre-Construction Phase: Environmental and Social Management and Monitoring Plan

Social Impacts at Pre-Construction Stage – Applies to Roads, Drainage Works, Ablution Block facilities and flood lights

Road and Drainage Works

Activity	Associated Impacts	Management Actions	Monitoring Indicators	Monitoring Frequency	Responsibility	Cost KES
Setting out and clearance of project routes and site	Delay in project implementation due to opposition from the 17 PAPs impacted by the Project (Roads and Drainage Works)	Implementation of Resettlement Action Plan (RAP) recommendations before commencement of civil works	• Numbers of satisfied PAPS • Extend of route opened to the contractor	Monthly	CPCT – Homabay	Refer to RAP report (KES 805,015)
Vegetation clearance, channeling and site preparations)	Vegetation Cover destruction	▪ Construction activities will be limited to Project sites / routes which already exist therefore limited destruction to vegetation cover, ▪ Compensatory planting of trees along the road reserve i.e. plant at least twice the number of trees	Soil erosion extend and intensity on site	Monthly	CPCT – Homabay	100,000 for purchase of tree seedlings and maintenance for 6months
	Soil erosion and Control of sedimentation	• 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	Silt load in storm water channels	Monthly	CPCT – Homabay	100,000 for erosion control

Activity	Associated Impacts	Management Actions	Monitoring Indicators	Monitoring Frequency	Responsibility	Cost KES
		from getting into storm water channels ▪ Site compounds and stockpiles will be located away from shallow wells and storm water channels				

Ablution Block Site

Activity	Associated Impacts	Management Actions	Monitoring Indicators	Monitoring Frequency	Responsibility	Cost KES
Site preparation	Soil erosion and Control of sedimentation	• 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	Silt load in storm water channels	Monthly	CPCT – Homabay	50,000 for erosion control

Flood Light Sites

Activity	Associated Impacts	Management Actions	Monitoring Indicators	Monitoring Frequency	Responsibility	Cost KES
Site preparation	Soil erosion and Control of sedimentation	• 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	Silt load in storm water channels	Monthly	CPCT – Homabay	50,000 for erosion control

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

Environment Impacts at construction Stage – Roads and Drainage

Road and Drainage

Activity	Associated Impacts	Management Actions	Responsibility	Monitoring Indicator	Frequency	Cost (KES)
Construction Activities	Vegetation Cover destruction	▪ 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	Monthly	50,000
	Impacts on Water Resources - water pollution	• 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 water drainage channels	Monthly	50,000
	Siltation and Sedimentation	• Any work along storm water channels will be isolated to	All work areas	Silt load in storm	Monthly	Included in cost above on

Activity	Associated Impacts	Management Actions	Responsibility	Monitoring Indicator	Frequency	Cost (KES)
	Control	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	Responsibility Contractor(s)	water channels		Water Resources Management
	Soil Erosion Impacts	• Earthworks should be controlled so that land that is not required for the Project works is not disturbed; • 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	All work areas Responsibility Contractor(s)	Extend of soil erosion on site	Monthly	Included in cost above on Water Resources Management

Activity	Associated Impacts	Management Actions	Responsibility	Monitoring Indicator	Frequency	Cost (KES)
Construction Activities	Risk of Accidents at Work Sites	▪ 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	Weekly	50,000
Construction Activities	Solid Wastes impacts	▪ 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	civil works areas Responsibility Contractor(s) Supervision	Quantity of solid Wastes Generated and appropriately disposed	Weekly	50,000

Activity	Associated Impacts	Management Actions	Responsibility	Monitoring Indicator	Frequency	Cost (KES)
		dispose of all 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				
Construction Activities	Liquid Wastes Impacts	▪ 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 solid Wastes Generated and appropriately disposed	▪ Weekly	50,000
Construction Activities	Sanitation issues resulting from both solid and liquid wastes on site Risks associated with	▪ 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	civil works areas Responsibility Contractor(s) Supervision	Incidence of reported cases of water related diseases among the workforce and neighbor community	Weekly	50,000

Activity	Associated Impacts	Management Actions	Responsibility	Monitoring Indicator	Frequency	Cost (KES)
	water born diseases exposed to community and workforce	▪ 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				
Construction Activities	Fuels, Oils and other hydro-carbons	▪ The contractor shall ensure that the machines and equipment are in good condition when on 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.	civil works areas Responsibility Contractor(s) Supervision	▪ Quantity of waste fuels and oils appropriately disposed ▪	▪ Weekly	50,000
Construction Activities	Noise and Vibration control from plant and equipment Risk to health and safety of community and workers	▪ 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	civil works areas Responsibility Contractor(s) Supervision	Reported complaints from neighbor community and institutions	Weekly	50,000

Activity	Associated Impacts	Management Actions	Responsibility	Monitoring Indicator	Frequency	Cost (KES)
		RE ▪ The Contractor must adhere to Noise Prevention and Control Rules of April 2005				
Construction Activities	Air Quality Control Air pollution causing respiratory disorders to human	▪ 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 ▪ 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.	civil works areas Responsibility Contractor(s) Supervision	Cases of respiratory complication at nearby health centre	Weekly	50,000
Construction Activities	Risks of Accidents, Injuries or death of workers or community member	▪ 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	civil works areas Responsibility Contractor(s) Supervision	Accidents occurrence incidences	Monthly	Included in cost above on accident management

Activity	Associated Impacts	Management Actions	Responsibility	Monitoring Indicator	Frequency	Cost (KES)
		▪ Contractor to provide a traffic management plan during construction to be approved by the resident engineer				

Road and Drainage

Social Impacts During Construction Stage - Roads, Drainage Works

Activity	Associated Impacts	Management Actions	Responsibility	Monitoring Indicator	Frequency	Cost (KES)
Construction Works	Labour Influx to Project settlements	• 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	civil works areas Responsibility Contractor(s) Supervision	Number of grievances recorded by disgruntled works force and community	Weekly	100,000
Construction Works	Gender Inclusivity, in Project activities	• 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.	civil works areas Responsibility Contractor(s) Supervision	women and Men employed by the Project	Weekly	100,000

		• 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				
Construction Works	Children abuse impacts	• The contractor will develop and implement a Children Protection Strategy that will ensures minors are protected against negative impacts 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	civil works areas Responsibility Contractor(s) Supervision	Number of cases reported involving abuse of children	Weekly	Included in GBV Gender Inclusivity budget above
Construction Works	Ineffective Grievance Management	• 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.	civil works areas Responsibility Contractor(s) Supervision	Number of cases reported and resolved on site	Weekly	50,000

		• 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.				
Construction Works	Gender-Based Violence Sexual Exploitation and Abuse (SEA) and Sexual Harassment (SH)	• Develop and implement a plan to manage the risk of SEA/SH. • Map the GBV referral pathways and create awareness among women and men on the risk of SEA/SH. • Ensure the GRM is SEA/SH-responsive. • Ensure all those with physical presence on site sign and understand the Code of Conduct. • Put in place measures for monitoring GBV/sexual harassment.	civil works areas • Responsibility Contractor(s) Supervision	Number of cases reported and resolved involving GBV and SEAH	Weekly	Included in GBV Gender Inclusivity budget above
Construction Works	Increase of communicable diseases including HIV and Aids	• HIV/AIDS Awareness Program and other 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	civil works areas Responsibility Contractor(s) Supervision	• Number of Trainings Held • Availability of Training reports • Attendance list of participants during the training	Weekly	50,000

Construction Works	The project could trigger risk of excluding some beneficiaries due to unfriendly infrastructure designs	-Apply universal designs to infrastructure, to ensure they can be accessed, understood and used by all people regardless of their age, size, ability or disability.	civil works areas Responsibility Contractor(s) Supervision	Number disadvantaged groups included in the project	Weekly	50,000

Ablution Block Site and Flood Light Site

Environment Impacts

Activity	Associated Impacts	Management Actions	Responsibility	Monitoring Indicator	Frequency	Cost (KES)
Construction Activities	Siltation and Sedimentation Control	• 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	All work areas Responsibility Contractor(s)	Silt load in storm water channels	Monthly	20,000

Activity	Associated Impacts	Management Actions	Responsibility	Monitoring Indicator	Frequency	Cost (KES)
		shallow wells and storm water channels				
	Soil Erosion Impacts	• Earthworks should be controlled so that land that is not required for the Project works is not disturbed; • 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	All work areas Responsibility Contractor(s)	Extend of soil erosion on site	Monthly	20,000

Activity	Associated Impacts	Management Actions	Responsibility	Monitoring Indicator	Frequency	Cost (KES)
Construction Activities	Risk of Accidents at Work Sites	▪ 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	Weekly	20,000
Construction Activities	Solid Wastes impacts	▪ 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 waste in a proper	civil works areas Responsibility Contractor(s) Supervision	Quantity of solid Wastes Generated and appropriately disposed	Weekly	50,000

Activity	Associated Impacts	Management Actions	Responsibility	Monitoring Indicator	Frequency	Cost (KES)
		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				
Construction Activities	Liquid Wastes Impacts	▪ 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 solid Wastes Generated and appropriately disposed	▪ Weekly	20000
Construction Activities	Sanitation issues resulting from both solid and liquid wastes on site Risks associated with water born diseases	▪ 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	civil works areas Responsibility Contractor(s) Supervision	Incidence of reported cases of water related diseases among the workforce and neighbor community	Weekly	20000

Activity	Associated Impacts	Management Actions	Responsibility	Monitoring Indicator	Frequency	Cost (KES)
	exposed to community and workforce	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				

Social Impacts

Activity	Associated Impacts	Management Actions	Responsibility	Monitoring Indicator	Frequency	Cost (KES)
Construction Works	Children abuse impacts	• The contractor will develop and implement a Children Protection Strategy that will ensures minors are protected against negative impacts 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	civil works areas Responsibility Contractor(s) Supervision	Number of cases reported involving abuse of children	Weekly	
Construction Works	Ineffective Grievance Management	• 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	civil works areas Responsibility Contractor(s) Supervision	Number of cases reported and resolved on site	Weekly	50,000

		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.				
Construction Works	Gender-Based Violence Sexual Exploitation and Abuse (SEA) and Sexual Harassment (SH)	• Develop and implement a plan to manage the risk of SEA/SH. • Map the GBV referral pathways and create awareness among women and men on the risk of SEA/SH. • Ensure the GRM is SEA/SH-responsive. • Ensure all those with physical presence on site sign and understand the Code of Conduct. • Put in place measures for monitoring GBV/sexual harassment.	civil works areas • Responsibility Contractor(s) Supervision	Number of cases reported and resolved involving GBV and SEAH	Weekly	Included in GBV Gender Inclusivity budget above
Construction Works	Increase of communicable diseases including HIV and Aids	• HIV/AIDS Awareness Program and other 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	civil works areas Responsibility Contractor(s) Supervision	• Number of Trainings Held • Availability of Training reports • Attendance list of participants during the training	Weekly	50,000

		Camps by outsiders to be controlled • Contractor to provide standard quality condoms to personnel on site				
Construction Works	The project could trigger risk of excluding some beneficiaries due to unfriendly infrastructure designs	-Apply universal designs to infrastructure, to ensure they can be accessed, understood and used by all people regardless of their age, size, ability or disability.	civil works areas Responsibility Contractor(s) Supervision	Number disadvantaged groups included in the project	Weekly	50,000

Table 8- 3: 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 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	Homa Bay 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 Homabay 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.	Homa Bay County Government	To be established at operation phase and included in the operation of the Projects

Ablution blocks

No.	Issue	Action required	Responsibility	Provisional Budget
1	Water borne diseases because of burst sewers from the ablution blocks	• Regular inspections, repair and maintenance of the sewer lines to be carried out by HOMAWASCO • Residents to be encouraged by HOMAWASCO to form Community Watch Groups for information sharing and reporting on the status of the sewer lines • HOMAWASCO to undertake awareness campaigns to educate community members not to dump solids in manholes. • HOMAWASCO to develop an inventory of system components, with information including age, construction materials, and drainage areas served for ease of identification and maintenance of the sewers.	Homa Bay County Government	To be established at operation phase and included in the operation of the Projects
2	Land and Soil Contamination by Raw Sewage	• The HOMAWASCO to carry out regular patrols and attend to burst pipes promptly • HOMAWASCO to encourage land owners along sewer lines to maintain vegetated belts along the pipeline to control any overflows flows and trap soil. They will also be encouraged to take responsibilities at the lowest levels in regard to protecting the sewer line e.g. by promptly reporting to HOMAWASCO in case of bursts / blockages;	Homa Bay 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	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	Homa Bay County Government	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	Homa Bay County Government	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 Homabay County •Conduct public sensitization programs on importance not interfering with power for flood mast	Homa Bay County Government	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	Homa Bay County Government	To be established at operation phase and included in the operation of the Projects
5	Improved business	The Flood lights to work effectively the moment the darkness comes in and switch off in the morning	Homa Bay County Government	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	Homa Bay County Government	To be established at operation phase and included in the operation of the Projects

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: GRIEVANCE REDRESS MECHANISM

9.1 Grievance Procedure and Rationale

The Project Grievance Redress Mechanism (GRM) should facilitate the Project to respond to concerns and grievances of the project-affected parties related to the environmental and social performance of the project.

9.2 GRM Core Principles

The GRM is based on six core principles

- **Fairness**: Grievances are treated confidentially, assessed impartially, and handled transparently.
- **Objectiveness and independence**: The GRM operates independently of all interested parties in order to guarantee fair, objective, and impartial treatment in each case. GRM officials have adequate means and powers to investigate grievances (e.g., interview witnesses, access records).
- **Simplicity and accessibility**: Procedures to file grievances and seek action are simple enough that stakeholders can easily understand them. Project stakeholders have a range of contact options including, at a minimum, a telephone number. The GRM is accessible to all stakeholders, irrespective of the remoteness of the area they live in, and their level of education or income. The GRM does not use complex processes that create confusion or anxiety.
- **Responsiveness and efficiency**: The GRM is designed to be responsive to the needs of all complainants. Accordingly, staff handling grievances are trained to take effective action, and respond quickly to grievances and suggestions.
- **Speed and proportionality:** All grievances, simple or complex, are addressed and resolved as quickly as possible. The action taken is swift, decisive, and constructive.
- **Participation and social inclusion:** A wide range of stakeholders are encouraged to bring grievances and comments to the attention of the Project staff. Special attention is given to ensure that marginalized or vulnerable groups, including those with special needs, are able to access the GRM.

9.3 Grievance Redress Tiers

The ARAP provided a grievance redress mechanism in a 3-tier arrangement as indicated below

- The first tier will allow for amicable review and settlement of the grievance at the settlement level with assistance of the clan elders and the SEC members who will discuss and agree on amicable resolutions. The composition of the 1st tier includes, 2 SEC Representative, Nyumba Kumi Representation, representative of Women, Person with disability and Youth

- The second tier will involve the RIC in case the grievance cannot be solved at the first level. Second level tier includes composition of 1st tier but now representative of national government and County Government
- The third tier will be the option of allowing the grieved party to seek redress at the court of law

Levels (i), and (ii) are costs free. The legal redress option however, may incur some costs for the parties involved.

9.4 Grievance Redress Steps

The procedure of receiving and resolution of complaints is summarized in **table 9.1** below:

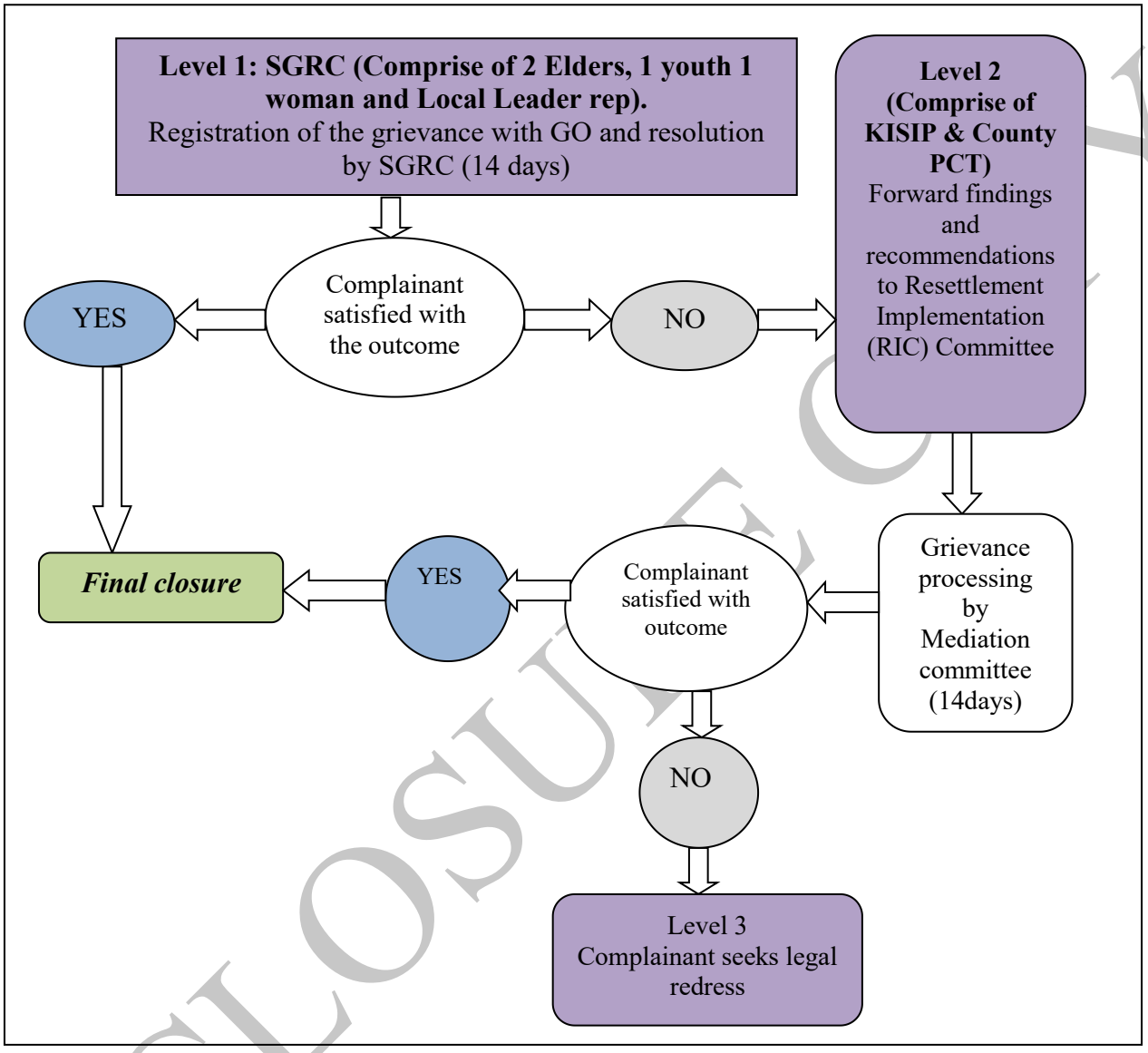
Table 9- 1: Grievance Redress Steps

Steps	Grievance Redress Steps Details
Step 1: Receipt of complaint/grievance	A verbal or written complaint from a PAP or community member will be received by the Grievance Officer (GO) on behalf of the SGRC
Step 2: Determination of Corrective Action	If in their judgment, the grievance can be solved at this stage and the GO and SGRC will determine a corrective action in consultation with the aggrieved person. A description of the action, the time frame within which the action is to take place, and the party charged with implementing the action will be recorded in the grievance register
Step 3: Meeting with the complainant	The proposed corrective action and the time frame in which it is to be implemented will be discussed with the complainant within 14 days of receipt of the grievance. Acceptance of the agreement and corrective action will be documented
Step 4: Implementation of Corrective Action	Agreed corrective actions will be undertaken by the party agreed by SGRC within the agreed time frame. The date of the completed action will be recorded in the grievance register.
Step 5: Verification of corrective action	To verify satisfaction, the aggrieved person will be approached by the GO and SGRC to verify that the corrective action has been implemented. A signature of the complainant will be obtained and recorded in the grievance register

9.5 Grievance Redress Mechanism

The settlement has an established Settlement Executive Committee (SEC) and Grievance Redress Committee (GRC), therefore this ARAP has enhanced the GRM through the below described three-tier Grievance Mechanism: **Figure 9-1** gives a presentation of the grievance redress mechanism.

Figure 9- 1::Grievance Redress Procedure



9.6 WB's Grievance Redress Service (GRS)

Communities and individuals who believe that they are adversely affected by a World Bank supported project may submit complaints to existing project-level grievance redress mechanisms or the WB's Grievance Redress Service (GRS). The GRS ensures that complaints received are promptly reviewed in order to address project-related concerns. Project affected communities and individuals may submit their complaint to the WB's independent Inspection Panel which determines whether harm occurred, or could occur, as a result of WB non-compliance with its policies and procedures. Complaints may be submitted at any time after concerns have been brought directly to the World Bank's attention, and Bank Management has been given an opportunity to respond. For information on how to submit complaints to the World Bank's corporate

Grievance Redress Service (GRS), http://www.worldbank.org/en/projects-operations/products-and-services/grievance-redress- service. For service. For information on how to submit complaints to the World Bank Inspection Panel, please visit www.inspectionpanel.org

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CHAPTER 10: CONCLUSION

10.1 Environment and Social Assessment Finding

This report presents below listed findings.

(ii) The environment and social assessment 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.

(iii) 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.

(iv) The assessment identified that the roads in the settlement will impact 2 PAPs who own business structures the encroach into the road reserve. The ARAP prepared for the settlement provide a budget of Kshs 2,256,750.00 (Two Million, Two Hundred and Fifty Six, Seven Hundred and Fifty for compensation of the PAPs as required by OP 4.12, the PAPs own a masonry wall, office block and 2nr toilets affected by R013 and Ro12 roads within the settlement.

10.2 The ESIA Make Provisions Listed below

- The Environment and Social Management Plan (ESMP) prepared under this ESIA assessment provides a budget of Kenya Shillings One Million, Two hundred Thousands Seven Hundred Fifty Thousand (Kshs 1,200,000.00) for mitigation of environment and social impacts identified in this Report. The Bid Documents to be prepared for the project should incorporates the Environment, Social provisions discussed under Chapter 7 and 8 (Environment and Social Impact Assessment and Mitigation Measures).
- Project Contract Document to include provisions for the contractor to prepare and implement Construction Environment and Social Management Plan (C-EMSP). Annexes to the C-EMSP will include but not limited to:
    - ✓ *Soil and Sedimentation Control Plan,*
    - ✓ *Spoil Management Control Plan,*
    - ✓ *Dust Management Plan,*
    - ✓ *Health, Hygiene and Safety Plan,*
    - ✓ *Labour Management Plan,*
    - ✓ *Child Protection Strategy,*
    - ✓ *Gender-based Violence Action Plan,*
    - ✓ *Waste Management Plan,*
    - ✓ *Contractors Code of Conduct,*
    - ✓ *Gender Inclusivity Strategy,*

- ✓ *HIV/Aid Prevention Strategy.*

- The contractors will be required to engage services of a qualified Environment, Health and Safety Officers and Social Safeguards Officer at the time of Project implementation.
- At Project implementation stage, the contractor with approval of the supervising engineer will prepare periodic Environmental and Social Implementation Report. The reports will provide status of implementation of risks & impacts management measures to date from the project start to the end of the reporting period. From an Occupational Health and Safety approach, the contractors will ensure they undergo the following;
    - ✓ *OSH risk assessment, Registration of workplaces, Safety and Health (OSH) Audit, Fitness to work assessment of employees,*
    - ✓ *Training of all workers or workers' representatives in basic Occupational Safety and Health, Accident and incident reporting, Compensation of injured workers who die or get injured and disabled and*
    - ✓ *Examination of Safety Plants and Equipment.*
- At Project completion stage, within the Defects Liability Period, Homabay County Government will initiate an Initial Environment and Social Audit for the Project as required by EIA/EA Audit Regulations of the year 2003 amended in 2019 and subsequent annual self-audits. The Audit will develop an Environment and Social Audit Action Plan (ESAAP) that will be used to track Project Environment and Social Compliance during Operations Stage

References

(i) County Integrated Development Plan (CIDP) Homabay County 2023 - 2027
(ii) KISIP 2 Environment and Social Management Framework 2023
(iii) KISIP 2 Resettlement Policy Framework 2023
(iv) KISIP 2 Operations manual 2023
(v) The Land Act, No. 6 of 2012
(vi) The Community Land Act, No. 27 of 2016
(vii) The Physical Planning Act, No. 26 of 1996
(viii) The Occupational Health and Safety Act, 2007
(ix) The HIV and AIDS Prevention and Control Act, No. 14 of 2006
(x) The Sexual Offences Act, No. 3 of 2006
(xi) The Children's Act, No. 8 of 2001
(xii) The County Governments Act, No. 17 of 2012
(xiii) Republic of Kenya, Environmental Management and Coordination Act (EMCA, Cap 387), Government Printer, Nairobi
(xiv) Republic of Kenya, Water Act (2016), Government Printer, Nairobi
(xv) Republic of Kenya, Public Health Act, Cap 242, Government Printer, Nairobi.
(xvi) Republic of Kenya, Environmental Impact Assessment/Audit Regulations 2003, (Legal Notice No.101) Government Printer, Nairobi
(xvii) Stakeholder Engagement Framework (SEF)- 2023
(xviii) World Bank operational safeguards OP 4.12 on Involuntary Resettlement
(xix) World Bank operational safeguards OP 4.01 on Environmental Assessment.

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 identified	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 identified 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	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
		resources, the contractor will be required to obtain water abstraction permits from sub regional WRMA offices.		
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
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	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
		settlements However, during construction minor impacts on existing storm water drainage will be experienced		
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 encroaching on the reserve will be affected	Applicable as discussed in chapter (4))	As discussed in sub chapter (7.4 and 7.5) below
Will the project affect indigenous peoples?	No (all settlements)	No indigenous people	Applicable as discussed	As discussed in sub chapter (7.4)

Criteria	Yes/No	Comments	Other GoK/ WB Policies applicable	Recommended scale of Environmental Assessment
		identified on site	in chapter (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 as discussed in sub chapter 4.5 below	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 compensated as	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
		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 SOFIA SETTLEMENT IN HOMABAY COUNTY HELD ON 30TH OCTOBER 2023 FROM 11.00 AM HELD AT SALVATION OF SOULS CHURCH.

Attendance:

(Attendance list attached)

Agenda

INTRODUCTION AND OPENING REMARKS
PROJECT INFORMATION AND PROPOSED SCOPE
ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT
RESSETTLEMNT ACTION PLAN
PLENARY
CLOSING REMARKS

MINUTES NO.	DISCUSSIONS	ACTORS
Min. 01/30/10/2023	**INTRODUCTION AND OPENING REMARKS** The meeting was called to order by Pedo Village Elder Mr. Charles Owande, at 11.00 AM. A resident of Pedo village opened the meeting with a word of prayer. He informed residents that the chief was assisting in KCPE examination supervision and will join later. He welcomed the SEC chair to address residents. The SEC chair welcomed all members present. He urged them to be attentive, orderly and raise any concerns they might have concerning the proposed project. He expounded the meeting's agenda in the local luo dialect for ease of understanding. He later welcomed the Environmentalist to proceed with the agenda of the day.	Village Elder and SEC Chairperson
Min. 02/30/10/2023	**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 Sofia include; Upgrading selected roads within the settlement to R1 and R2 standards. Solar street light along the upgraded roads. 1 NO High mast flood light.	Safeguards Expert

<table>
<tr><th>MINUTES NO.</th><th>DISCUSSIONS</th><th>ACTORS</th></tr>
<tr><td></td><td>Extension of sewer line and repair of damaged manholes within the settlement.
Extension of waterlines, repair of damaged waterlines and construction of a water kiosk with a 10,000-litre rooftop water tank.
1 NO 5-toilet block Ablution block</td><td></td></tr>
<tr><td>Min. 03/30/10/2023</td><td>ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT.
An Environmental and Social Impact Assessment will be done as guided by EMCA 2015 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. 04/30/10/2023</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. 05/30/10/202</td><td>PLENARY
10.2.1 Questions
<table>
<tr><th>Questions/Concerns</th><th>Response</th></tr>
<tr><td>MR. Charles Ogongo wanted to know where the sewer line will be</td><td>Residents were informed that the sewer system will be located along the main</td></tr>
</table></td><td>All</td></tr>
</table>

MINUTES NO.	DISCUSSIONS		ACTORS
	situated and if they will utilize the existing sewer treatment plant for Homabay town.	roads, access roads and footpath so as to serve as many people as possible. They were further informed that the existing treatment plant will be used for treatment.	
	MR. Bon Nyamalo wanted to know how the SEC members were elected. He also wanted to know when the project will commence and if locals will get employment opportunities.	Residents were informed that SEC members were elected during the initial public forum that was organized for the project. They were further informed that at the moment the consultant is doing designs for the proposed works, implementation will start once all designs are done. The contractor will source all skilled labour from the settlement. Some skilled labour will also be picked from the settlement on need basis.	
	Bon Nyamalo wanted to know if there will be compensation for the affected structures.	Those in attendance were informed that there will be no compensation. Those with encroaching structures will be given adequate time to push back their structures voluntarily, as well as collect salvage material from the structures.	
	Mr. Philip Oponde wanted to know the role of the environmental assessment in the project. He also wanted to know why the road to Angalo Beach has been left out yet fishing was the main economic activity in the area.	Residents were informed that the primary role of the environmental assessment was to identify impacts of the project to the environment and provide adequate mitigation measures. Those in attendance were informed that the beach road which they feel has been left out should be identified so to be shared with design team for appropriate advice.	
Min. 06/30/10/2023	**CLOSING REMARKS** Residents proposed an alternative route to avoid a		SEC

MINUTES NO.	DISCUSSIONS	ACTORS
	disputed section of the proposed road. They also proposed extension of proposed road that starts from Dalawa hotel to extend all the way to Angalo beach. They also proposed extension of the road that passes Pedo dispensary to be extended to Angalo Beach as well. Mr. Philip Oponde proposed the design to include good drainage with scour checks so as to manage soil erosion that was rampant in the area due to the black cotton soil that is predominant in the area. Residents in attendance welcomed the project they requested to be included in all the process so that they can give their inputs.	

There being no other business, the meeting was adjourned at 12.00 noon with a word of prayer.

MINUTES CONFIRMED BY:

Settlement Executive Committee Representative

Name MOSES OGUDA NYOLLO ....Signature.....Date 30/10/23

Consultant's Representative.

Name Obra Mmaitsi ....Signature.....Date 30/10/2023

PHOTO PLATE

SOFIA SEC CHAIR ADDRESSING RESIDENTS.

A resident of Sofia Asking Questions.

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 Homa Bay County Government will be contacted immediately for appropriate reburial.

ANNEX 4: Socio Economic Survey Tool

MINISTRY OF LANDS, PUBLIC WORKS, HOUSING AND URBAN DEVELOPMENT
STATE DEPARTMENT FOR HOUSING AND URBAN DEVELOPMENT
SECOND KENYA INFORMAL SETTLEMENTS IMPROVEMENT PROJECT (KISIP2)

INFORMAL SETTLEMENT ENUMERATION FORM

E1: Enumeration Details

1. Date:
2. Enumeration No/Ref:
3. County:
4. Settlement:
5. Village:
6. ZoneID:
7. ParceID:
8. StructureID:
9. RoomID:
10. Household Location coordinates (ARC 1960 UTM)
    a. Eastings (M)
    b. Northings (M)

1. E31: Owner/Occupier details

1. First Name /Organization Name:
2. Middle Name:
3. Last Name:
4. Gender:
5. Phone number
6. Address
7. Age of plot owner(s)
    100) 0-18
    200) 18-25
    300) 26-35
    400) 36-45
    500) 46-55
    600) 56-65
    700) ≥ 70
8. ID No. /Registration No/Passport Number (Choose the applicable):
9. KRA Pin No (*only for structure owners*):
10. Nationality:
    100) Kenyan Citizen
    200) Refugee
    300) Other Nationality. Specify

11. Marital status:
    100) Single
    200) Married
    300) Separated
    400) Widowed
    500) Cohabiting
12. Do you have any form of disability or vulnerable?
    100) Yes
    200) No

    If yes, please specify type of disability and vulnerability *(Multiple Answers)*
    100) Visual
    200) Hearing
    300) Speech
    400) Physical
    500) Mental
    600) Self-care difficulties
    700) Elderly
    800) HH headed by children
    900) Terminally ill
    1000) orphans
    1100) widow
13. Educational level *(Multiple Answers)*
    100) College/University
    200) Secondary
    300) Primary
    400) Adult Education
    500) None
    600) Other. Specify

E4: Economic / Employment details

1. Occupation
    100) Civil Servant
    200) In private sector
    300) Casual Laborer
    400) Self-employed
    500) Unemployed
    600) Student
    700) N/A
    800) Other
2. Place of work
    100) In this village
    200) Inside this settlement
    300) Outside this settlement

    Specify where:
3. Total Monthly income

100) 0-5000
200) 5,001- 10,000
300) 10,001- 15,000
400) 15,001- 20,000
500) 20,001-30,000
600) 30,001-50,000
700) Above 50,000

4. Average monthly expenditure on food
   100) 0-5000
   200) 5,001- 10,000
   300) 10,001- 15,000
   400) 15,001- 20,000
   500) 20,001-30,000
   600) 30,001-50,000
   700) Above 50,000
5. Average monthly expenditure on clothing
   100) 0-5000
   200) 5,001- 10,000
   300) 10,001- 15,000
   400) 15,001- 20,000
   500) 20,001-30,000
   600) 30,001-50,000
   700) Above 50,000

E5: Household structure/unit details

1. Household size (How many persons do you live with?):
2. Age and number of the household members

Age-group	Male	Female
0-4		
5-9		
10-14		
15-19		
20-24		
25-29		
30-34		
35-39		
40-44		
45-49		
50-54		
55-59		
60-64		
65-69		
≥ 70		

3. Structure/Room use: *(Multiple Answers)*
   100) Residential:
   200) Industrial
   300) Educational
   400) Recreational

401. Sports/Gym
402. Music
403. Theatre
404. Disco/Night club
405. Commercial
406. Transport
407. Urban Agriculture
408. Public purpose
409. Public Utility
499. Other Recreational. Please explain.

4. Type of structure
   100) Permanent
   200) Semi-permanent
   300) Temporary
5. Walls *(Multiple Answers)*
   100) Stone
   200) Iron sheets
   300) Wooden
   400) Earth
   500) Polythene/ Carton
6. Floor (*Multiple Answers)*
   100) Cement
   200) Earth
   300) Other. Specify
7. Roof *(Multiple Answers)*
   100) Tiles
   200) Iron sheets
   300) Wooden
   400) Grass thatched.
   500) Other. Specify
8. Size (Enumerator to observe/measure)
   a) Length(m):
   b) Width(m):

E6: Water, Sanitation, and hygiene

1. What is the **main** source of water?
   100) No water
   200) Piped water.
   300) Shallow well
   400) Rainwater
   500) River/stream
   600) Mobile vendors
   700) (Other water source). Specify
2. Average cost of water per day – 20L jerrican (Kes):
3. Average amount of water used per day in liters)
   100) 0 – 10
   200) 11 – 20

300) 21 – 30
400) 31– 40
500) 41 – 50
600) Above 50

4. Do you have access to a bathroom?
   100) No bathroom
   200) Bathroom in the structure
   300) Bathroom outside the structure
5. If the answer is *no bathroom*, where do you bath?
6. Which type of toilet facilities do you have access to?
   100) No toilet/bathroom
   200) Latrine
   300) VIP
   400) WC/Sewer
   500) Septic Tank
   600) Flying Toilet
   700) Other. Specify
7. Average cost of use of toilet facilities incurred daily:
8. Do you have access to handwashing equipment?
   100) Yes, with soap and water
   200) Yes, Water only
   300) None

E7: Solid Waste

1. Where do you dispose your solid waste? *(Multiple Answers)*
   100) Private service provider
   200) Dump site
   300) Bins
   400) Road
   500) River
   600) Outside the structure
   700) Open sewer
   800) Other. Specify

2. What are the major types of solid waste generated by your household? *(Multiple Answers)*
   100) Plastics
   200) Paper
   300) Metal
   400) Organic
   500) Glass
   600) Electronic
   700) Other, specify
3. Do you sort any of the solid waste generated within this household?
   100) Yes
   200) No
   If yes, which solid waste do you sort?
   401 Plastics

402 Paper
403 Metal
404 Organic
405 Glass
406 Electronic
407 Other, specify

4. Do you sell any of your sorted waste?
   100) Yes
   200) No

If yes to whom to sell to this waste? State the name of buyer & quantities per month in kgs in the table below.

Waste type	Buyer	Quantity	Cost/kg
Plastics			
Paper			
Metal			
Organic			
Glass			
Electronic			

5. Do you re-use any of the waste you generate?
   100) Yes
   200) No

If yes, which waste do you reuse? (Multiple Answers)
   100) Plastics
   200) Paper
   300) Metal
   400) Organic
   500) Glass
   600) Electronic

6. Do you compost any of the waste you generate?
   100) Yes
   200) No
7. How do you store the waste you generate in this household? *(Multiple Answers)*
   100) Don't store
   200) Polythene bags
   300) Cardboard boxes
   400) Waste bins
   500) At one point within the structure/plot
8. How do you dispose the waste you generate? *(Multiple Answers)*
   100) Composting
   200) Indiscriminate dumping (open drains)
   300) Burning
   400) Private collectors
   500) County receptacles
   600) Open ground
   700) Pit latrine

800) No means
900) Other (specify) …….

If disposed at county receptacles, what is the approximate distance to the receptacle?
100) <=50m
200) 51 - 100m
300) 101 - 200m
400) 201 - 500m
500) Above 500m

9. How frequent are these receptacles emptied?
100) Daily
200) Weekly
300) Twice a week
400) Three times a week
500) Monthly

10. If the waste is collected by private collectors, provide the n*ame of private collector*

11. If the waste is collected by private collectors, select the t*ype of private collector*
100) Private
200) Public (Government)
300) Self-help/Community group
400) Other. Specify

12. If the waste is collected by private collectors, what is the frequency of garbage collection?
100) Daily
200) Weekly
300) Twice a week
400) Three times a week
500) Monthly

13. How is waste transported from your household / collection point? *(Multiple Answers)*
100) Truck
200) Mkokoteni/wheelbarrow
300) Other means, please specify

14. Where is the collected waste taken to? *(Multiple Answers)*
100) Dumpsite within the settlement
200) Dumpsite outside the settlement
300) Another site, please specify

15. Who pays for waste collection service?
100) Tenant
200) Landlord
300) Both

16. How much do you pay for waste collection per month?

100) I dispose my own waste
200) 1-50
300) 51-100
400) 101-150
500) 151- 200
600) Above 200
700) Others (Specify)

17. Can you rate your ability to pay for solid waste collection?
100) Not able
200) Struggling to pay
300) Comfortable paying

18. If a service provider to collect and manage solid waste for you, are you willing to pay for the service?
100) Yes
200) No

If yes, why?

19. *If* yes*, how much are you willing and able to pay for the service?*
100) 1-50
200) 51-100
300) 101-150
400) 151- 200
500) Above 200
600) Others (Specify

If no, why?

20. How many waste bags/bins *do* you have?
100) None
200) 1
300) 2
400) 3
500) 4
600) >4

21. How do you rate solid waste *management* within your household?
100) Very Good
200) Good
300) Fair
400) Poor

22. How would you *want* the solid waste management services improved within this settlement?

E8: Energy/electricity and communication

9. Source of energy for lighting *(Multiple Answers)*
100) Electricity
200) Gas
300) Biomass
400) Kerosene
500) Charcoal

600) Firewood
700) Soil balls
800) Other. Specify

10. If source is electricity, who is the service provider?
    100) Solar (personal)
    200) Solar (Other provider)
    300) Kenya Power
    400) Local provider
    500) Other. Specify
11. What other uses do you have for electricity?
    100) Lighting
    200) Cooking
    300) Charging electronics
    400) Radio/TV
12. Average cost of use of electricity per month:
13. Sources of Cooking energy: *(Multiple Answers)*
    100) Electricity
    200) Gas
    300) Biomass
    400) Kerosene
    500) Charcoal
    600) Firewood
    700) Soil balls
    800) Other. Specify

E9: Access to Public Services

1. Mode of transport used to work *(Multiple Answers)*
    100) Private car
    200) Train
    300) Bus/ Matatu
    400) Motorcycle
    500) Bicycle
    600) On foot
    700) N/A
    800) Other mode of transport. Please explain

2. Which mode of communication do you use? *(Multiple Answers)*
    100) Letters
    200) Land line telephone
    300) Pay phone
    400) Mobile phone
    500) Parcels
    600) E-mail
    700) Physical contact
3. Where do you seek medical treatment when sick? *(Multiple Answers)*
    100) Public hospital

200) Private hospital
300) Mission / NGO hospital
400) Traditional Healer
500) Chemist
600) Shop
700) Spiritual Healer

4. Name of the MAIN medical facility you vis:
5. Where is this medical facility located?
   100) In this village
   200) Inside this settlement
   300) Outside this settlement

   How far is the facility (Km): _____

6. Do your children (if you have) have access /use public schools?
   100) Yes
   200) No

   On average how far is the school(s) (Km): _____

7. Diseases that you have suffered in the past 4 months *(Multiple Answers)*
   100) Malaria
   200) TB
   300) Diarrhea
   400) Pneumonia
   500) Common cold
   600) Amoeba / Typhoid
   700) Hypertension
   800) Diabetes
   900) Other ailments. Please explain
8. What would you like to be considered during the upgrading process in order of priority?) *(Multiple Answers)*
   100) Security
   200) Health
   300) Education
   400) Water
   500) Electricity
   600) Roads
   700) Housing
   800) Employment
   900) Sanitation
   1000) Other issues. If any other, please state

E10: Disaster management

1. What disasters have you experienced in this settlement in the last 10 years? (*Multiple answers*)
   100) Conflicts
   200) Drought
   300) Disease outbreaks

400) Flooding
500) Fires
600) Landslide
700) Rock falling
800) Other (specify): _____

2. Rank the first 3 common disasters that have affected your household in the last 10 years?
    a) Rank one (Select one)
    100) Conflicts
    200) Drought
    300) Disease outbreaks
    400) Flooding
    500) Fires
    600) Landslide
    700) Rock falling
    800) Other (specify): _____

    b) Rank two (Select one)
    100) Conflicts
    200) Drought
    300) Disease outbreaks
    400) Flooding
    500) Fires
    600) Landslide
    700) Rock falling
    800) Other (specify): _____

    c) Rank Three (Select one)
    100) Conflicts
    200) Drought
    300) Disease outbreaks
    400) Flooding
    500) Fires
    600) Landslide
    700) Rock falling
    800) Other (specify): _____

ANNEX 5 LEAD EXPERT 2024 LICENSE

EAE 2 3 0 6 0 4 1 9

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/20255

Application Reference No: NEMA/EIA/EL/26924

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: **12/21/2023** Expiry Date: **12/31/2024**

Signature.....

(Seal)
Director General
The National Environment Management Authority

P.T.O.

ISO 9001 : 2015 Certified