



**Kenya National Highways Authority**

*Quality Highways, Better Connections*

## **ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA) REPORT FOR THE CONSTRUCTION OF BIRETWO-ARROR-CHESONGOCH (B126) ROAD**



**JANUARY 2025**

## 7 DECLARATION

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**TITLE:** ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA) REPORT FOR THE CONSTRUCTION OF BIRETWO-ARROR-CHESONGOCH (B126) ROAD

This ESIA project report has been prepared in accordance with the provisions and requirements of the Environmental Management and Coordination Act (EMCA) Cap 387 and subsidiary regulation - Environmental (Impact Assessment and Audit) Regulations, 2003,

**ASSIGNMENT:** Carry out Environmental and Social Impact Assessment for The Construction of Biretwo-Arror-Chesongoch (B126) Road

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## LIST OF ACRONYMS AND ABBREVIATIONS

AfDB	African Development Bank
CBO	Community Based Organization
CPP	Consultation and Public Participation
CSR	Corporate Social Responsibility
dB (A)	Decibels of noise measured with A-weighted filter
DCC	Deputy County Commissioner
DOSHS	Department of Occupational Safety and Health Services
DOSHS	Directorate of Occupational Safety and Health Services
EA	Environmental Audit
EIA	Environmental Impact Assessment
EMC	Environmental Management and Coordination
EMCA	Environmental Management and Co-ordination Act
ESIA	Environmental and Social Impact Assessment
ESMMP	Environmental and Social Management and Monitoring Plan
ESMP	Environmental and Social Management Plan
ESO	Environment and Social Officer
GBV	Gender Based Violence
GoK	Government of Kenya
GRC	Grievance Redress Committee
GRM	Grievance Redress Mechanisms
HIV/AIDS	Human Immunodeficiency Virus/ Acquired Immuno Deficiency Syndrome
IDA	International Development Association
IP	Indigenous Peoples
ISS	Integrated Safeguards System
KeNHA	Kenya National Highways Authority
KeRRA	Kenya Rural Roads Authority
KM	Kilometre
KNBS	Kenya National Bureau of Statistics
KURA	Kenya Urban Roads Authority
LAPSSET	Lamu Port-South Sudan-Ethiopia-Transport
MoTIHUD	Ministry of Transport, Infrastructure, Housing, and Urban Development
MTP	Medium Term Plan
NEMA	National Environment Management Authority
NGO	Non- Governmental Organization
NMT	Non-Motorized Transport
NPEP	National Poverty Eradication Plan
OD	Operational Directives
OP	Operational Policy
OS	Operational Safeguard
OSHA	Occupation Safety and Health Act
PAPs	Project Affected Persons
PEC	Poverty Eradication Commission
PPE	Personal Protective Equipment
PPE	Personal Protective Equipment
PRSP	Poverty Reduction Strategy Paper
PSVs	Public Service Vehicles
RAP	Resettlement Action Plan
RE	Resident Engineer
SDGs	Sustainable Development Goals

SEA	Sexual Exploitation and Abuse
SEP	Stakeholder Engagement Plan
STD	Sexually Transmitted Diseases
UNFCCC	United Nations Framework Convention on Climate Change
VMG	Vulnerable and Marginalized Groups
WB	World Bank
WHO	World Health Organization
WRA	Water Resources Authority
WSSD	World Summit for Social Development

## Table of Contents

<b>1</b>	<b>EXECUTIVE SUMMARY</b>	<b>1</b>
<b>1.1</b>	<b>PROJECT INTRODUCTION</b>	<b>69</b>
1.1	Project Background	69
1.2	Scope of works	69
1.3	Overall Project Objectives and Expected Results	69
1.4	Project Rationale	70
1.5	Objectives of the Updated ESIA Study	70
1.6	ESIA Methodology	71
1.6.1	Inception Stage	71
1.6.2	ESIA Study Phase	72
1.6.3	Preparation of an ESMP and ESMoP	75
1.6.4	Structure of this ESIA Report	76
<b>2</b>	<b>PROJECT LOCATION AND DESCRIPTION</b>	<b>78</b>
2.1	Project Description	79
2.1.1	Existing road condition	79
2.1.2	Design Speed and Standards	80
2.1.3	Pavement Design	81
2.1.4	Proposed General Works	83
2.1.5	Material Investigations	84
2.1.6	Project Costs	86
<b>3</b>	<b>RELEVANT POLICY, LEGAL AND REGULATORY FRAMEWORK</b>	<b>87</b>
3.1	Policy Framework	87
3.1.1	Environment Policy, 2014	87
3.1.2	Vision 2030	87
3.1.3	National Land Policy, 2009	87
3.1.4	Integrated National Transport Policy (INTP), 2009	88
3.1.5	The National Biodiversity Strategy, 2007	88
3.1.6	Gender Policy, July 2011	88
3.2	Legal Framework	88
3.2.1	The Constitution of Kenya, 2010	88
3.2.2	Environmental Management and Coordination Act (EMCA)	89
3.2.3	Water Act, 2016	92
3.2.4	Kenya Roads Act, 2007	92
3.2.5	Traffic Act, 2014	93
3.2.6	Occupational Health and Safety Act (OSHA), 2007	93
3.2.7	Subsidiary Legislations under OSHA Chapter 514	94
3.2.8	Employment Act, 2007	95
3.2.9	The Labour Institutions Act	96
3.2.10	The Labour Relations Act	96
3.2.11	Work Injury Benefits Act (WIBA) Chapter 236	96
3.2.12	Wildlife Conservation and Management Act, 2013	96

3.2.13	Public Health Act, Chapter 242	96
3.2.14	HIV/AIDS Prevention and Control Act, 2006	97
3.2.15	National Construction Authority Act, 2011	97
3.2.16	Land Act (No.6 of 2012)	97
3.2.17	The National Lands Commission Act, 2012	97
3.2.18	The Prevention, Protection and Assistance to Internally Displaced Persons and Affected Communities Act, 2012	98
3.2.19	The Land Registration Act, 2012	98
3.2.20	Land and Environment Court Act, 2012	98
3.2.21	Land Laws (Amendment) Act, 2016	99
3.2.22	Physical Planning Act, 2019	99
3.2.23	Climate Change Act, 2016	99
3.2.24	Urban Areas and Cities Act, No. 13 of 2011	99
3.2.25	The National Museums and Heritage Act (2006)	99
3.2.26	Energy Act, 2019	100
3.2.27	Mining Act, 2016	100
3.2.28	The National Sand Harvesting Guidelines, 2007	100
3.2.29	Technical Guidelines on The Management of Used Oil and Oil Sludge In Kenya (2016)	101
3.2.30	Intergovernmental Relations Act	101
3.3	Institutional framework	101
3.3.1	The Ministry of Transport, Infrastructure, Housing and Urban Development	101
3.3.2	Kenya National Highways Authority	102
3.3.3	The National Environment Management Authority	103
3.3.4	Water Resource Authority (WRA), formerly WRMA	103
3.3.5	National Transport and Safety Authority	103
3.3.6	Kenya Roads Board	104
3.3.7	Elgeyo Marakwet and Baringo County Governments	104
3.3.8	Directorate of Occupational Safety and Health Services (DOSHS)	104
3.4	International Treaties and Conventions	104
3.4.1	The 1985 Vienna Convention for the protection of the Ozone Layer	105
3.4.2	The 1987 Montreal Protocol on Substances that Deplete the Ozone Layer	105
3.4.3	The United Nations Convention on Climate Change ("1992 UNFCCC")	105
3.4.4	The Paris Agreement, 2015	105
3.4.5	CITES Convention (1975)	106
3.4.6	Convention on Biological Diversity	106

#### **4 BASELINE ENVIRONMENTAL AND SOCIAL SETTING 107**

4.1	Physical Environment	107
4.1.1	Climatic Conditions	107
4.1.2	Topography	107
4.1.3	Drainage and Hydrology	107
4.1.4	Water Resources	108
4.1.5	Waste Management	109
4.1.6	Geology and Soils	110
4.1.7	Air Quality	110
4.1.8	Noise and Vibrations	110
4.2	Biological Environment	111
4.2.1	Flora and Fauna	111
4.3	Social and Economic Baseline Conditions	113
4.3.1	Administration	113

4.3.2	Demography Trends	114
4.3.3	Livelihoods of the Project counties	116
4.3.4	Land Tenure and Ownership	117
4.3.5	Education	117
4.3.6	Health	118
4.3.7	Trade and Industry	119
4.3.8	Transport, Information, and Communication	119
4.3.9	Energy	119
4.3.10	Mode of transport	122
4.3.11	Social Welfare	122
4.3.12	Religion	123
4.3.13	Tribe/clans	124
4.3.14	security and public safety	124
4.4	Cross-Cutting Issues	124
4.4.1	Livelihoods and Poverty Analysis	124
4.4.2	Gender Issues	125
4.5	Housing Conditions (Roof)	125
<b>5</b>	<b>STAKEHOLDER CONSULTATION AND PUBLIC PARTICIPATION</b>	<b>126</b>
5.1	Introduction	126
5.2	Objectives of Stakeholder Participation	126
5.3	General information	126
5.4	Methodology	127
5.4.1	Stakeholder Identification	127
5.5	Analysis of Questionnaires	140
5.6	Ownership of the Project	150
5.6.1	Adverse Environmental Impacts Anticipated by the Respondents	150
5.6.2	Mitigation Measures for the Negative Environmental Impacts	150
5.6.3	Socio-Economic Impacts Anticipated by the Respondents	150
5.6.4	Mitigation Measures for the Adverse Social Impacts	151
5.6.5	Safety and Health Impacts Anticipated by the Respondents	151
5.6.6	Mitigation Measures for Health and Safety Impacts	152
5.7	Summary of Feedback from the Public Consultation	152
5.7.8	Positive feedback from the local community	152
<b>5.5.9</b>	<b>Negative feedback from the local community</b>	<b>152</b>
5.8	Suggestions that the Contractor Should Take into Consideration	152
<b>6</b>	<b>POTENTIAL ENVIRONMENTAL AND SOCIAL IMPACTS AND MITIGATION</b>	<b>153</b>
<b>MEASURES</b>		
6.1	Construction Phase Impacts	154
6.1.1	Positive Impacts	154
6.1.2	Negative Impacts	156

6.2	Impacts on Vulnerable Groups	181
6.3	Operation Phase Impacts	182
6.3.1	Positive Impacts	182
6.3.2	Negative Impacts	184
6.4	Cumulative Impacts of the Project Road	187
6.4.1	Identification of Potential Cumulative Impacts	188
6.5	Potential Impacts during Decommissioning	189
6.5.1	Positive Impacts	190
6.5.2	Negative Impacts	190
6.6	Resettlement Action Plan	191
6.7	Environmental, Social and Climate Change Risks to the Project	192
6.7.1	Climate change impacts	192
6.7.2	Transport of Dangerous Goods	193
6.7.3	Fire	193
6.8	Environmental and Social risk management	194
<b>7</b>	<b>CLIMATE CHANGE SCREENING AND ADAPTATION</b>	<b>195</b>
7.1	Introduction	195
7.2	Climate Change and Disaster Risk Screening of the Project	195
7.2.1	Methodology	195
7.2.2	Screening Results	195
7.2.3	Potential Impacts on Project's Physical Components	195
7.3	Potential Contribution of The Proposed Road to Climate Change	195
7.3.1	Social and Economic Factors	195
7.3.2	Firewood Use and Charcoal Burning	195
7.3.3	Greenhouse Gases (GHG) Contribution	195
7.3.4	Spurred Economic Development	195
7.4	Climate Change Adaptation Component	196
7.5	Adaptation/Mitigation Measures	196
7.6	Linkages to Climate Change Adaptation Measures	196
<b>8</b>	<b>ALTERNATIVES TO THE PROJECT</b>	<b>197</b>
8.1	Alternative Alignments	197
8.2	Alternative Modes of Transport	197
8.3	Alternative 1: "No Action" Scenario	197
8.4	Alternative 2: With Project Option	197
8.4.1	Analysis of Alternative Construction Materials and Technology	197
8.5	Environmental and Social Management Plan	197



8.6	Purpose and Objectives of ESMP	197
8.7	Auditing of the ESMP	198
8.8	Responsibilities for the Implementation of the ESMP	198
8.8.1	Kenya National Highways Authority (KeNHA)	198
8.8.2	Ministry of Transport, Infrastructure, Housing and Urban Development	199
8.8.3	Ministry of Environment and Forestry	199
8.8.4	National Environment Management Authority	199
8.8.5	Kenya Forest Service (KFS)	199
8.8.6	Kenya Wildlife Service (KWS)	199
8.8.7	Water Resources Authority (WRA)	199
8.8.8	National Lands Commission (NLC).	200
8.8.9	Construction Contractor	200
8.8.10	Supervising Consultant	200
8.8.11	Directorate of Safety and Health Services (DOSHS)	200
8.8.12	Community Based Organizations and Civil Society Groups	201
8.8.13	County Governments	201
8.9	Environmental and Social Management Plan (ESMP) during Construction and Operation Phases	201
<b>9</b>	<b>GRIEVANCE REDRESS MECHANISM</b>	<b>228</b>
9.1	Grievance Redress Mechanism (GRM)	228
9.2	Objectives of Grievance Redress Mechanism (GRM)	228
9.3	GRM Guiding Principles	228
9.4	Grievance Handling Mechanism Structure	229
9.4.1	Members of the Grievance Redress Committee (GRC) at project Level	229
9.5	Key staff coordinating Grievance Redress	230
9.6	Receiving Complaints	230
9.7	Registry and Monitoring	231
9.8	Grievance Redress Mechanism Process	231
9.9	GRM Jurisdiction	234
<b>10</b>	<b>ENVIRONMENTAL AND SOCIAL MONITORING PLAN (ESMoP)</b>	<b>235</b>
10.1	Environmental and Social Monitoring	235
10.1.1	Internal Monitoring	235
10.1.2	External Monitoring and Evaluation	236
10.2	Other Enhancement Measures	236
10.2.1	Community engagement and communication	236
10.3	Contractor Clauses	237
<b>11</b>	<b>CONCLUSION AND RECOMMENDATIONS</b>	<b>243</b>

11.1	Conclusion	243
11.2	Recommendations	244
<b>12</b>	<b>REFERENCES</b>	<b>246</b>
<b>13</b>	<b>Annex 1: Sample Grievance Redress Form</b>	<b>247</b>
<b>14</b>	<b>Annex 2: Sample Chance Find Procedures</b>	<b>247</b>
<b>15</b>	<b>Annex 3: Minutes of public consultation meetings</b>	<b>249</b>
<b>16</b>	<b>Annex 4: Photographs</b>	<b>282</b>
<b>17</b>	<b>Annex 5: Invitation Letters</b>	<b>289</b>
<b>18</b>	<b>ANNEX 6: ATTENDANCE SHEET</b>	<b>303</b>
<b>19</b>	<b>ANNEX 5: CSR PROPOSALS FROM THE COUNTY GOVERNMENT AND BIRETWO BUSINESS COMMUNITY</b>	<b>304</b>

#### LIST OF FIGURES

Figure 4- 1 :Drainage along the road	108
Figure 4- 2: Berese Water Project	109
Figure 4- 3 : Trees along the road project	112
Figure 4- 4 :Entrance gate to Ririmoi National Game Reserve 2.5 km from the road	113
Figure 4- 6: livestock - sheep along the road	117
Figure 4- 7: Bee hives along the road	117
Figure 4- 8: Temporary and permanent strutures at Biretwo Centre	117
Figure 4- 9: Sampled schools along the road section	118
Figure 4- 10: Arror Mission Health Centre and Songeto dispensary along the road	119
Figure 4- 11: Percentage Distribution of Households by Source of Cooking Fuel in Elgeyo-Marakwet County	119
Figure 4- 12: Solar panel	121
Figure 4- 13: Percentage Distribution of Households by Source of Lighting Fuel in Elgeyo Marakwet County	121
Figure 4- 14: Ririmoi National Game reserve 2.5KM from the road	123
Figure 4- 15: Reserves signage along the road	123
Figure 4- 16: church signage along the road	123
Figure 4- 17: church signage along the road	123
Figure 4- 18: Clan boundary Mark	124
Figure 4- 19: Signage of Chepsigot police post at Biretwo Centre	124

#### LIST OF TABLES

Table 0-1ESMP during operation phase	52
Table 0-2ESMP during Decommissioning Phase	54
Table 1-1:Criteria for assessing significance	74
Table 1-2:Significance rating matrix	75
Table 1-3:Negative and Positive Mitigation Ratings	75
Table 2-1Lesseru - Kitale Road Design Standards	Error! Bookmark not defined.
Table 2-2 Pavement Structure for the Main Carriageway	Error! Bookmark not defined.

**Table 0-1 Material Sites** Error! Bookmark not defined.

**Table 3-1 WHO 2021 air pollution guidelines** 90

**Table 3-2 Comparison between WHO and NEMA Noise Guidelines** 90

**Table 3-3: NEMA Waste Water Discharge Guidelines** 91

**Table 5-2: Summary of General Comments and Concerns from sample stakeholders** Error! Bookmark not defined.

**Table 5-3: Summary of General Comments and Concerns from public consultations meetings** Error! Bookmark not defined.

**Table 5-4: Summary of comments and issues raised from Public Consultations on the Road Project** Error! Bookmark not defined.

**Table 6-1: Key Environmental and Social Receptors for the Project Road** 153

**Table 6-2: Project affected Persons (PAPs)** 164

**Table 6-3: Summary of the Likely Potential Cumulative Impacts** 188

**Table 6-4 : Number of PAPs Enumerated According to Settlement** 192

**Table 6-5 : RAP Implementation Costs** 192

**Table 9-1ESMP Matrix** 202

**Table 9-2ESMP during operation phase** 223

**Table 9-3ESMP during Decommissioning Phase** 225

**Table 10-1: Grievance Redress Process** 231

**Table 11-1: ESMoP during Construction and Operation phase** 238

## PROJECT SUMMARY DATA SHEET

Name of Contact of Project Proponent	Director General Kenya National Highways Authority (KeNHA) P O Box 49712-00100 Nairobi
Title of Project	Environmental and Social Impact for the construction of Biretwo-Arror-Chesongoch (B126) road.
Objectives of Project	It aims to improve transportation connectivity between counties, reduce travel time, and enhance road quality. The project also seeks to support economic development, especially in anticipation of the Aror Dam completion, by facilitating the transport of agricultural goods. Security is a priority, with spur roads intended to aid security forces in addressing local security challenges. Additionally, the project aims to boost tourism by improving access to the Rimoi National Reserve. Community connectivity, safety enhancements, and environmental sustainability are integral components of the project's goals. Overall, it is a comprehensive initiative targeting socio-economic development, security, environmental protection, and community welfare.
Scope of the ESIA project report	<ul style="list-style-type: none"> <li>- Conduct site investigations for primary data and review relevant secondary data</li> <li>- Include stakeholder analysis and consultation in the ESIA, identifying vulnerable populations</li> <li>- Identify potential positive and adverse environmental and social impacts, considering direct, indirect, and cumulative effects</li> <li>- Review proposed measures to avoid, reduce, mitigate, manage, and/or compensate for impacts</li> <li>- Develop an Environmental and Social Management Plan (ESMP) outlining safeguard strategies</li> <li>- Prepare a comprehensive Environmental and Social Impact Study report</li> <li>- Include a monitoring plan for the road project in the impact study report</li> <li>- Seek regulatory approval from the National Environmental Management Authority (NEMA) for license issuance</li> </ul>
Location and Description of the Project	The road is located in Elgeyo-Marakwet County in the North Rift region of Kenya National Highways Authority. The road starts at (B16) Biretwo through Aror and runs in a Northerly direction to terminate at Chesongoch. Additional security spur roads are from Chegilet-Kipyegor-Kapchela road, Kapkata-Koitilial road, Aror-Sisiya-Kapsowar road. The road spans approximately 75 km, with additional security spur roads covering a total of 32 km. The (B16) Biretwo – Aror – Tot (B124) road is currently under Kenya National Highways Authority routine maintenance.
Total Estimated Project budget (est)	<b>KES 23.7 Billion</b>

# 1 EXECUTIVE SUMMARY

## Introduction

### 1. Project Location and Description

The road is located in Elgeyo-Marakwet County in the North Rift region of Kenya National Highways Authority. The road starts at JCT (B16) Biretwo through Arror and runs in a Northerly direction to terminate at Chesongoch. Additional security spur roads are from Chegilet – Kipyegor – Kapchela road, Kapkata – Koitilal road, Arror – Sisiya – Kapsowar road. The length of the road is approximately 75 Km.

### 2. Scope of works

The entire road section of 75km is unpaved with no pavement done.

- The existing terrain is relatively rolling along the entire section.
- Road carriageway width is averagely 6.0m.
- Road reserve width is between 40-60m.
- Bushes are grassy intermingled and heavy soft, fast growing heavy bushes.
- Most existing culverts are fully blocked with outlets silted or full of vegetation.
- Culverts are of 600mm and 900mm sizes with varying lengths (141 cross culverts, 4 access culverts & 2 box culverts) of accesses and cross.
- Most drains are undefined and partially blocked with vegetation growth.
- There are no shoulders on the project road.
- There are no warning signs to alert the road users of sharp bends, school ahead and other important information.
- The major drainage feature prominent along the road is drifts where a total of 61No.

### 3. Main Works of the proposed Project

The major items of Works to be executed under the construction contract will include but not limited to the following:

- Maintenance of the existing road and accommodation of traffic through the works during construction;
- Site clearance and top soil removal
- Earthworks
- Construction of improved 300mm subgrade as shown on the drawings or as instructed by the Engineer.
- Construction of cement/lime improved gravel subbase/base on carriageway and shoulder
- Construction of graded crushed stone base on carriageway and shoulder
- Application of double seal surface dressing of 14/20mm and 6/10mm chippings to Carriageway and Shoulders.
- Bituminous surface treatment and surface dressing
- Bituminous mixes
- Provision and installation of road furniture as specified.
- Construction of pipe culverts and other drainage works.
- Installation of erosion control and erosion protection works;
- Implementation of Environmental Management Plan;
- Maintenance of works during construction and the defects liability period. Heavy bush clearing along the entire section.

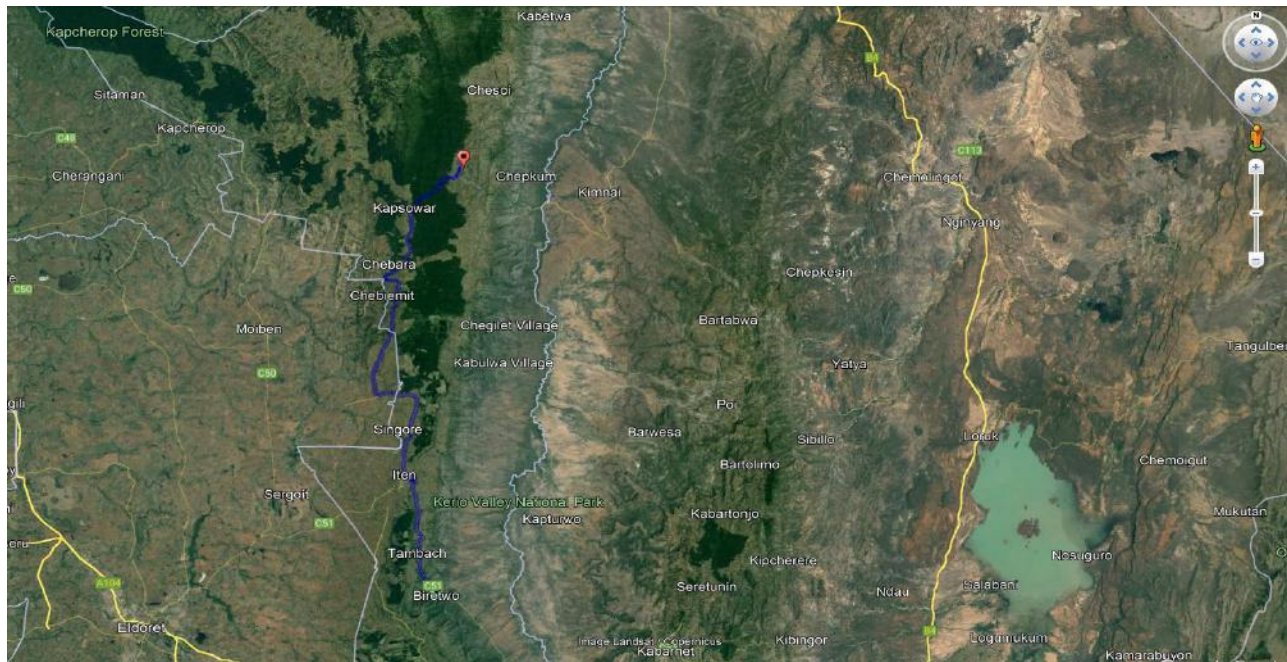


Figure 0-1 Map showing location the project road

#### 4. Project Rationale

The rationale for the proposed Biretwo-Arror-Chesongoch Road project is multifaceted and rooted in addressing critical challenges related to transportation, economic development, and connectivity in Elgeyo-Marakwet County, situated in the North Rift region of Kenya. The current state of the road, spanning approximately 75 kilometers, is unpaved and requires substantial improvements. The road serves as a vital link connecting counties such as Elgeyo Marakwet, Baringo, West Pokot, and Turkana County through the Tot-Kopasi River-Lomut-Sigor-Marich Pass route.

The existing road faces numerous issues, including inadequate structural capacity, challenging terrain with sections prone to erosion during heavy rainfall, and the absence of defined drainage systems. This adversely affects the movement of vehicles and goods, hindering economic development in the area and contributing to increased road user costs. The proposed project seeks to rectify these shortcomings by upgrading the road to bitumen standards.

Several factors contribute to the necessity of this road upgrade. Firstly, it serves as a crucial link for transporting agricultural produce and connecting producers to markets, especially in anticipation of the completion of the Aror Dam, which is expected to boost agricultural production in the region. This aligns with the Bottom-Up Transformational Agenda advocated by the Government of Kenya.

Additionally, the proposed project includes spur roads like Chegilet-Kipyegor-Kapchelal, Kapkata-Koitilial, and Aror-Sisiya-Kapsowar, which play a significant role in supporting security forces in the area to address rampant insecurity. Furthermore, the upgraded road is expected to reduce travel time, lower vehicle maintenance costs, and enhance road user comfort, thereby contributing to increased economic activities in the region.

Tourism also stands to benefit from the project, particularly with the Rimoi National Reserve located along the Biretwo-Arror Road. The improved road infrastructure is anticipated to make this tourist attraction more accessible, potentially increasing revenue for both the National and County Governments.

## 5. Project Objectives

The Biretwo-Arror-Chesongoch Road project aims to address critical transportation challenges and stimulate economic development in Elgeyo-Marakwet County, Kenya. The current 75-kilometer unpaved road faces structural and accessibility issues, hindering economic activities and posing challenges to security and tourism. Upgrade the existing Biretwo-Arror-Chesongoch Road to bitumen standards to improve its structural capacity, accessibility, and safety. The other objectives include:

1. Enhance Agricultural Connectivity: Facilitate the transport of agricultural produce to markets, particularly in anticipation of increased production from the Aror Dam project.
2. Improve Security Infrastructure: Upgrade spur roads like Chegilet-Kipyegor-Kapchelal and Aror-Sisiya-Kapsowar to support security forces in addressing regional insecurity
3. Boost Regional Economic Growth: Reduce travel time and vehicle maintenance costs, fostering economic activities and trade in Elgeyo-Marakwet and neighboring counties.
4. Promote Tourism: Enhance accessibility to the Rimoi National Reserve, contributing to tourism development and generating revenue for the National and County Governments.

## 5. Project Beneficiaries

The Biretwo-Arror-Chesongoch Road project aims to bring about widespread benefits to a diverse set of stakeholders and communities. Among the primary beneficiaries are the local communities residing along the corridor, who will experience improved access to essential services and social amenities. Agricultural producers in Elgeyo-Marakwet County and neighboring areas stand to gain from reduced transportation costs and enhanced market accessibility, fostering economic growth in the agricultural sector. The security forces will benefit from upgraded spur roads, such as Chegilet-Kipyegor-Kapchelal and Aror-Sisiya-Kapsowar, facilitating improved regional security measures.

The tourism sector is expected to flourish with increased accessibility to the Rimoi National Reserve, attracting visitors and generating revenue for both the National and County Governments. Road users, including commuters and transporters, will enjoy safer and more efficient travel, leading to reduced travel times and lower vehicle maintenance costs. The national and county governments anticipate increased economic activities and potential revenue generation from the agricultural and tourism sectors.

The project's environmental and social management plan (ESMP) aims to benefit local environmental and social groups by minimizing adverse impacts and promoting sustainable development practices. Entrepreneurs and businesses along the road corridor can expect new opportunities and economic growth, while the strengthened regional connectivity benefits counties such as Elgeyo-Marakwet, Baringo, West Pokot, and Turkana, supporting trade and development initiatives. Ultimately, the Biretwo-Arror-Chesongoch Road project contributes to the holistic development of communities and regions involved, fostering overall community development.

## 6. Objective of ESIA

The main objective of the ESIA is to identify environmental and social impacts associated with the proposed construction of the proposed roads and to recommend an appropriate environmental and social management strategy for the project, which complies with EMCA requirements, and Good International Industry Practices (GIIP) in Environmental, Health, and Safety General Guidelines related road construction. The core outcome of the Study is an Environmental and Social Management Plan, to be carried out to enhance positive impacts and mitigate negative environmental and social impacts of the project. Specific tasks included;

- To carry out site investigations to collect primary data and review available relevant secondary data to establish a comprehensive environmental and social baseline, indicators
- To ensure that the stakeholder analysis and consultation are conducted as part of the ESIA review, and identify who among the affected population is particularly vulnerable to potential adverse impacts.
- To conduct public consultations and meaningful stakeholder engagement with project-affected persons, interested parties, and Non-Governmental Organizations (NGOs) on the project's environmental and social impacts, as well as offer opportunity to receive their opinions and feedback so as to take their views into account and reflect the issues raised into the final design for the project.
- To identify all the potential significant positive and adverse environmental and social impacts, including direct, indirect and cumulative impacts associated with the project
- To proposed measures to avoid, reduce, mitigate, manage and/or compensate for such impacts, including the institutional arrangements and required capacity building to implement all such measures and monitor their effectiveness
- To prepare an Environmental and Social Management Plan (ESMP), detailing strategies for the implementation of environmental and social safeguards in the project

## 7. ESIA Approach and Methodology

The systematic investigative and reporting methodologies specified in the conduct of ESIA Studies (Legal Notice 101 of EMCA, 1999, amended 2015) were applied in the ESIA Study. Baseline data on the project was first carried out through review of documents. Opinions formed were validated through fieldwork entailing site investigations and interviews with key primary stakeholders (e.g. traders, shoppers, county government officials, and residents living along the road project, etc.).

The study also entailed holding public consultation meetings with residents living along the road project and other stakeholders. Providing basis for identifying, predicting, analyzing, and evaluating potential impacts that may emanate from the project. Diverse study methods and tools including scoping the project area, use of questionnaires, direct stakeholder consultations, holding public consultation meetings, and observations were employed. An Environmental and Social Management Plan comprising of an impact mitigation plan and modalities for monitoring and evaluation was then developed to guide environmental and social management during all phases of project development.

The process involved two stages of reconnaissance and detailed ESIA Study. The reconnaissance field visit was to appreciate the project and familiarize with the general site conditions. The detailed ESIA Study stage comprised of the following activities:

- Desktop studies of the available information for the project area;
- Documentation review for the baseline bio-physical environment;
- Baseline socio-economic survey through field observations (sampling households, focused group discussions, and key informant interviews);
- Public meetings with community members and institutional stakeholders;
- Impact analysis and assessment; and
- Preparation of ESMP;
- Developing a social and environmental monitoring plan including parameters, methodologies, sampling locations, frequency of measurements and timeframes



## 8. Project Alternatives

The Biretwo-Arror-Chesongoch road project aims to enhance transportation infrastructure by upgrading the existing alignment, with potential realignments to address geometry and safety issues while maintaining environmental and social considerations. The primary alternatives under consideration are categorized as "with the project" and "without the project."

In terms of road alignment, the proposed plan largely adheres to the existing reserve, minimizing horizontal and vertical realignment except in cases where resettlement may be necessary. This approach seeks to balance infrastructure development with environmental and social responsibilities. Considering alternative modes of transport, the project area heavily relies on roads as the primary means of fast, affordable land transportation. Rail, water, and air transport alternatives are deemed impractical for the general populace.

The "No Action" scenario (Alternative 3) involves maintaining the current road without upgrades, relying on intermittent repairs. This option is deemed unviable, leading to missed economic and social benefits, hindered regional integration, limited employment opportunities, and suboptimal travel conditions. The recommended alternative (Alternative 2) involves reconstructing the existing pavement alignment, incorporating drainage and safety components, and fostering regional economic integration. Economic analysis demonstrates the project's viability, boasting an impressive Internal Rate of Return (IRR) and substantial benefits for both the local and Kenyan economy.

In further analyzing construction materials and technology alternatives (Alternative 2.1), the project proposes the use of locally sourced materials and international standards, complemented by modern technologies. Recycling existing pavement materials may be considered to cut costs, and the assessment of green technologies prioritizes environmental and safety concerns while maintaining cost-effectiveness. This comprehensive approach aims to balance developmental goals with sustainability and economic viability.

### **Policy, Legal, and Regulatory Framework**

This ESIA Report has been developed to ensure that the proposed construction of the road conforms to national policy aspirations towards securing sustainable development. Specifically, this report has been developed to ensure compliance with requirements of the Environmental Management and Coordination Act (EMCA) 1999 CAP 387, amended 2015, which is Kenya's supreme environmental law, and the Constitution of Kenya 2010. Section 58 of EMCA requires that all proposed development in Kenya to be subjected to environmental impact assessment that should be carried out in line with the Second Schedule (of EMCA) and the Legal Notice 31 and 32 (Regulations for Environmental Assessment and Audit (Amendment) of 2019

### **Policy Framework**

The policy frameworks considered were but not limited to the following;

- Environment Policy, 2014
- Vision 2030
- National Land Policy, 2009
- Integrated National Transport Policy (INTP), 2009
- Draft Policy on Aligning the Roads Sub-Sector with the Constitution, 2012
- Guidelines for Prevention and Control of Soil Erosion in Road Works, 2010
- The National Biodiversity Strategy, 2007
- Gender Policy, July 2011
- The National Social Protection Policy (NSPP)

## Legal and Regulatory Framework

- The primary law governing environmental management in Kenya is the Environmental Management and Coordination Act (EMCA), 1999 as amended in 2015 and associated regulations. According to EMCA, the proposed project falls under high-risk category for which full ESIA study should be prepared. Other key legal provisions of relevance considered include:

- Constitution of Kenya, 2010;
- Water Act, 2016;
- Kenya Roads Act, 2007;
- Traffic Act, 2014;
- Occupational Health and Safety Act (OSHA), 2007;
  - Subsidiary Legislations under OSHA Chapter 514;
  - Employment Act, 2007;
  - Work Injury Benefits Act (WIBA) Chapter 236;
  - The Factories and Other Places of Work (Hazardous substances) Rules 2007
  - The Factories and Other Places of Work (Noise Prevention and Control) Rules L.N 25 Of 2005
  - The Factories and Other Places of Work (Medical Examinations Rules) Rules L.N.24 of 2005
  - The Factories and Other Places of Work (Fire Risk Reduction) Rules L.N.59/2007
  - Incidence reporting and records maintenance
- Wildlife Conservation and Management Act, 2013;
- Public Health Act, Chapter 242;
  - The Public Health (Drainage and Latrine) Rules
- HIV/AIDS Prevention and Control Act, 2006;
- National Construction Authority Act, 2011;
- Land Act (No.6 of 2012);
- The National Lands Commission Act, 2012;
- Community Land Act, 2016
- The Prevention, Protection and Assistance to Internally Displaced Persons and Affected Communities Act, 2012;
- Land Registration Act, 2012;
- Land and Environment Court Act, 2012;
- Land Laws (Amendment) Act, 2016;
- National Sand Harvesting guidelines, 2007
- Technical Guidance on Management of used oil and oil sludge in Kenya, 2016
- Physical Planning Act, 2019;
- Climate Change Act, 2016;
- Urban Areas and Cities Act, No. 13 of 2011;
- The National Museums and Heritage Act (2006);
- Energy Act, 2019;
- Mining Act, 2016 and
- Intergovernmental Relations Act.
- Access to Information Act, 2016

## International Treaties and Conventions

Kenya has ratified the following Project-relevant international conventions:

- The 1985 Vienna Convention for the Protection of the Ozone Layer
- The 1987 Montreal Protocol on Substances that Deplete the Ozone Layer
- The United Nations Convention on Climate Change (“1992 UNFCCC”)

- The Kyoto Protocol
- Paris Agreement, 2015
- Convention on Biological Diversity
- The international convention on the protection of the rights of all migrant workers and members of their families, December, 1990
- Convention on the Rights of Persons with Disabilities (ICRPD), 2006
- ILO Convention No. 182 Concerning the Prohibition and Immediate Action for the Elimination of the Worst Forms of Child Labour, 1999.
- ILO Convention 138 on Employment Age, 1973
- CITES - the Convention on International Trade in Endangered Species of Wild Fauna and Flora

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### **Institutional Framework**

The main administrative structures include:

- Ministry of Transport, Infrastructure, Housing and Urban Development
- Kenya National Highways Authority
- The National Environmental Management Authority
- Water Resources Authority (WRA)
- National Transport and Safety Authority
- Kenya Roads Board (KRB)
- Elgeyo Marakwet and Baringo County Governments
- Directorate of Occupational Safety and Health Services (DOSHS)
- Energy and Petroleum Regulatory Authority (EPRA)

## **9. Baseline Environmental and Social Setting**

### **Physical Environment**

Elgeyo-Marakwet County, located in the Rift Valley region of Kenya, boasts a distinctive physical environment characterized by rugged topography, deep valleys, and steep escarpments. The county's highland areas feature diverse elevations, offering scenic views and a temperate climate with temperatures ranging from 18°C to 22°C. In contrast, the Kerio Valley, traversing the county, introduces a semi-arid climate with temperatures between 25°C and 28°C. Elgeyo-Marakwet's geological composition is rooted in ancient basement systems overlaid by recent volcanic flows, resulting in isolated phonolite outcrops. The region supports varied flora and fauna, with forests and grasslands in the highlands and more arid conditions in the valley. The Kerio River, a significant watercourse, flows through the valley, contributing to the diverse water network. The Rimoi National Reserve, an underutilized tourist attraction, showcases the county's biodiversity. This nuanced understanding of Elgeyo-Marakwet's physical environment is pivotal for effective development planning, infrastructure projects, and environmental conservation initiatives.

**Topography:** The Biretwo – Arror – Chesongoch (B126) Road project in Elgeyo Marakwet County faces challenges due to its hilly topography, requiring careful engineering for stability, erosion control, and drainage. Presence of Arror, Kerio, and Kipcheptem Rivers necessitates bridges or culverts. Heavy rainfall leads to deep gullies, highlighting the need for erosion control and proper grading. Cultural considerations, like clan boundary marks, add complexity, requiring respect in construction plans. Proximity to Rimoi National Game Reserve mandates coordination for wildlife impact assessments. Passage through settlements emphasizes the need to minimize disruptions to communities and provide alternative access routes. Thorough planning and mitigation measures are crucial for road durability, while minimizing environmental and social impacts.

**Soils and geology:** Elgeyo-Marakwet County features diverse geology with ancient basement systems and volcanic flows, primarily characterized by isolated phonolite outcrops. The highland areas boast fertile soils supporting agriculture, while the semi-arid Kerio Valley may have less fertile soils. This variation influences land use and agricultural practices across the county. Understanding the geology and soil is crucial for sustainable land management and infrastructure development.

For the Biretwo – Arror – Chesongoch (B126) Road project, this knowledge is vital. The geological insights aid in anticipating challenges related to excavation, foundation stability, and natural hazards. The understanding of soil characteristics is essential for determining suitable construction methods and assessing drainage impact. This information guides engineering decisions, ensuring the road aligns with the geological and soil conditions, contributing to the project's success and long-term sustainability.

**Drainage and Hydrology:** The project encounters several rivers, including Arror River, Kesup River, Kerio River, and Kipcheptem River. Careful planning and engineering solutions are required to address challenges posed by these water bodies. Measures such as constructing bridges or culverts are essential for the road's safe and sustainable passage, minimizing disruption to aquatic ecosystems and surrounding landscapes. Successfully overcoming these river-related challenges is crucial for the project, emphasizing both environmental preservation and the safety and durability of the infrastructure.

**Air Quality:** The Road project traverses rural areas with sparse settlements and minimal anthropogenic activities, resulting in low air pollution levels. Current air pollution sources include occasional dust from gravel roads and whirlwinds over bare land. Town centers exhibit limited pollution from local vehicular movements and market activities, with no major industrial sources.

During road construction, an increase in dust pollution is expected due to excavations and traffic. This may impact public health, soils, livestock, and water supplies. To address this, baseline air quality data will be collected before construction, with ongoing monitoring at construction sites, plants, quarries, and borrow sites. The project's air quality is influenced by transport, agriculture, and urban emissions, with vehicular emissions, including CO<sub>2</sub>, CO, NO<sub>x</sub>, SO<sub>x</sub>, and particulate matter, expected to rise. However, overall concentrations are anticipated to remain relatively low due to high dispersal rates and significant tree cover along the corridor.

**Noise and Vibrations:** The Biretwo – Arror – Chesongoch (B126) Road corridor experiences predominantly ambient noise levels influenced by human settlement. Elevated noise is noted near markets and urban centers due to economic activities. Vehicular traffic, particularly heavy trucks, is the primary noise source, mostly confined to the carriageway. Contributors include road traffic, motorcycles, church prayers, and human noise from business activities. Overall, noise levels are low along most of the corridor, except near market centers. Key sensitive points, especially schools near the road, like Walbei High School and Kaptubei Mixed Secondary School, may face critical noise impact during construction and operation. Mitigation measures should be considered to ensure a conducive learning environment for students and community well-being, emphasizing the importance of addressing noise pollution, especially around educational institutions.

**Water Quality:** The Road project in Elgeyo Marakwet County traverses an area rich in water resources, with significant rivers like Arror, Kerio, and Kipcheptem. These rivers are vital for local communities, serving as sources for domestic use and agriculture, supporting crops and livestock. Initiatives like the Kimwarrer-Arror Irrigation Scheme aim to enhance water availability and support agricultural practices. While these water resources contribute to economic development, challenges in water accessibility exist, leading to the implementation of water projects. As the road project advances, it is crucial to prioritize sustainable water management practices to avoid compromising water quality and availability for the local population. Preserving the ecological integrity of the rivers is essential for responsible and sustainable development in the region.

## Biological Environment

**Vegetation:** The Biretwo – Arror – Chesongoch (B126) Road project traverses’ diverse ecosystems, showcasing a rich variety of indigenous flora, including notable species like the Logoinywet tree. The corridor features a harmonious blend of cultivated and wild plant life, with banana plantations adding to the diversity. Significant water bodies such as the Kerio, Kessup, and Arror Rivers enhance the ecological richness, sustaining local communities and contributing to their resilience and development. The road project's interconnectedness with the natural environment highlights the need to consider ecological impact during construction and operation, emphasizing the importance of responsible environmental practices.

**Wildlife and birds:** The road project is in close proximity to the Rimoi National Game Reserve, situated just 2.5 kilometers away. This reserve hosts a captivating array of wildlife, including elephants, monkeys, and various other species. The reserve actively engages with local communities, promoting awareness and sustainable tourism. Recognizing the interaction between the road corridor and the game reserve is crucial, emphasizing the need for wildlife conservation and protection measures during road construction and operation.

### Social and Economic Baseline Conditions

**Administration** The county is divided into four sub-counties, which are: Keiyo North, Keiyo South, Marakwet West, and Marakwet East. Each of these sub-counties is further divided into 20 wards, with 72 locations and 206 sub-locations. Marakwet East has the highest number of divisions, six (6) while Keiyo South and Keiyo north have the least, three (3) each. Marakwet West sub county has the highest number of sub locations at sixty (60) while Keiyo north has the lowest at thirty-five (35). Marakwet East and Marakwet West have the highest number of locations.

**Population:** In Elgeyo Marakwet County, the distribution of sub-counties reflects a balanced gender ratio, with both males and females contributing significantly to the population. Marakwet West and Keiyo South sub-counties exhibit a higher population, with 68,948 males and 68,560 females in Marakwet West, and 60,919 males and 59,827 females in Keiyo South. In comparison, Keiyo North and Marakwet East sub-counties have slightly lower populations, with 49,601 males and 49,574 females in Keiyo North, and 47,849 males and 49,190 females in Marakwet East.

As of the 2019 population census, the national inter-censual population growth rate stands at 2.3%, marking an increase from 38.6 million in 2009 to 47.6 million in 2019. In the 2009 census, the combined population of Marakwet and Keiyo districts was 369,298, while the 2019 population census records a population of 454,480. This reflects a notable population increase of 18.74% and an inter-censual growth rate of 1.87

**Livelihoods of the Project counties:** Access to employment is a crucial element in addressing inequality and reducing poverty by providing individuals with the means to generate income for their basic needs and economic security. To account for diverse needs based on factors such as age, gender, height, and weight, establishing an adult equivalent that considers average requirements across different populations is essential. The poverty line, set at Ksh1,562 and Ksh2,913 per adult equivalent per month for rural and urban households in 2005/06, serves as a critical threshold for identifying those considered poor. Nationally, the proportion of people living below the poverty line decreased from 46 percent in 2005/06 to 45.2 percent in 2009. Unemployment stands out as a significant vulnerability, exposing individuals to poverty. The level of employment and wage structures plays a pivotal role in shaping the extent of poverty and inequality. Effective macroeconomic policies should prioritize creating regular, high-quality employment opportunities supported by basic labor protections. The 2009 Population and Housing Census, while not solely dedicated to labor, focused on employment among individuals aged 15-64. It included categories such as work for pay, family business, family agricultural holdings, intern/volunteer, retired/home maker, full-time student, incapacitated, and no work. The tabulation integrated education levels, spanning none, primary, and secondary education, offering a comprehensive approach for a nuanced understanding of the employment landscape and its intersection with education and occupation.

**Land Ownership:** The County, land ownership includes a mix of communal, private, and public lands. Communal lands are often held and used collectively by communities, while private lands are owned by individuals or entities. Public lands may be owned by the government or other public institutions. The specific land tenure arrangements, such as freehold or leasehold, can vary. In the context of a road project, understanding these land ownership and tenure structures is crucial. The project might require acquiring land for the construction of the road, which involves negotiations and possibly compensations with private landowners. Additionally, the project may impact communal lands, and proper consultation with the affected communities is necessary. If there are specific details about land ownership and tenure in the County provided in the project documents, those details would be essential for a more accurate and context-specific analysis.

**Water Resources:** The Biretwo – Aror – Chesongoch (B126) Road project in Elgeyo Marakwet County traverses an area abundant in water resources, prominently featuring the Aror River, Kerio River, and Kipcheptem River. These rivers are vital for sustaining local communities, serving as crucial sources for domestic and agricultural needs. Communities rely on these water bodies for irrigation, supporting the cultivation of various crops and ensuring a stable water supply for livestock. Initiatives like the Kimwarrar-Aror Irrigation Scheme showcase community efforts to enhance water availability. Despite challenges in water accessibility, the road project must prioritize sustainable water management practices to safeguard the quality and availability of water for local communities. Preserving the ecological integrity of these rivers is imperative for responsible and sustainable development in the region.

**Education:** The educational landscape in Elgeyo-Marakwet County, marked by a modest 18% of residents having a secondary level of education or above, accentuates the importance of infrastructure development for educational advancement. Notable constituency variations, with Keiyo North leading at 23%, underscore the potential of the Biretwo – Aror – Chesongoch Road project to address educational disparities. Enhanced connectivity from the road project could ease access to educational institutions, particularly in areas with lower educational attainment. Emphasizing Marakwet East's lowest educational share underscores the road project's role in improving accessibility to educational facilities. The project's positive impact on education is further highlighted by the substantial 62% of residents with only primary-level education, signaling the need for infrastructure supporting primary schools. The road project can contribute significantly, particularly in Marakwet West constituency, which exhibits the highest percentage of residents with primary-level education only. Additionally, addressing the 20% of residents with no formal education, notably in Marakwet East, showcases the road project's potential to enhance educational equity by facilitating access to literacy and skills development programs, fostering community upliftment.

**Health:** During the plan period, Elgeyo-Marakwet County witnessed a significant increase in skilled deliveries, reaching 98%, attributed to programs like Linda Mama and expanded obstetric care services. Community health interventions and a high contraceptive prevalence rate of 59% positively impacted maternal health. Challenges in achieving ANC visit targets persist. Immunization coverage increased, but healthcare worker strikes and COVID-19 affected rates. HIV prevalence remained stable, with improvements and challenges in TB cases. The report emphasizes health concerns like non-communicable diseases and sanitation, highlighting educational initiatives and health workforce improvements. The road project, by enhancing transportation infrastructure, can potentially improve healthcare access, positively impacting maternal and child health and overall population well-being in Elgeyo-Marakwet County.

**Trade and Industry:** Elgeyo-Marakwet County has strategically invested in business development, offering entrepreneur training, constructing lockable shops, and modernizing public toilets to boost the local economy. Special attention is given to empowering the informal sector, especially juakali workshops, through upgrades to Constituency Industrial Development Centres. These initiatives align with the economic goals of the road project, promoting sustainability, prosperity, and a balanced approach to development that encompasses tourism, business empowerment, and informal sector growth.

## Cross Cutting Issues

**Poverty:** Access to employment is crucial for addressing inequality and poverty, allowing individuals to meet basic needs. The poverty line in 2005/06 was Ksh1,562 and Ksh2,913 per adult equivalent per month for rural and urban households. Nationally, the proportion of people below the poverty line decreased from 46% in 2005/06 to 45.2% in 2009. Unemployment poses a significant vulnerability, impacting poverty. Effective macroeconomic policies should prioritize creating high-quality employment opportunities. The 2009 Census focused on labor, including work categories and education levels, offering insights into the intersection of education and occupation.

**Gender Issues:** The main gender issues are contained under the customary practices where the male vests ownership and control of productive assets. Women in the counties are faced with a number of challenges including inadequate access to credit, lack of technical skills, multiplicity of roles for women and inadequate access to education and training. The traditional delineation of labour persists with women assuming the entire responsibility for childcare, provision of food, water and firewood collection and the general maintenance of the homestead among others. Other forms of gender issues that are rampant in these counties include but not limited to; discrimination against women and girls, harmful practices such as child abuse, early and forced marriages. Although not well documented, Gender Based Violence (GBV) is rampant in the project corridor and in some cases normalized. Normalization of GBV and stigma influenced by cultural norms prevents GBV survivors from speaking openly about their experiences and often keeps them from reporting their cases to the local administration or the police. The Kenya's Sexual Offenses Act provides for the prevention and protection of all persons from harm from sexual acts including sexual assault, rape, defilement, sexual harassment and child prostitution. It also provides for access to justice and psychosocial support.

#### 10. Stakeholder Engagement and consultations

In general, the following steps were followed in carrying out the entire consultation process: -

- i. Courtesy visits to County Government offices –Elgeyo Marakwet County
- ii. Courtesy visits to County Commissioner - Elgeyo Marakwet County
- iii. Courtesy visits at the Deputy County Commissioners offices and Assistant County Commissioners offices
- iv. Setting meeting with the Governor, CECS, county commissioner and County technical team
- v. Setting dates for public Barazas and technical meetings at various levels and with different target groups

*Table: Summary of the benefits and issues / concerns raised during the meetings*

ENGAGEMENT WITH THE COUNTY GOVERNMENT OF ELGEYO MARAKWET LEADERSHIP	
STAKEHOLDERS	BENEFITS AND ISSUES / CONCERNS
<ul style="list-style-type: none"> <li>KeNHA Representatives</li> <li>Representatives from the Ministry of Interior and National Coordination</li> <li>Governor Elgeyo Marakwet</li> <li>Senator Elgeyo Marakwet</li> <li>Deputy Governor Elgeyo Marakwet</li> <li>Member of Parliament Representatives</li> <li>Members of the County Assembly</li> <li>County Executive Committee Members from various County Departments</li> <li>County Chief officers from various Departments</li> </ul>	i. The Governor emphasized that the Biretwo-Arror-Chesongoch road project aligns with the County Integrated Development Plan (CIDP) spanning the years 2013, 2017, and 2022. Expressing optimism and confidence in the project's progress, the Governor highlighted that the envisioned benefits were becoming tangible. The county government pledged unwavering support throughout the construction process.
	ii. Senator Elgeyo Marakwet proposed an alternative route for the project, diverting the road away from Aror Center and suggesting the original path at Kinyech Junction to reach Biretwo Health Center. Simultaneously, there was a recommendation to reconfigure Aror Center into a loop road, exploring potential options for addressing project needs more effectively or overcoming challenges linked to the current road alignment.
	iii. The Governor recommended the upgrading of escarpment roads at Kabulwet, Chegilet, and Koitilial. Further suggestions included improvements to transportation infrastructure and the promotion of

	<p>connectivity, particularly focusing on roads leading to Rimoi National Park and Biretwo Museum.</p> <p>iv. The initiative has reached a critical stage, marked by collaborative efforts and suggestions that underscore the shared commitment of both KeNHA and the County Government to ensure the success of the Biretwo-Arror-Chesongoch road project.</p> <p>v. It was proposed that KeNHA should integrate social infrastructure into the road and improve existing markets, including Biretwo, Kabulwo, Arrior, and Mogut.</p> <p>vi. Mentioned during discussions was the absence of a scanning hospital along the entire road project in case of accidents. Therefore, it was proposed to construct at least two trauma centers along the project road to address emergency issues in case of accidents.</p> <p>vii. Given the water scarcity in the area and the reliance on clean water from Arrior, it was proposed that the contractors drill boreholes at intervals of 6km in public institutions. This way, the contractor could share the resource with the community and hand it over to the community upon completion of the road project.</p> <p>viii. A proposal was made to integrate in-built fiber optic cable into the road for internet connectivity in the region, addressing issues of insecurity in Kerio Valley.</p> <p>ix. Recommendations included the improvement of access roads to all social amenities along the project road.</p> <p>x. Additionally, it was proposed to improve existing water furrows along the road, ensuring efficient water management and preservation of vital resources in the community.</p> <p>xi. In regards to the proposed CSR initiatives the Authority requested the County Government of Elgeyo Marakwet to develop a write up with a list of CSR Initiatives and share with the authority.</p>
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Sub-County	Venue	Summary of issues raised and discussed
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<b>Keiyo South Sub County Public Baraza</b>	<b>Biretwo</b>	<ol style="list-style-type: none"> <li>i. The residents of Keiyo South emphasized the importance of implementing soil control measures during construction, particularly in this high escarpment area prone to erosion.</li> <li>ii. The community's recommended prioritizing the construction of an access road to significant locations like the Biretwo Museum, Biretwo slaughterhouse, Chepsigot Chief's office, and the Blind Special School.</li> <li>iii. The residents articulated a need for a proposed loop road to Biretwo Center to enhance overall traffic flow in and around Biretwo Centre.</li> <li>iv. In alignment with the community suggested that it is essential to install streetlights at major road centers and public institutions to ensure safety and convenience.</li> <li>v. The residents emphasized the importance of water provisions, advocating for the drilling of boreholes along the project route, especially at public institutions.</li> <li>vi. The residents emphasized addressing the community's vision for inclusive development, creating job opportunities for locals and Persons Living with Disabilities (PLWDs) should be integrated into the project.</li> <li>vii. The residents stressed the significance of education and community support, suggesting the enhancement of schools situated along the project route as part of corporate social responsibilities (CSR).</li> <li>viii. Keiyo South Residents explained that Preserving cultural sites, including the Arrow River, is a priority for the community, and measures should be taken to ensure the site's integrity.</li> <li>ix. In promoting a sustainable future, the residents recommend that the contractor sets up campsites on public land for future use by the community.</li> <li>x. In addressing drainage issues along the road, the community advocated for the involvement of experts to ensure that the road design effectively mitigated flood concerns</li> <li>xi. The community requested KeNHA to adhere to legal requirements for any land acquisition or demolition of houses within the road reserve. Promoting transparency.</li> <li>xii. Emphasizing the benefits of past public participation meetings, residents requested that their opinions and grievances be taken into consideration, even if they differed from official perspectives.</li> <li>xiii. Kenya National Highways Authority (KeNHA) was urged to design an advanced drainage system, avoiding diversions into private lands, and ensuring fair compensations in case of past land acquisitions.</li> <li>xiv. Expressing concerns about safety, the community highlighted issues related to bumps, over-speeding drivers, and suggested the installation of more permanent bumps. They also called for the improvement of the drainage system to prevent floods and soil erosion.</li> <li>xv. The community raised concerns about the maintenance of road markings, signages, and the drainage system designed to control flooding, emphasizing the need for sustained functionality</li> </ol>
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<b>Keiyo North Sub-County Public Baraza</b>	<b>Kabulwo</b>	<ol style="list-style-type: none"> <li>i. Keiyo North Subcounty residents strongly advocate for the tarmacking of security roads in the area, including the construction of Chepkundo and Tawilale access roads. Additionally, they underscore the importance of considering other feeder roads during the construction process.</li> <li>ii. Addressing security concerns, the residents recommend the installation of streetlights in the area to enhance overall safety, emphasizing the need for well-lit public spaces.</li> <li>iii. Expressing concerns about child protection, the residents urge the implementation of comprehensive safety measures to ensure the well-being of children and to alleviate fears of potential abuse by project workers during road construction.</li> <li>iv. In an effort to promote local community involvement, the residents suggest sourcing workers and construction materials locally, fostering economic empowerment and community engagement.</li> <li>v. Emphasizing fairness, the residents recommend a compensation strategy based on fair market value for affected property owners, ensuring just and equitable compensation for any land acquisition or property adjustments.</li> <li>vi. The residents express a desire for Corporate Social Responsibility (CSR) activities, including the improvement of existing markets, especially Kabulwo, and the enhancement of Chegilet health center through equipping. They also request the provision of scholarships to needy students as part of the community support initiatives associated with the construction project.</li> <li>vii. The community requested KeNHA to adhere to legal requirements for any land acquisition or demolition of houses within the road reserve. Promoting transparency.</li> <li>viii. Emphasizing the benefits of past public participation meetings, residents requested that their opinions and grievances be taken into consideration, even if they differed from official perspectives.</li> <li>ix. Kenya National Highways Authority (KeNHA) was urged to design an advanced drainage system, avoiding diversions into private lands, and ensuring fair compensations in case of past land acquisitions.</li> <li>x. Expressing concerns about safety, the community highlighted issues related to bumps, over-speeding drivers, and suggested the installation of more permanent bumps. They also called for the improvement of the drainage system to prevent floods and soil erosion.</li> </ol>
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<b>Marakwet West Sub-County Public Baraza</b>	<b>Error</b>	<ul style="list-style-type: none"> <li>i. Marakwet West Subcounty residents raised critical concerns regarding compensation for land encroachment, emphasizing the need for fair and transparent processes in addressing these compensation issues.</li> <li>ii. Acknowledging the community's expectations, Corporate Social Responsibility (CSR) considerations included prioritizing the upgrading of health facilities and educational institutions along the project route, reflecting the residents' commitment to holistic community development.</li> <li>iii. In the interest of road safety, participants advocated for the installation of speed bumps along the project route, contributing to safer travel conditions and accident prevention.</li> <li>iv. Recognizing the importance of local community empowerment, there was a consensus among residents that local employment opportunities should be prioritized, ensuring that the community benefits directly from the project.</li> <li>v. Highlighting environmental concerns, residents expressed the need to minimize tree cutting along the project route, particularly emphasizing the preservation of mango trees that serve as a vital livelihood source for the locals.</li> <li>vi. To enhance safety and visibility, the installation of sufficient streetlights was recommended, especially at public institutions and market centers. Additionally, preserving existing furrows and streams for agricultural use aligned with the residents' commitment to sustainable land utilization.</li> <li>vii. Addressing route adjustments, residents proposed reinstating the original route from Kinyech Junction to Biretwo Health Center. This adjustment aimed to minimize land take while simultaneously upgrading Aror Center as a loop road for the project route, addressing both community and infrastructure needs.</li> <li>viii. Residents advocated for the improvement of escarpment roads, specifically the Koitilial-Kapsowar road (30km) and Tunyo-Kapsowar road, recognizing the significance of well-maintained roads for accessibility and transportation efficiency.</li> <li>ix. The community highlighted the need for the improvement of access roads to social amenities, including hospitals, schools, and market centers, emphasizing the importance of accessible infrastructure for the well-being of the residents.</li> <li>x. The community requested KeNHA to adhere to legal requirements for any land acquisition or demolition of houses within the road reserve. Promoting transparency.</li> <li>xi. Emphasizing the benefits of past public participation meetings, residents requested that their opinions and grievances be taken into consideration, even if they differed from official perspectives.</li> <li>xii. Kenya National Highways Authority (KeNHA) was urged to design an advanced drainage system, avoiding diversions into private lands, and ensuring fair compensations in case of past land acquisitions.</li> <li>xiii. Expressing concerns about safety, the community highlighted issues related to bumps, over-speeding drivers, and suggested the installation of more permanent bumps.</li> </ul>
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Marakwet East Sub-County Public Baraza	Chesongoch	<ul style="list-style-type: none"> <li>i. Residents in Marakwet East Subcounty to be involved in the construction activities, leveraging the skilled and unskilled labor available in the area, ensuring a collaborative effort and promoting community participation.</li> <li>ii. Throughout the construction process, the residents asked for commitment to the preservation of water furrows, acknowledging their significance and ensuring minimal disruption to the local water supply infrastructure.</li> <li>iii. Access roads along the project route to be upgraded, enhancing connectivity within the community and facilitating smoother transportation for residents.</li> <li>iv. To address water needs in the area, the establishment of boreholes was recommended by the residents, providing a sustainable solution and improving water accessibility for the residents.</li> <li>v. The residents suggested that the constructor source materials locally, contributing to the improvement of livelihoods in the community and fostering economic empowerment among the residents.</li> <li>vi. Responding to a specific community request, Corporate Social Responsibility (CSR) initiatives suggestions were directed towards the Queen of Peace Secondary School at Chesongoch. This school, renamed after more than 70 students were massacred, now serves as a center of peace and hosts students from West Pokot, Elgeyo Marakwet, and Baringo County. The requested CSR activities included dumping material and grading of a playground, the construction of a dormitory for the girls, and scholarships for female students, reflecting the community's commitment to education and memorializing the tragic event.</li> <li>vii. The community requested KeNHA to adhere to legal requirements for any land acquisition or demolition of houses within the road reserve. Promoting transparency.</li> <li>viii. Emphasizing the benefits of past public participation meetings, residents requested that their opinions and grievances be taken into consideration, even if they differed from official perspectives.</li> <li>ix. Expressing concerns about safety, the community highlighted issues related to bumps, over-speeding drivers, and suggested the installation of more permanent bumps. They also called for the improvement of the drainage system to prevent floods and soil erosion.</li> <li>x. The community raised concerns about the maintenance of road markings, signages, and the drainage system designed to control flooding, emphasizing the need for sustained functionality</li> <li>xi. Ensure the proper handling and utmost care in the process of relocating the grave, with a focus on maintaining respect of culture and sensitivity throughout the entire procedure.</li> </ul>
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**The proposed mitigation measures include the following**

1. Alternate Trading Locations: Provide alternative trading spaces and offer compensation to traders affected by the project's construction.

2. Dust Emission Control: Implement dust control measures, such as sprinkling water on excavated areas, to minimize environmental impact and health concerns.
3. Project Timeline Management: Implement strict project management practices to minimize delays, ensuring efficient completion without unnecessary disruptions.
4. Diversions: Ensure well-planned and properly excavated diversions to prevent damage or breakdown of vehicles, prioritizing safety and convenience for road users.
5. Effective Communication: Clearly communicate diversion routes and potential challenges to road users, minimizing navigational issues and promoting awareness during construction.
6. Road Safety: Implement stringent safety measures to reduce the occurrence of accidents during construction, prioritizing the well-being of workers and the public.
7. Vegetation Conservation: Develop strategies to preserve and replant vegetation affected by the project, promoting environmental sustainability.
8. Land Management: Minimize land loss by optimizing construction plans and exploring alternative layouts to preserve valuable land.
9. Community Health Measures: Implement health protocols to mitigate the spread of communicable diseases, addressing social disruption concerns during construction.
10. Erosion Control Measures: Implement soil erosion prevention techniques, such as retaining walls or vegetation cover, to mitigate potential risks.
11. Utilities Coordination: Coordinate with utility providers to minimize disruptions to water, power, and other essential services, ensuring seamless continuity during construction.
12. Conflict Resolution Mechanisms: Establish effective conflict resolution strategies to address potential conflicts and prevent delays in construction.
13. Security Measures: Enhance security in the construction area to minimize theft cases and maintain a secure environment for workers and nearby residents by security personnel throughout the construction phase.

## Analysis of Questionnaires

### 1.1 Ownership of the Project

A total of forty (40 No.) of the surveyed individuals comprising of 27 males and 13 females were positive about the On-going construction of the road Project. This indicates that a hundred (**100 per cent**) of the surveyed respondents supports the project. The activity was carried out at Marakwet East, Marakwet West, Keyo North and Keyo South in Elgeyo Marakwet County.

#### 1.1.1 Adverse Environmental Impacts Anticipated by the Respondents

The **Table 1-3** below shows the responses of the respondents regarding the environmental impacts of the Project Road.

**Table 1-3: Environmental impacts anticipated by the respondents**

Nature of Environmental Impacts	No. of Respondents	Percentage (per cent)
Adverse Environmental impacts only	40	100

One respondent found the construction of the road to be beneficial for the environment as shown in **Table 1-4** below.

**Table 1-4: Positive Environmental impacts anticipated by the respondent**

Impacts	No. of Respondents	Percentage (per cent)
Positive environmental impacts	0	0

The respondents did not find the construction of the road to be beneficial for the environment.

**Table 1-5: Adverse Environmental impacts anticipated by respondents**

Impacts	No. of Respondents	Percentage (per cent)
Cutting down of trees	1	2.5
Soil erosion	22	55
Water pollution	18	45
Air pollution	35	87.5
Loss of Vegetation	28	70

### 1.1.2 Mitigation Measures for the Negative Environmental Impacts

According to the respondents, there are various mitigation measures that can be taken to avoid negative environmental impacts, namely;

- Dust suppression should be carried out on the earthwork's section whenever unfavorable weather occurs

### 1.1.3 Socio-Economic Impacts Anticipated by the Respondents

The respondents indicated that the project's socio-economic impacts would be significant as indicated in **Table 1-6** below.

**Table 1-6: Socio-economic impacts anticipated by respondents**

Socio-Economic Impacts	No. of Respondents	Percentage (per cent)
Positive Socio-economic impacts	40	100
Adverse Socio-economic impacts	26	65

The anticipated positive socio-economic impacts identified by the respondents are shown in **Table 1-7** below.

**Table 1-7: Positive socio-economic impacts identified by the respondent**

Impacts	No. of Respondents	Percentage (per cent)
Increased employment	35	87.5
Improve access to market and services	30	75
Increase road safety	17	42.5
Save on time of travel	1	2.5
Enhance safety and security	1	2.5

The anticipated Negative socio-economic impacts identified by the respondents are shown in the **Table 1-8** below.

**Table 1-8: Adverse socio-economic impacts identified by the respondent**

Impacts	No. of respondents	Percentage (per cent)
Noise pollution	26	65

#### 1.1.4 Mitigation Measures for the Adverse Social Impacts

The respondents were asked to identify the various mitigation measures that they would like to see implemented to address the negative social impacts. The responses were listed below.

- Create more jobs for local residents and youths;
- To help reduce road accidents, install speed calming devices and signs in key areas
- Provide alternative source of water for the locals; and
- Sprinkle water on the road during construction to reduce amount of dust generated.

#### 1.1.5 Safety and Health Impacts Anticipated by the Respondents

The respondents indicated that the project's health and safety impacts would be significant as listed in **Table 1-9** below.

**Table 1-9: Health and Safety Impacts anticipated by respondents**

Impacts	No. of Respondents	Percentage (per cent)
Positive health and safety impacts	0	0
Adverse health and safety impacts	0	0

The **Table 1-10** below shows the projected positive impacts of health and safety on the respondents' lives.

**Table 1-10: Positive health and safety impacts anticipated by the respondents**

Health & Safety impacts	No. of Respondents	Percentage (per cent)
Nil	0	0

The **Table 6-19** shows the expected adverse health and safety impacts that respondents anticipated to experience.

**Table 1-11: Adverse health and safety impacts anticipated by the respondents**

Impacts	No. of Respondents	Percentage (per cent)
Noise pollution	26	65

**1.1.6 Mitigation Measures for Health and Safety Impacts**

The respondents identified various measures that can be taken to minimize the hazards associated with health and safety.

The installation of speed bumps can help improve road safety on the road.

**1.2 Summary of Feedback from the Public Consultation****1.2.8 Positive feedback from the local community**

- The construction of this project has created employment opportunities for women and youths in the local community;
- Small-scale businesses have been established to provide food and other amenities to the local workers;
- The construction of the road project will improved safety and security in the area; and
- There has been an increase in economic growth in the area as a result of the road project.

**5.5.9 Negative feedback from the local community**

- The excessive amount of dust emission could cause interference with the operations of nearby businesses; and
- Lack of adequate road signage, tapes and cones especially on active work sections.
- Look on compensation issues when they arise

**1.3 Suggestions that the Contractor Should Take into Consideration**

- Put up adequate road signs that inform the public about the speed limits at various sections of the road; and
- Dust control should be carried out on a continuous basis.
- Develop spur roads leading to public institutions such as school hospitals, police stations etc.

**11. Environmental and Social Impact Assessment****Preliminary Identification of VECs**

The Table below provides an overview of the key Valued Ecosystem Components (VECs) that are potential receptors expected to be affected during the implementation of proposed project.

**Potential environmental and social receptors during the Implementation of proposed project**

Project activities	Impact	VECs
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Project activities	Impact	VECs
Project construction activities typically including:	Air Quality degradation and pollution	Public institutions, community members
<ul style="list-style-type: none"> <li>• Access road construction or upgrade</li> </ul>	Noise pollution	Public institutions, community members
<ul style="list-style-type: none"> <li>• Site preparation and development</li> </ul>	Soil contamination and erosion	Soils, water resources, local communities, livestock
<ul style="list-style-type: none"> <li>• Removal of select vegetation</li> </ul>	Loss of land	PAPs
<ul style="list-style-type: none"> <li>• Grading and excavation of soils</li> </ul>	Generation of Solid and hazardous waste as well liquid waste	Local communities, water sources, soil
<ul style="list-style-type: none"> <li>• Land clearing for projects rights-of way</li> </ul>	Water pollution	Water resources eg. Rivers Aror, River Kerio, River Kesup, local communities
<ul style="list-style-type: none"> <li>• Dismantling of damaged equipment</li> </ul>	Vegetation clearance Disturbance and/or displacement of wildlife	Flora, Fauna
<ul style="list-style-type: none"> <li>• Equipment staging areas</li> </ul>	Increase in Traffic Congestion and Detours	Local communities, institutions
<ul style="list-style-type: none"> <li>• Trenching and excavation works</li> </ul>	Impact on socio-economic activities of the area, such as impact on business, change in pricing of commodities etc	Local communities, institutions
<ul style="list-style-type: none"> <li>• Storage of materials and Chemical / oil</li> </ul>	Health and safety	Workers, local communities, livestock
<ul style="list-style-type: none"> <li>• Vehicle and equipment operation and maintenance.</li> </ul>		
<ul style="list-style-type: none"> <li>• Land Use &amp; Land Acquisition</li> </ul>		
<ul style="list-style-type: none"> <li>• Demolition, lifting and transporting of debris and rubbles</li> </ul>		
<ul style="list-style-type: none"> <li>• Repair, reconstruction and rehabilitation of damaged infrastructure/buildings;</li> </ul>		
<ul style="list-style-type: none"> <li>• Drilling activities, eg for Water</li> </ul>		

A summary of the positive and negative impacts envisaged during the implementation of different phases of the projects are presented below.

#### Construction Phase

#### Positive Impacts

**Employment Opportunities:** Construction activities will create employment opportunities for workers at international, national and local community level. This will be significant when gender mainstreaming will be implemented more so for the women who are marginalized and rarely have job opportunities in road construction.

**Business Opportunities for Local Suppliers and Service Providers:** The road construction activities involve a capital expenditure that requires a range of inputs comprising of machinery/plant and spares for plant and machinery, tyres for plant and machinery, gabions, concrete additives, reinforcement bars, posts and other consumables (wood formwork, bricks, cement, sand, aggregate, oils and lubricants) among others. The locals are optimistic that there will be business opportunities such as food vending and supply of firewood in the in the construction sites. They also requested that the vehicles for transport services be hired from the locals.

**Knowledge and skills transfer:** Through staff interaction, the locals employed in the project will have an opportunity to learn from some of the specialized skilled and semi-skilled personnel that will be involved during the project construction. This may enhance their knowledge in construction of bitumen standard roads and associated facilities and their ability to access similar opportunities in future even beyond the county. The works will also invoke interest in youngsters to participate in such project in future and their career goals.

### **Negative Impacts During the Pre-Construction /Construction Phase**

**Vegetation Loss:** The project road will be confined to the existing road reserve. However, it is anticipated there will be some form of vegetation clearance to pave way for diversions, near drainage sites, and clearing vegetation that might be on the way leave. Some vegetation might also be lost in areas while establishing camp sites, borrow sites, quarry sites, construction sites and associated plants.

**Habitat Loss and Disturbance:** Construction activities such as vegetation clearing, access to/operation of material sites and excavations along the road corridor will lead to wildlife displacement from their natural habitat. Some of the wildlife such as birds with territory and home ranges will have to abandon the disturbed habitats and re-establish elsewhere leading to increased inter and intra-species competition for preferred sites.

**Workmen's and Storage Camp:** Camps for this type of road would generally require approximately 5 to 10 acres of land, with offices for contractor and resident engineer, housing for migrant workers, area for materials storage, garage and service bays, parking for staff and construction vehicles, materials laboratory, among others. Construction camps may put pressure on fuel sources such cases kerosene or gas to be used for heating and cooking purposes. Strain on major utilities like water can also cause social unrest along the road project. Sewage, solid and oil/petroleum wastes also produced at the camps could also pollute sources of water, land and soil. Sanitation and hygiene in the workmen's camp are also issues of concern, and if not properly addressed may lead to outbreaks of illnesses such as cholera, hepatitis, typhoid etc.

**Excessive Noise and vibration:** Construction activities generate noise from vehicles used for transportation of material and workers to site, earthworks using heavy equipment and machinery for site preparation and facility erection and diesel generators used for on-site power generation. Workers at construction site are likely to be exposed to increased noise levels as they operate the noisy equipment or work close to the noise sources.

**Construction dust and air quality:** The construction dust may cause reduced visibility, respiratory problems to exposed workers and community members and discolouration of adjacent vegetation and buildings. In addition, construction machinery will emit exhaust fumes contributing to air pollution. Because of the settlement patterns, the most likely receptors of dust pollution are located in the urban and town centres along the road, with the other receptors being roadside vegetation and wildlife.

**Generation of Solid Wastes:** A range of solid waste, both hazardous and non-hazardous, are likely to be generated during road project implementation. Wastes emanating from construction phase will mainly come from site clearance

(vegetation) and excavation works (cut-to-spoil); Construction support activities and machinery maintenance and repair works such as used lubricant cans, packaging wrapper, worn-out tyres, and replaced equipment parts; Consumables (such as wood formwork, metal cuttings); Material testing and trial laboratories such as lab material rejects, test specimens for disposal, excess lab sample materials and grounded equipment or spares; Discarded material from handling losses; Residential camp sites wastes such as leftovers/food scraps, bottles, cans, clothing, food packaging, newspapers and magazines. Improper waste disposal is likely to affect the aesthetic value of the surrounding as well as the local community. The waste may attract scavengers and breeding pests, informal recycling or pollution of sensitive resources (such as water sources) triggering community health and safety issues.

**Increased Soil Erosion incidences:** Project implementation activities such as material borrowing and earthworks (surface scarring) will loosen soil material, which will expose to agents of soil erosion, especially in sloppy and bare areas. Active construction sites may have piled batches from borrow areas as fill material.

**Contamination by liquid waste and hydrocarbon spills:** Routine cleaning will generate washdown water containing sediment (soil, clay, gravel and sand), detergents and automotive fluids, all of which are pollutants. This may contaminate the receiving soils and surface water environment if not managed properly. Other sources of liquid contamination include release of untreated camps' sewer or grey water, leaks and spills from hydrocarbon containments including stored bitumen. Given scarcity of water resources in the area, any minor pollution of existing surface water can be seriously detrimental to both wildlife, livestock and local communities.

**Impacts of Materials Borrow Sites:** During the construction phase, the contractor will have to source construction materials from various material sources. While potential material sites have been identified in the project design report, the actual sites to be exploited will be decided by the appointed contractor. Cases of over extracting these materials from few sites beyond their regenerative capacity may arise if not done in a sustainable manner. The contractor will thus be expected to undertake detailed environmental and social impact assessment before commissioning the selected individual material sites.

**Increased water demand:** Due to high water demand for construction works, sometimes it is difficult to meet the water demand for construction works, local community domestic uses and for livestock from the existing resources. Without participatory exploitation of alternative sources of construction water, conflicts may emerge between the contractor and the local communities.

**Impacts on increased construction traffic and associated accidents:** Activities related to construction works will undoubtedly induce uncharacteristic high levels of additional vehicular traffic along the proposed road. Related issues of vehicle congestion and reckless driving by truck drivers delivering construction materials to the site will be some sources of potential accidents to humans and livestock, disturbance of normal living conditions to the local population, dust pollution, etc during the construction phase.

**Disruption of Public Utilities:** There will be requirements for relocation of public utilities such as water, electricity, and sewer lines in some sections of the road away from the road reserve, thereby affecting supply for the local residents, especially at major towns. In addition, construction activities might interfere with the underground fibre optic cables running along the road which could disrupt communication networks. Trucks with heavy loads of construction materials may also damage roads and footpaths, and other public utilities during the construction process.

**Spread of Communicable Diseases:** The road construction activities are likely to cause particulate emissions (PM<sub>2.5</sub>, PM<sub>10</sub>) such as dust leading to Upper Respiratory Tract Infections (URTI) complications among local community and workers if not well managed. Particles less than 10microns (PM<sub>10</sub>) and finer ones PM<sub>2.5</sub> in diameter bypass body's usual defenses against dust, penetrating and lodging deep in the respiratory system (WHO, 2011). These infections occur within the upper respiratory tract (nose, throat, ears and sinuses) leading to common colds, influenza and respiratory distress syndromes. The infections are mainly caused by airborne agents or contaminated surfaces

**Spread of HIV/AIDS and other STDs:** During project road construction, it is likely that a significant increase in population along the project area as they are attracted to the project activities. The influx is likely to include people from outside the areas of counties served by the road. Construction workers could increase or create the demand for casual sex with local residents leading to the emergence or increase in sex work near the construction sites.

**Workers welfare:** Project workers such as construction workers face the risk of exploitation, discrimination and other forms of unfair treatment by employers/contractors, eg. exposure to poor health and living conditions, poor sanitation, being overworked with no compensation, low wages, improper provision of proper PPEs and equipment for the works assigned, among others.

**Community Health and Safety:** During road construction, the general public may be exposed to injuries from various construction activities like accidents involving construction trucks or other mobile equipment, falls or slips into unprotected trenches/ditches etc. Children have low conscience of the inherent risks present at construction projects such as abuse, accidents and exploitation. Children are easily attracted around active construction sites to watch ongoing activities obliviously.

**Conflicts between construction workers and local communities:** While employment opportunities from construction is a positive impact, consultation feedback pointed out that there is a very high expectation on employment opportunities and supply of materials for local people during project implementation. Coupled with existing inter-clan conflicts, labour imbalance can create conflicts between the contractor and local communities if not well managed

**Labour influx and Social Change:** Influx of workers triggers the mushrooming of slums as workers opt for low-cost accommodation. Construction camps are set up by the contractor to provide living and eating areas for workers and also have separate areas for storing equipment and stockpiling material. Interaction with the project staff can lead to positive influences in the form of promotion of diversity in ways of thinking, experience of new cultures and exposure to new expectations in goals and achievements. On a higher level, these influences can result in adoption of new trends in social interaction, modes of dressing, leisure time activities and spending habits.

**Child Protection, Sexual exploitation and abuse (SEA) of under-age girls:** There is potential of the contractor employing children who have not reached the employment age, therefore violating the child labour laws of the borrower. The laws of Kenya prohibit contractors from “employing children in a manner that is economically exploitative, hazardous, detrimental to the child’s education, harmful to the child’s health or physical, mental, spiritual, moral, or social development.

In addition, there is a potential risk of project workers engaging in illegal sexual relations with minor girls, leading to HIV infection, teenage pregnancy, early child marriage, illegal and risky abortions, school dropout, etc.

**Gender Equity and Mainstreaming in employment:** There is potential that gender inequality might occur during project construction through unequal distribution of work, discrimination against women, and unequal pay for women, lack of provision of separate facilities for women, among others. Sexual harassment against women or men might also happen for those seeking employment through for example sexual favours for exchange of employment.

**Gender Based Violence (GBV), Rape and Sexual harassment:** Due to labour influx for some project activities such as construction works, the project could exacerbate GBV, sexual harassment and other sexual offenses such as rape. Construction workers may engage in sexual fraternization with locals. In addition to this being a driver of HIV infection, it will lead to domestic conflicts, GBV and domestic violence at household level. Women who seek employment may also face demands for sexual favours before being employed which amounts to sexual harassment. Even when employed, women may face continuous and unwanted demands for sex and risk losing their jobs if they do not give in.

**Alcohol and drug abuse:** The presence of migrant construction and other project workers in the community may lead to the emergence of small business hubs with kiosks for selling foodstuffs, cigarettes, alcohol, etc. to serve the workers and other members of the community. These business hubs may also engage in selling illegal drugs to project workers and other members of the community. The overall effect may be an increase in consumption of alcohol and illegal drugs in the community

**Complaints and Grievances / Social Conflicts:** There is also potential for social unrest among the local population if they are not considered for employment. This can bring negative publicity during construction including stoppage of work and can delay the projects progress. Against the background of this knowledge and expectation, there is a risk of dissatisfaction if procedures of allocation of workforce are not adequately applied, or if they are seen to be applied in an inequitable manner, especially due to local clan political dynamics.

**Occupational Safety and Health Hazards:** Construction activities will expose staff to risks of accidents and incidents while undertaking excavations and trenching, installation of contractor facilities, operating mobile machinery, electrically powered equipment and materials delivery vehicles

**Social Change:** During construction phase it is expected that there will be an influx of workers from various cultures and social practices. The project area on the other hand can be categorized into rural, peri-urban and urban settlements hence resulting in a range of cultures from homogenous conservative communities to metropolitan/cosmopolitan communities in the major towns. There shall be an influx of people in the project area in search of employment, most of whom shall be unskilled and semi-skilled. The contractor(s) are also expected to come with a team of skilled personnel to carry out various specialized tasks during the entire construction phase.

**Construction works induced traffic and inconveniences:** During the road construction works, it will be necessary to have some deviations in order to allow uninterrupted traffic flow. The road corridor is wide enough, and deviations shall remain within the road reserve. However, deviations if not well maintained have negative environmental and social impacts such as generating dust, blockage of accesses, increase in soil erosion, and potential to damage vehicles, thereby increasing maintenance costs to the users of the road.

Much of the road design has been aligned along the existing road reserve. Accesses to facilities abutting the road will be temporarily interrupted within the settlement areas, especially in centres along the road leading to traffic inconveniences and interference with normal operations. In many of these centres, access to the market place and other businesses may be interrupted during construction affecting business operators and their patrons.

**Crime management:** The influx of labour a specific project area or site especially during construction, and the settlement changes due to economic development of the area after project completion has the potential to lead to a number of negative socio-economic impacts, including increased insecurity and community conflicts, increased incidences of diseases (as mentioned above); increased risk of accidents and occupational hazards. Crimes might occur in the project area during the construction and operation such as stealing of construction materials or individual property, fighting, petty crimes such as pick pocketing, drug abuse and alcoholism among others.

**Absenteeism in schools:** School children who live near construction sites are likely to be absent from school many times or will perpetually report late to school because of engaging in petty business activities of vending eats and other items to construction workers, or being lured by workers into sexual relationships that would encourage dropping out or being absent from school.

**Increase in the prices of goods and services in the community:** Increased demand by migrant labor may affect the local economy positively for producers and providers of some goods and services. This may lead to prices of rent, food and other commodities to rise. This may negatively affect other households who have a fixed income or those who are already barely managing to survive.

### Operation Phase Impacts

## Positive impacts

**Spurred Economic Development:** The project road will improve connectivity between other parts of Kenya, and as far as South Sudan. Improved road connectivity will spur economic development as creation of opportunities to invest and spend increase with the volume of goods and services accessible to local population and on transit. In addition, the upgraded road will provide faster movement of people, goods and services in the area, which will likely stimulate more public and private investments such as facilities which include but not limited to schools, health centres, water, energy, and sanitation mainly in the urban centres. This growth means the social and economic conditions of these people will grow, improving and uplifting the standards of living along the proposed road project.

**Reduced travel time and cost:** The development of the project road will reduce travel time and cost associated with the current poor road conditions. Paving the project road will improve travel experience by reducing the travel time for users. The cost of travel is deemed to decline with reduced wear and tear due to the paved conditions. This will trickle down to reduced cost of living (access to social and economic services) within the project area.

**Improved health benefits:** The health benefits associated with the proposed road at operation phase include: improved access to health facilities and health services especially for pregnant women during labour; improved traveling experience especially for the aged who previously suffered joint, back and head injuries when traveling on the rough roads; and Improved access by health specialists who are willing to give service but are currently hindered by the poor road network. The challenges they currently face include time wastage on the road, the stress of traveling, loss of productive time and inconsistent transport.

**Cultural integration due to influx of people:** The improvement of the project road will improve connectivity of counties to the rest of the country. The number of people from other parts of the country willing to exploit opportunities due to the connectivity will increase. As people of different cultural background, lifestyles and ethnicities stream-in along the project road it will enhance the cultural integration and coexistence within the local communities. However, this may be a gradual process

**Reduced Vehicle Operational costs:** The reduced vehicle operating and maintenance costs due to improvement of the riding quality and surface of the road compared to the current road situation greatly enhances accessibility to basic facilities, for the local communities and others served the road corridor. Therefore, the development of the road will also be an opportunity for the area to be opened up for other opportunities and development in other commercial sectors by outside investors, since more investors will deploy their vehicles along the road due to reduced costs of maintenance and operations.

**Improved Travel Comfort and Response:** The road project will generally increase travel safety and comfort. With the improvement of the road, public transport business will be more competitive, and it is likely that transporters may opt for better and bigger public transport buses. In addition, an improved road will allow quicker response by medical and security personnel to the areas served by the road, thereby improving service delivery of the area.

**Increased Vehicle Accidents:** Improved road conditions will attract more traffic volume and increase incidences of vehicle over speeding considering the road has a maximum design speed of 120km/hr. Under these circumstances, a combination of reckless driving and ignorance of local communities of road safety requirements and basic rules may result in accidents.

## Negative Impacts during Operation

**Encroachment along the Project Roads:** After construction of the project road is complete and operational, there is the possibility of encroachment of various informal businesses along the project roads due to the increase in traffic and improved business opportunities. The encroachment increases the possibility of road side accidents and makes

road maintenance difficult and an expensive activity due to the compensation demands from destruction of properties and disruption of livelihoods for the encroachers.

**Road Maintenance Impacts:** During road maintenance, solid waste generation may include road resurfacing waste (removal of the old road surface material), road litter, illegally dumped waste, or general solid waste from rest areas, vegetation waste from right-of-way maintenance; and sediment and sludge from storm water drainage system maintenance. Paint waste may also be generated from road and bridge maintenance (due to removal of old paint from road stripping and bridges prior to re-painting).

**Increase in Communicable Diseases:** Once operational, the project road will experience increase in vehicle traffic, including long-distance drivers who will be making stop-overs in different towns along the road. Areas where truck drivers usually stop have been known to have high number of sex workers, who are likely to include those from outside the project areas. Truck drivers could increase or create the demand for casual sex leading to the emergence or increase in sex work at the centres along the road. With increased vehicle traffic, there will be a proportionate rise in emission levels. Human exposure to these emissions has health impacts. Health problems associated with the vehicle related pollutants include cardiovascular and respiratory diseases and cancer.

**Drainage and Storm water Management:** During the operation of the road, storm water will be generated as a result of an increase in paved sections of the roads, meaning that there will be more runoff than normal, which will affect the drainage systems, hydrological regimes and storm drains of the project area.

**Solid Waste:** During operation period, road users spilling materials (oils, foodstuffs, plastic materials, and other wastes), tends to leave pollutants on the road reserve, bus stops and the adjacent lands compromising the natural resources and people's health.

### Cumulative impacts

Cumulative impacts are impacts which result from the incremental impact of a proposed activity on a common resource when added to the impacts of other past, present or reasonably foreseeable future activities. As a result, cumulative impacts such as impacts on resources such as water, energy and road construction materials within the region might arise due to the needs for the simultaneous construction of the roads. If well implemented, the proposed measures are expected to minimize the overall cumulative impacts from these projects in the region. Other road projects include those along or near the road corridor undertaken by other road agencies such as KURA, KeRRA, the county Governments and the Constituencies through Constituency Development Fund (CDF).

Cumulative impacts such as impacts on resources such as strain in water, energy and road construction materials within the region might arise due to the needs for the simultaneous construction of the roads, other initiatives in the project road corridor (e.g. water and sanitation projects), degradation of environment due vegetation clearance, an increase in soil erosion, impacts of wildlife such as potential poaching in the region due to better access, solid waste generation, among others. Furthermore, the project can also contribute negatively from a social perspective such as changes in cultural practices for the local communities due to influx of people looking for business opportunities, increase in tourism in the area, security challenges, changes in traffic patterns, housing availability, and employment, considering that there are a number of proposed projects along or near the road corridor.

### Summary of the Likely Potential Cumulative Impacts

Environmental and Social Item	Potential Cumulative Impacts	
	Construction Phase	Operation Phase

Environmental and Social Item	Potential Cumulative Impacts	
	Construction Phase	Operation Phase
Soil Degradation, site related oil spills	Although not so significant, risks of oil spills increase as more projects are being undertaken in the region.	Increase in vehicles and potential accidents, and improper servicing of vehicles increase chances of soil and water sources degradation from poor management of oil wastes
Loss of flora, proliferation of invasive species	This may happen during the construction phase if the construction of other nearby projects coincides with that of the proposed project.	Vehicles and passengers plying along the roads may carry invasive species that may spread in the region Proposed measures include monitoring composition of species regenerating along road reserves and taking prompt actions in case of emergence of invasive species.
Solid waste	There will be a large amount of solid waste generated by all projects from various sources during construction such as at camp sites, soil spoil, cement bags, among others	Regional growth and increase in population as a result of easy access to the North Western region will increase solid waste generated in towns and centres. Passengers and travelers using the roads also tend to throw waste on the roads which increase the amount of waste generated in the region.
Air Quality	There is potential for degradation of during construction if not mitigated only if the construction of other nearby projects coincides with that of the proposed project	The impacts of the proposed road on regional air quality and greenhouse gases are currently negligible since the road is in poor condition and thus minimal traffic is experienced in the area. However, this is expected to change in future with improvement of various corridors in the area. It is recommended that monitoring of air quality in the region during operational stages should be conducted to devise methods of controlling greenhouse gases
Noise and Vibration	There is the potential for cumulative noise impacts of the proposed development in conjunction with other concurrent projects in the vicinity arising from simultaneous demolition and construction works.	Increase in traffic in the region, and higher speeds as a result of a good road will translate to increase in noise levels as more traffic use the roads.
Increased Traffic	There will be increased traffic in the region from construction activities of all the projects. The potential risks include cumulative increase in traffic accidents.  Mitigation measures have been proposed to be implemented during construction	Traffic volumes will increase in the project area due to improved road conditions. More vigilance needed with installation of speed measure in high risk areas along the projects However, the proposed mitigations need to be strictly adhered to.



Environmental and Social Item	Potential Cumulative Impacts	
	Construction Phase	Operation Phase
Strain in water resources	There is potential strain of water resources in the area during the construction phase if the construction of other nearby projects coincides with that of the proposed project.	Social unrest due to usage of water resources may occur as a result of easier access by other communities.
Social Impacts including: Labour influx, Crime, disruption of services, increased conflicts, impacts on children, GBV sexual exploitation and abuse	Influx of immigrant workers will impact the region through increase of local population. The Cumulative impacts will only occur during the construction phase if the construction of other nearby projects coincides with that of the proposed project. The proposed mitigations need to be strictly adhered to.	Given that traffic volumes will increase in the project area due to improved road conditions, changes in social setting of the communities in the region is bound to change in one way or another which could bring negative impacts such as social conflicts, intermarriages, prostitution, child abuse and sexual exploitation of underage girls.  Continuous community awareness and sensitization of such negative issues will need to be done continuously using Community-Based Organizations (CBOs) and NGOs operating in the region with the support of the local county governments
Increased demand for firewood.	The major source of energy in the region for domestic use is firewood. The contractors of the road may also use firewood to heat up bitumen for the construction. This increased demand strains the forest resources and increases the level of carbon dioxide in the atmosphere	With an improved transport system in the region, access of firewood to larger markets is increased which will lead to unsustainable use of forest resources
Strain on Natural resources due to construction materials requirements - sand, stone and gravel.	With the concurrent implementation of development projects in the region, sand and gravel demand is on the rise. The sources of such resources face habitat disturbances, deformation and unsustainability	The road project will induce economic growth in the region leading to physical developments that will demand the use of sand, stone and gravel for construction

To mitigate against cumulative impacts, the project implementers have or will carry out ESIA studies that propose mitigation measures to be implemented during construction and operation phases of the projects. It is also proposed that the project implementers in the region should have a collaborative engagement with each other to develop a common cumulative impact management strategy to minimize cumulative impacts of their projects. If well implemented, the proposed measures are expected to minimize the overall cumulative impacts from these projects in the region.

### Potential Impact during Decommissioning

#### Positive Impacts

**Reuse of Contractor's Facilities:** Some of the contractor's camps and other facilities erected during project construction can be handed over to the local government for convenient utilization as local administration offices or social halls instead of demolition. Boreholes can also be handed over to the community to improve their access.

### **Negative Impacts**

**Community Safety:** Abandoned and improperly rehabilitated material borrow sites and quarries can present a great safety and health hazard to adjoining communities due to water ponding, deep cliffs and being inhabited by or providing hideout for problem wildlife.

**Loss of Income:** Staff working at the contractor's camp will lose income sources as their services will be terminated. Without prior awareness of contract conditions, abrupt loss of income source may psychologically impact the affected workers and even their families.

**Noise pollution:** Decommissioning of construction structures involve noisy activities originating from movement of heavy ground vehicles, disassembling all the prefabricated structures, disconnection of services, breaking down concrete foundations and handling of debris from sites.

**Dust and Fumes:** Decommissioning activities likely to cause dust and fumes include: Excavation and loading of spoil debris for disposal; Decommissioning of septic facilities; and Removal of fuel holding tanks and dispensers. These will be a nuisance mainly to demolition workers but may also affect nearby communities.

**Waste Accumulation:** Decommissioning of construction camps will generate waste some of which may not be reused or recycled. Spillages during handling substances may also occur contaminating surfaces. Removal and reinstatement of sites may accumulate debris that require proper handling and disposal.

### **Proposed Environmental and Social Plan (ESMP)**

The negative environmental, health and safety, and social impacts together with the proposed mitigation measures are presented in the table below.

Table 0-1: Summary of Impacts and Proposed Mitigation measures

Environmental / Social impact	Level of Impact	Proposed mitigation and management measures	Goals/Targets of mitigation	Responsibility	ESMP Costs
<b>ENVIRONMENTAL IMPACTS</b>					
Vegetation Loss	Low	<ul style="list-style-type: none"> <li>Minimize unnecessary vegetation clearance</li> <li>Revegetation and landscaping of vegetation and trees along the road</li> <li>Siting of camp sites should be done away from densely vegetated areas.</li> <li>Compensate for the valuable trees to be felled within the settlements as per the project RAP recommendations.</li> </ul>	<ul style="list-style-type: none"> <li>Vegetation cover along the road reserve that is also safe to the road users.</li> <li>Landscaping and grassing on road reserves and especially on steep slopes</li> <li>Recovery of tree cover lost in Kitale</li> </ul>	Contractor, RE, KeNHA	250,000
Workmen's camps management	High	<ul style="list-style-type: none"> <li>Locate camp sites away from residential areas and settlements</li> <li>Contractor to prepare a Waste Management Plan for all worksites, especially the campsites</li> <li>Provision of adequate water and sanitation (fixed toilets with running water and changing rooms) at the campsites, separate for men and women;</li> <li>Provide for septic tanks and soak pits</li> <li>Pay special attention on waste generation and disposal, sanitary conditions at the sites, which includes exploring an option of having a third party to manage the various waste generated at the campsites, including regular treatment of pests and rodents;</li> <li>No waste at the campsite shall be buried</li> </ul>	Campsite meeting environmental and social conditions of the project	Contractor, RE	800,000

		<p>or burnt; contractor to segregate waste, reuse, compost or use licensed third-party service providers for disposal of waste;</p> <ul style="list-style-type: none"> <li>• Treatment of the campsite for rodents and other pests shall be done regularly;</li> <li>• Completely decommissioning of the camp including permanent foundations and floors to discourage future informal settlement at the campsite</li> </ul>			
Excessive Noise and Vibration	Medium	<ul style="list-style-type: none"> <li>• Contractor to prepare Health and safety plan;</li> <li>• Monitor environmental and occupational noise levels as per the EMCA provisions of regulations</li> <li>• The noise emission characteristics should be considered during selection and mobilization of construction equipment;</li> <li>• Where feasible, fit equipment with rock mufflers, sound insulations, silencers to lower the levels of noise emission;</li> <li>• Sensitize construction workers to switch off machinery and vehicles when not in use;</li> <li>• Provision of appropriate and adequate Personal Protective Equipment (PPEs) to workers;</li> <li>• Proper selection of project auxiliary sites, e.g. locate noisy operations like batching plant away from the densely settled areas;</li> <li>• Where noisy activities must be undertaken near sensitive receptors, the neighbouring occupants must be informed in advance and works limited to day time only.</li> <li>• Noise quality samples to be used as baseline data will be collected before</li> </ul>	Noise levels meeting conditions of the applicable standards	Contractor, RE, County governments	300,000

		commencement of the civil works for regular monitoring during the construction period at various sensitive areas to be agreed upon with the RE.			
Construction Dust and Air Quality	High	<ul style="list-style-type: none"> <li>• Sprinkling water (at least twice a day) on the accesses and excavated surfaces during the construction period to suppress dust generation;</li> <li>• Limit the speed of construction vehicles (maximum speed limit 40 kph/25 mph) on earth road;</li> <li>• Where feasible, fit equipment with rock mufflers, sound insulations, silencers to lower the levels of noise emission;</li> <li>• Provision of appropriate protective personal equipment including respirators and dustcoats to exposed workers;</li> <li>• Ensuring the location of material stockpiles are away from human settlements and business premises;</li> <li>• Covering loaded trucks during the transportation of material;</li> <li>• Sensitize workers on best practice on management of air pollution from vehicles and machinery;</li> <li>• Demolition of existing structures shall be done in a manner that the dust from demolitions can be controlled;</li> <li>• Undertake regular air quality (dust level) monitoring and conduct corrective adjustments where necessary.</li> <li>• Air quality samples to be used as baseline data will be collected before commencement of the civil works for regular monitoring during the construction</li> </ul>	Low particulate matter in the air meeting the applicable standards	Contractor , RE	400,000

		period at various sensitive areas to be agreed upon with the RE.			
Generation of Solid Wastes	Medium	<ul style="list-style-type: none"> <li>Contractor will prepare Solid Waste Management Plan</li> <li>Waste be managed as per Environmental Management and Coordination (Waste Management) Regulations 2006;</li> <li>Utilize the 3C strategy – Reduce, Reuse and Recycling;</li> <li>Reuse excavated top soil for landscaping of the site as far as practical;</li> <li>Segregation of solid wastes and provision of suitable and well labelled waste receptacles within the camp and at active construction sites;</li> <li>Disposed solid waste at designated sites through licensed waste handlers;</li> <li>Sensitize resident workers and service providers (e.g. food vendors) at project sites on proper waste management practices especially hazardous materials and risks of contaminations.</li> </ul>	Proper waste management and disposal Minimal accumulation of waste	Contractor, RE, Contracted Licensed waste handlers	200,000
Increased Soil Erosion	Low	<ul style="list-style-type: none"> <li>Material excavation should be minimized and restricted to designated locations;</li> <li>Excavated material should be properly piled and managed - sprinkled with water and covered (where possible) to prevent possible wash-out into seasonal watercourses.</li> <li>The contractor should ensure that construction related impacts like erosion and cut slope destabilization should be addressed through rock pitching;</li> <li>Re-vegetation should be done in tandem</li> </ul>	Controlled soil erosion Proper compaction of surfaces Proper Landscaping and grassing of embankments	Contractor, RE	600,000

		<p>with construction activities to avoid exposure of bare ground to agents of erosion;</p> <ul style="list-style-type: none"> <li>• Enforce landscaping and restoration of the construction site prior to decommissioning of the construction site;</li> <li>• As part of enhancing environmental protection in the region, the contractor should start a tree planting campaign for reforestation by incubating a tree nursery programs along the road. The types of trees to plant shall be through the guidance of the local KFS or through involvement of the Ministry of Environment and Forestry</li> </ul>			
Contamination by Liquid Waste and Hydrocarbon Spills	High	<ul style="list-style-type: none"> <li>• Contractor will prepare waste management plan</li> <li>• Machinery maintenance should be done only on purpose-built garages that meet hydrocarbon containment measures and controlled drainage;</li> <li>• Fueling and servicing of vehicles will be undertaken from only designated and lined area</li> <li>• Contractor will be required to have an emergency spill containment and response plan;</li> <li>• Minor service and washing areas placed/constructed with containment basins to ensure that the surrounding areas (including groundwater) are not polluted;</li> <li>• All sanitation waste, grey water runoff or uncontrolled discharges from the site/working areas (including wash down areas) to any water courses shall be contained, treated and properly</li> </ul>	Zero tolerance on liquid waste and hydrocarbon spills	Contractor, RE	1,000,000

		channeled; <ul style="list-style-type: none"> <li>Flash toilets at camp sites should be connected to septic tanks or other treatment facilities approved by the county government and NEMA;</li> <li>Water containing such pollutants as cements, concrete, lime, chemicals and fuels shall be discharged into a conservancy tank for removal from site.</li> </ul>			
Habitat Loss and Disturbance	Low	<ul style="list-style-type: none"> <li>Locate project auxiliary features like camps and batching plants in areas already disturbed or outside of wildlife habitats.</li> <li>Construction activities should be confined on the demarcated corridor and discourage movement or intrusion into wildlife habitats;</li> <li>Throughout the construction cycle, project staff should be sensitized regularly on wildlife conservation.</li> <li>The Contractor should sensitize workers on nature conservation, and enforce unauthorized intrusion or use of the wildlife habitats through signed code of conduct;</li> <li>After decommissioning contractor facilities, native vegetation should be replanted as restoration measures. Accredited sources of seedlings should be used (such as local KFS tree nurseries).</li> <li>To avoid random off-road driving that leads to trampling of vegetation in sensitive habitats, vehicles should be provided with designated routes</li> <li>Existing diversions and diversions should be considered before opening up new</li> </ul>	Minimal vegetation clearance Minimal disruptions of habitat life	Contractor, RE	300,000



		ones during construction.			
Impacts on Materials Borrow Sites	High	<ul style="list-style-type: none"> <li>All material sites shall be selected in consultation with the county governments and the local communities, and rehabilitation/decommissioning plans agreed to ensure the sites will not cause any social conflict within the communities. If borrow sites will be converted to water pans, proper communities and stakeholder engagement shall be conducted and agreed upon (through signing of agreements to exclude any future liability by the contractor) if such usage will be proposed by the community members.</li> <li>The contractor shall carry out environmental and social assessment for all auxiliary sites and seek relevant statutory licenses including NEMA for proposed material sites to be used for construction works;</li> <li>Construction materials including sand, stones and borrow materials must be sourced from duly approved sources only;</li> <li>Materials haulage routes must be pre-determined to avoid unnecessary off road driving;</li> <li>Contractor to develop a system of tracking materials received viz a vis utilization to ensure proper materials management to avoid wastage;</li> <li>The contractor shall locate material sites away from settlements if possible;</li> <li>Where material sites are located near settlements, the contractor shall carry out baseline studies of structural integrity assessments of nearby structures;</li> </ul>	<p>Properly rehabilitated material borrow sites</p> <p>No incidents/accidents at materials borrow sites</p>	Contractor, RE	500,000

		<ul style="list-style-type: none"> <li>The contractor shall develop safety management plans for any blasting which shall require the blasting to be done by a qualified experts, sensitization and notification to locals on blasting times;</li> </ul> <p>All material sites shall always be fenced with controlled entry at all times.</p>			
<b>SOCIAL IMPACTS</b>					
Land take and disruption of livelihoods	Medium	<ul style="list-style-type: none"> <li>RAP Study Report for the project should be implemented to guide the compensation and resettlement process;</li> <li>Compensation for all affected properties should be compensated before construction commences;</li> <li>Grievance management system should be operationalized and maintained throughout the project implementation phase. All pertinent stakeholders should be involved in the compensation and grievance redress mechanism during implementation of RAP.</li> </ul>	<p>Do no harm for the PAPs</p> <p>Minimize livelihoods of the PAPs</p>	KeNHA, Contractor, RE	2,000,000
Construction works induced traffic and inconveniences	High	<ul style="list-style-type: none"> <li>The contractor shall be required to formulate and implement a traffic management plan</li> <li>Provision of alternative routes in areas where accesses have been disrupted;</li> <li>Provision and maintenance of clear traffic signages of ongoing construction works, regulate speed limits and diversion signage to notify approaching traffic;</li> <li>In urban areas, schedule delivery of materials to the sites during periods of light traffic between 9.00am - 12.00 pm and 2.00 pm - 4.00 pm during week days;</li> </ul>	<p>Minimal disruptions of traffic due to construction activities</p> <p>Minimal accidents reported for contractors' vehicles</p> <p>Observance of Code of Conduct</p>	Contractor, RE	300,000

		<ul style="list-style-type: none"> <li>• Contractor to carry out road safety awareness for community members and institutions along the project corridor</li> <li>• Obtain permission from inhabitants and county governments if diversion routes go beyond the Right of Way;</li> <li>• Reinstatement of diversion routes (and old tracks) to original condition;</li> <li>• Institute a traffic management plan incorporating adequate temporary signages and flagmen as necessary;</li> <li>•</li> </ul>			
Disruption of Public Utilities	Medium	<ul style="list-style-type: none"> <li>• Liaise with utilities providers (power, water, telecommunication) to identify affected sections of alignment of the utilities and provide cost to cover the relocation of the existing infrastructure;</li> <li>• Relocation plans shall include adequate notification of affected customers.</li> </ul>	Minimal disruption of public utilities	Contractor, RE	100,000
Communicable Diseases	Medium	<p>Upper Respiratory Tract Infections (URTI)</p> <ul style="list-style-type: none"> <li>• Apply dust suppression measures - sprinkling water on the accesses and excavated surfaces – this shall be determined by the RE depending on the prevailing weather conditions;</li> <li>• Maintain a grievance register to log any complaints from local community;</li> <li>• Hold inductions for staff and people visiting the construction sites on the health and safety aspects;</li> <li>• Provide dust masks for all staff and visitors to active construction areas;</li> <li>• The Contractor should plan work program's activities and timing to avoid</li> </ul>	No reported cases of communicable diseases	Contractor, RE	300,000

		<p>emission impact on sensitive receptors, especially urbanized areas;</p> <ul style="list-style-type: none"> <li>• Install screens and scrubbers on crusher sites to minimize dust emissions;</li> <li>• Locate ancillary facilities away from residential/institutional to minimize dust or other emissions to the residents;</li> <li>• Regular maintenance contractors' equipment</li> </ul>			
	Medium	<ul style="list-style-type: none"> <li>• Spread of HIV/AIDS, COVID, and Other STDs</li> <li>• KeNHA/Contractor should, in liaison with approved local service providers, provide HIV/AIDS awareness training to staff and the locals and monitor the efficacy of the awareness created during the project implementation period;</li> <li>• Sensitize workers on the need to refrain from risky behaviors;</li> <li>• Provision of condoms both male and female in the sanitary facilities and various locations for the members of public;</li> <li>• The unskilled workers should, as far as feasible, be recruited from among the residents of the project area and its immediate neighborhood to minimize labour influx;</li> <li>• Workers should be given regular leave, preferably monthly to cool off period and join their families</li> <li>• Regular sensitization and awareness, and provision of measures to reduce spread of COVID-19, and other communicable diseases.</li> </ul>	Adherence to Code of Conduct by employees	Contractor, RE Appointed NGO	300,000

Conflicts with local communities on labour issues	Medium	<ul style="list-style-type: none"> <li>Contractor to formulate and implement a labour management plan for his workforce;</li> <li>Contractor will be required to have a transparent external communication plan covering among others, how available opportunities will be advertised;</li> <li>The Contractor should prioritize employing locals as casuals to reduce the need for labour influx;</li> <li>Consultations with the local council of elders to ensure that available opportunities are fairly distributed across different clan members;</li> <li>Maintain a grievance register to log any complaints from workers and local community.</li> </ul>	Local benefits from project construction in employment	Contractor, RE	300,000
Workers Welfare	Low	<ul style="list-style-type: none"> <li>The contractor shall comply with the required Law of Kenya under Department of Occupational Safety Health and Services (DOSHS), and Labour requirements;</li> <li>Have fulltime nurse on the campsite, with all first aid facilities are available at all times;</li> <li>In collaboration with local health facilities, ensure that the workers have access to health facilities in the area;</li> <li>Contractor to ensure that first aid facilities are available at all times at the work sites, and arrangement to access to ambulance service;</li> <li>The contractor shall provide portable water and mobile toilets (separate for women and men) for the workers at all worksites along the road;</li> </ul>	Adherence to labour laws  Proper living and working conditions for the workers	Contractor, RE	500,000

		<ul style="list-style-type: none"> <li>The contractor has to ensure that for any personnel accommodation, suitable arrangements are made to meet the welfare and hygiene requirements and prevention of epidemics, taking into consideration issues like harsh weather conditions in the region, sanitation, etc.</li> <li>Contractor should hire qualified Human Resources staff to manage labour related risks in the project</li> </ul>			
Community Safety and Health	Medium	<ul style="list-style-type: none"> <li>Ensure that all active work areas have controlled access limited to authorized persons only;</li> <li>Establish and maintain continuous liaison with the host communities including sensitization on safety and health issues on construction sites;</li> <li>Prepare and implement construction traffic management plan, incorporating safety of other traffic;</li> <li>Install and maintain appropriate safety and warning signages along road sections and all other construction sites and facilities;</li> <li>Ensure proper and adequate provision of sanitation and waste management facilities at all construction sites;</li> <li>Maintain a system of receiving and responding to any safety concerns by the communities;</li> <li>Undertake general and third-party insurance liability covers as appropriate.</li> </ul>	Minimize health and safety risks to the local communities	Contractor, RE	100,000
Labour influx and Social Change	High	<ul style="list-style-type: none"> <li>The contractor shall develop a labour management plan for project;</li> </ul>	Adherence to Code of Conduct by employees  □ Good relationship	Contractor , RE	150,000

		<ul style="list-style-type: none"> <li>• The Contractor should prioritize employing locals as casuals to reduce the need for labour influx;</li> <li>• Ensure there is adequate security and reasonable controlled access to project offices and residential quarters of immigrant staff to discourage deviant behaviours at workers campsites;</li> <li>• Employment policy of the contractor should prohibit deviant behaviours at the workplace among staff such as cultural profiling, sexual exploitation, child labour and gender-based violence;</li> <li>• Workers will be sensitized on the different cultural practices in the region and for immigrant workers, respecting different cultural, religions and beliefs, including behaviours and norms of the local people;</li> <li>• Contractor to establish a grievance management system to handle internal and external complaints.</li> <li>• Workers will be sensitized and sign code of conduct regarding interactions, behaviours and relations with the local communities.</li> </ul>	of workers and local communities		
Child Protection, Sexual	High	<ul style="list-style-type: none"> <li>• Workers will be educated by relevant agencies such as police and probation officers on the relevant laws and polices</li> </ul>	Adherence to Code of Conduct by all employees	Contractor, RE	200,000

exploitation and abuse (SEA) of underage girls		<p>protecting children</p> <ul style="list-style-type: none"> <li>• Reach out to children in and out of school in the vicinity of the construction sites with a life skills program focusing on HIV/AIDS and sexual abuse prevention among others areas</li> <li>• Mobilize and strengthen child protection institutions and structures near construction sites</li> <li>• Reach out to school authorities and parents near construction sites on paying special attention to child protection in light of labour influx</li> <li>• Partnerships will be established with relevant government agencies and NGOs to ensure children access survivor centered services such as medical care, psychosocial support, legal redress, safety, etc. as and when necessary</li> <li>• Ensure no children are employed on site in accordance with national labor laws</li> <li>• Ensure that any sexual exploitation and abuse (SEA) of children by the contractors' workers are promptly reported to the police</li> <li>• Popularize /put in place confidential mechanisms and hotlines for reporting child abuse cases</li> <li>• Enforce the child protection related clauses in the Code of conduct signed by all workers</li> <li>• Ensure visibility of signage and information, education and communication materials on such issues in the construction sites</li> <li>• Liaise with the administration units</li> </ul>			
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		(County and sub County governments, Police, DO, chiefs, etc.) to provide regular surveillance and patrols to protect workers and unacceptable behavioral interaction of children and workers			
Gender Equity and Mainstreaming	Medium	<ul style="list-style-type: none"> <li>Contractor and implementing agency to prepare and implement a Gender Action plan to include at minimum, in conformance with local laws and customs, equal opportunity for employment (min 30% of labour should be women);</li> <li>Ensure that women are given adequate employment opportunities during recruitment and job postings, including equal payment</li> <li>Regular sensitization and awareness campaigns to the workers should be done to promote gender equity in employment during the construction works and during operation</li> <li>Provision of gender disaggregated accommodation, bathing, changing, sanitation facilities</li> </ul>	<p>Women are given opportunities to participate in the projects</p> <p>30% of labour to be women</p>	Contractor, RE	
Gender based violence (GBV), Rape and Sexual Harassment	Medium	<ul style="list-style-type: none"> <li>Contractor will prepare a GBV Prevention and Response Plan and implementation arrangements</li> <li>Contractor to prepare and enforce a No Sexual Harassment and discrimination Policy in accordance with national laws;</li> <li>KeNHA to engage services of local CSO to educate all workers and nearby communities and stakeholders on preventing and responding to sexual harassment and GBV ahead of any project related works;</li> </ul>	<p>Adherence to Code of Conduct by all employees</p> <p>Zero cases of GBV related to the project reported</p>	Contractor, RE	300,000

		<ul style="list-style-type: none"> <li>• Popularize /put in place confidential mechanisms and hotlines for reporting GBV and sexual offences cases;</li> <li>• Strategies such as male involvement will be employed in preventing and responding to GBV and sexual harassment;</li> <li>• Establish partnerships with relevant government agencies and NGOs to ensure survivors of GBV and sexual offences access survivor centered services such as medical care, psychosocial support, legal redress, safety, etc as and when necessary;</li> <li>• Provision of gender disaggregated facilities - separate bathing, changing, sanitation facilities for men and women;</li> <li>• Grievance redress mechanisms including non-retaliation should be set up for the workers;</li> <li>• Liaise with the administration units (County and sub County governments, Police, DO, chiefs, etc.) to provide regular surveillance and patrols to protect workers and unacceptable behavioural interaction of local communities and workers</li> </ul>			
Alcohol and drug abuse by workers	Low	<ul style="list-style-type: none"> <li>• All workers (including subcontractors) to sign and comply with Code of Conduct on zero-tolerance on alcohol and drug abuse.</li> <li>• Removing any employee who persists in any misconduct or lack of care, carries out duties incompetently or negligently, fails to conform to any provisions of the contract, or persists in any conduct which is prejudicial to safety, health, or the protection of the environment.</li> </ul>	Adherence to Code of Conduct by all employees	Contractor, RE	100,000

		<ul style="list-style-type: none"> <li>• Taking all reasonable precautions to prevent unlawful, riotous or disorderly conduct by or amongst the Contractor's personnel, and to preserve peace and protection of persons and property on and near the site.</li> <li>• Prohibiting alcohol, drugs, arms, and ammunition on the worksite among personnel.</li> <li>• Liaise with the administration units (County and sub County governments, Police, DO, chiefs, etc.) to provide regular surveillance and patrols to protect workers and unacceptable behavioral interaction of local communities and workers</li> </ul>			
Loss of life, injury or damage to people and private property	High	<ul style="list-style-type: none"> <li>• Contractor shall maintain records and make reports concerning health, safety and welfare of persons, and damage to property, at all times</li> <li>• The contractor shall have insurance for his workers as required by law;</li> <li>• Insuring against liability for any loss, damage, death or bodily injury which may occur to any physical property or to any person which may arise out of the Contractor's performance of the contract</li> <li>• All fatalities or severe accidents/incidences shall be reported to the client (KeNHA) immediately (KeNHA) shall report to the AfDB within 24 hours after occurrence. The same should be done to DOSHS (within 24 hrs) with a written notice within 7 days as per the statutory requirements.</li> </ul>	Zero cases of severe incidents/accidents	Contractor, RE	500,000
Complaints	Medium	<ul style="list-style-type: none"> <li>• Provide grievance redress mechanism for</li> </ul>	Proper and operational	Contractor, RE	100,000

and grievances/social conflicts		<p>the local communities and workers;</p> <ul style="list-style-type: none"> <li>• Advice the public and workers on where to report grievances;</li> <li>• Consider prioritizing the local manpower for both skilled and unskilled labour.</li> <li>• Implement proposed grievance resolution mechanism</li> <li>• Grievance redress mechanisms especially for workers should incorporate non-retaliation policies</li> </ul>	GRM setup for employees and members of the public		
Impacts on Vulnerable groups	Low	<ul style="list-style-type: none"> <li>• The project had conducted a standalone Social Assessment (SA) report in 2015 to determine how the communities will benefit from the project activities, and the recommendations will be incorporated into the project design;</li> <li>• Develop an action plan that sets out the measures through which the project will ensure that potentially adverse effects on the peoples' communities are avoided, minimized, and mitigated, and/or compensate for such effects;</li> <li>• The project to conduct continuous Consultations in order to achieve broad community support;</li> <li>• The project will make the development process more inclusive of vulnerable groups and local communities by meaningful consultations and incorporating their perspectives in the design of development programs and poverty reduction strategies;</li> <li>• Provide the local communities and vulnerable groups with opportunities to benefit more fully from development</li> </ul>	Incorporation of project benefits for the vulnerable groups	KeNHA, Contractor, RE	100,000

		programs associated with the project, such as social infrastructure projects along the road project.			
<b>OCCUPATIONAL HEALTH AND SAFETY</b>					
Occupational Safety and Health Hazards	High	<ul style="list-style-type: none"> <li>Contractor will prepare Health and Safety Plan and Emergency Response Plans and operationalize them</li> <li>Contractors' selection criteria should include ability to demonstrate having some defined minimum requirements for Safety and Health Management System.</li> <li>Contractor's should comply OSHA 2007 requirements as bare minimum;</li> <li>Contractor must obtain a registration of workplace certificate from DOSH and comply with the subsequent requirements of the Health and Safety Committee Rules 2004 of the OSHA;</li> <li>Enforce use of defined standard operating procedures for handling various activities, depending on risks levels;</li> <li>Establish an emergency response procedure and display on all work areas;</li> <li>Provision of a standard first aid kit at active construction sites at all times;</li> <li>Designate qualified first-aider as per the OSHA requirements;</li> <li>Contractor to have a full time Health and Safety advisor on site</li> <li>Engage a qualified Health and Safety auditor to conduct routine and annual Health and Safety (H&amp;S) audits;</li> <li>Establish a Health and Safety Committee for the project construction team as per the Health and Safety Committee Rules</li> </ul>	<p>Eliminate incidents and accidents (Zero cases)</p> <p>Proper provision and use of PPEs</p>	Contractor, RE	400,000

		<p>2004 of the OSHA</p> <ul style="list-style-type: none"> <li>• Provide medical care for all staff as necessary as allowed in the Kenyan Law including securing a worker insurance cover as required under WIBA;</li> <li>• Conduct risk assessment before commencing new assignments/tasks;</li> <li>• Provide appropriate and adequate Personal Protective Equipment (PPE) to all workers that is commensurate with construction site activities;</li> <li>• Abide by standard best practice health and safety provisions in the construction contract;</li> <li>• Conduct daily toolbox and monthly safety meetings for the construction workforce;</li> <li>• Undertake routine worksites safety inspections;</li> <li>• Carry out induction and training on Health and Safety for workers and visitors to site</li> <li>• Display of appropriate safety signs around the construction site</li> <li>• All operators shall be trained and skilled in their area of operations;</li> <li>• Regular trainings to workers on OHS and first aid administration;</li> <li>• Contractor (s) to maintain an accident register; carry out accident and incidents investigations and implement corrective actions.</li> </ul>			
Road Safety	High	<ul style="list-style-type: none"> <li>• Copies of insurance policies for the contractor's drivers and vehicles should be provided to the Supervision Consultant.</li> <li>• The contractor's vehicles and equipment must be in proper working condition and</li> </ul>	Minimal road accidents	Contractor, RE, Local administration	200,000

		<p>have registration plates, and numbering.</p> <ul style="list-style-type: none"> <li>• The contractor to sensitize all drivers and equipment operators to adopt safe driving and operation behaviors, to ensure proper discipline by these personnel, and sanctions those in breach.</li> <li>• Ensure that safety is included in the driver's contracts as part of "Code of Conduct" and any non-compliances are sanctioned;</li> <li>• Excavated sites, embankments, and dangerous locations are protected with proper safety barriers, tape and warning signs.</li> <li>• Install temporary speed calming measures such as bumps and speed signs at high risk areas such as shopping centres, hospitals, and schools;</li> <li>• As part of normal Occupational Health and Safety monitoring, the contractor and Supervision Consultant both maintain a log detailing every violation and accident on site or associated with the project work activities, including the nature and circumstances, location, date, time, precise vehicles and persons involved, and follow-up actions with the police, insurance, families, community leaders, etc.</li> <li>• The implementing agency, in cooperation with the relevant government agency, should undertake road safety campaigns targeting settlements, schools, and other facilities along the project road or other affected areas. The cost of such campaigns should be covered in the</li> </ul>			
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		<ul style="list-style-type: none"> <li>project budget.</li> </ul>			
Impacts Related to High Temperature and Humidity Levels	Low	<ul style="list-style-type: none"> <li>Contractor must ensure Project staff have access to adequate potable water;</li> <li>Provisions should be made for adequate ventilation and air conditioning for in-house work spaces;</li> <li>Sensitize staff on health concerns and avoiding heatstroke, dehydration and fatigue;</li> <li>Work schedules should be such that workers are allowed adequate break durations in between working sessions;</li> <li>Ensure adherence to OSHA, 2007.</li> </ul>	Workers welfare complied with	Contractor, RE	400,000
Stakeholder Engagement	High	<ul style="list-style-type: none"> <li>The implementing agency (KeNHA) should prepare and implement a communication and community/stakeholder engagement plan that addresses all project issues</li> </ul>	Continuous Stakeholder engagement	KeNHA, Contractor, RE	200,000
Grievance Redress Mechanisms	Medium	<ul style="list-style-type: none"> <li>Proper, effective and strong Grievance Redress Mechanisms (GRM)</li> </ul>	Established GRM	Contractor, RE, KeNHA	100,000
<b>Total</b>					11,000,000.00

Table 5.5.9-1 ESMP during operation phase

Environmental / Social impact	Level of Impact	Recommendation, mitigation, monitoring and/or Management Measures	Goals of mitigation	Responsibility for Implementation	Cost (KSHS)
ENVIRONMENTAL IMPACTS					
Road Maintenance Impacts	Low	<ul style="list-style-type: none"> <li>Incorporate recycling of road resurfacing waste where possible;</li> <li>All vegetation cuttings for road clearance</li> </ul>	Conserve environment during road maintenance	KeNHA	1,000,000



Environmental / Social impact	Level of Impact	Recommendation, mitigation, monitoring and/or Management Measures	Goals of mitigation	Responsibility for Implementation	Cost (KSHS)
		<p>maintenance suspected to be from invasive alien species should be burnt on site translocated to minimize dispersal;</p> <ul style="list-style-type: none"> <li>• Manage sediment and sludge removed from storm water;</li> <li>• All removed paint materials suspected or confirmed as containing lead should be treated as a hazardous waste.</li> </ul>			
Increased Vehicle Accidents	High	<ul style="list-style-type: none"> <li>• The public should be sensitized on safety measures to observe while using the road;</li> <li>• KeNHA to liaise with National Traffic Safety Authority (NTSA) for close monitoring of the road usage and impose penalties on those going against the set roads usage rules;</li> <li>• KeNHA should ensure maintenance of installed road furniture and safety signages along the road;</li> <li>• Undertake periodic roadside bush clearance that may reduce visibility clearance or obstruct critical signages.</li> </ul>	Road use safety	KeNHA	200,000
Communicable Diseases	Low	<ul style="list-style-type: none"> <li>• Regular sensitization and awareness of the truck drivers, sex workers, and local communities on communicable diseases such as HIV, COVID-19, and other communicable diseases.</li> <li>• Enforcement of Vehicles to adhere to emission criteria set under the Environmental Management and Co-ordination (Fossil Fuel Emission Control)</li> </ul>	Prevent communicable diseases	KeNHA	200,000

Environmental / Social impact	Level of Impact	Recommendation, mitigation, monitoring and/or Management Measures	Goals of mitigation	Responsibility for Implementation	Cost (KSHS)
		regulations, 2006. <ul style="list-style-type: none"> <li>• Proper Vehicle maintenance and servicing of vehicle engine, especially for maintenance equipment.</li> </ul>			
Encroachment along the Project Roads	Medium	<ul style="list-style-type: none"> <li>• KeNHA in consultation with the county governments should enforce development control by not allowing for any development approvals on the road reserve to ward off potential encroachers and to allow for easy implementation of future road maintenance or expansion plans;</li> <li>• Install and maintain road reserve boundary posts at appropriate intervals;</li> <li>• Conduct awareness talks and presentations about the road reserve.</li> </ul>	Curb encroachment onto road reserve	KeNHA	300,000

Table 5.5.9-2 ESMP during Decommissioning Phase

Environmental / Social impact	Level of Impact	Recommendation, mitigation, monitoring and/or Management Measures	Goals	Responsibility for Implementation	Cost (KSHS)
Community Health and Safety	Low	<ul style="list-style-type: none"> <li>• Contractor must prepare detailed decommission plan for approval by local government, NEMA and department of mines as applicable;</li> <li>• KeNHA should consider satisfactory rehabilitation of decommissioned sites as part of contractual requirement with enforceable penalties including financial disincentives.</li> </ul>	Enhance public safety	KeNHA	200,000

Environmental / Social impact	Level of Impact	Recommendation, mitigation, monitoring and/or Management Measures	Goals	Responsibility for Implementation	Cost (KSHS)
Loss of Income	Low	<ul style="list-style-type: none"> <li>Notify the employees in advance on the project closure date and adequately compensate them;</li> <li>Dismissal procedures to be compliant with Employment Act, 2007;</li> <li>Provide counselling &amp; alternative skills for alternative activities;</li> <li>Employer should possibly identify alternative means of livelihood for the staff who were employed at the construction camp.</li> </ul>	Improve local financial safety nets	KeNHA	3000,000
Noise pollution	Low	<ul style="list-style-type: none"> <li>Prepare a decommissioning plan to guide activities;</li> <li>Monitor noise levels as per the NEMA Environmental Management and Coordination (Noise and Excessive Vibration Pollution) (Control) Regulations, 2009 &amp; OSHA, 2007;</li> <li>The noise emission characteristics should be considered during selection and mobilization of decommissioning equipment; and</li> <li>Sensitize staff to switch off machinery and vehicles when not in use.</li> </ul>	Mitigate noise pollution	KeNHA	50,000
Dust and Fumes	Low	<ul style="list-style-type: none"> <li>Prepare a decommissioning plan to guide staff on proper handling of sensitive facilities;</li> <li>Enforce stand operating procedures while undertaking demolition works;</li> <li>Provide and enforce the appropriate use of PPE against dust; and</li> <li>Employ dust suppression measures such as sprinkling water on loose soil surfaces and providing cover for spoil batches.</li> </ul>	Suppress pollution from dust and fumes	KeNHA	90,000
Waste Accumulation	Medium	<ul style="list-style-type: none"> <li>Decommissioning plan should cover waste management;</li> </ul>	Proper Waste management	KeNHA	100,000

Environmental / Social impact	Level of Impact	Recommendation, mitigation, monitoring and/or Management Measures	Goals	Responsibility for Implementation	Cost (KSHS)
		<ul style="list-style-type: none"> <li>Waste be managed as per Environmental Management and Coordination (Waste Management) Regulations 2006;</li> <li>Establish a segregation and grading waste management system to manage garbage and other forms of waste generated;</li> <li>Prioritize options of waste reduction, reuse and recycling, particularly papers, polythene bags and plastic wrappers and containers and other materials that can possibly be recycled; and</li> <li>Disposed waste at designated sites through licensed waste handlers.</li> </ul>			
<b>TOTAL COST OF ESMP</b>					5,140,000

**NB:** The cost of ESMP excludes RAP costs

## Grievance Handling Mechanism Structure

Grievance redress mechanisms (GRM) provide a formal avenue for affected groups or stakeholders to engage with the project implementers or owners on issues of concern or unaddressed impacts. Grievances are any complaints or suggestions about the way a project is being implemented. They may take the form of specific complaints for damages/injury, concerns about routine project activities, or perceived incidents or impacts. Identifying and responding to grievances supports the development of positive relationships between projects and affected groups/communities, and other stakeholders.

### Objectives of Grievance Redress Mechanism (GRM)

The GRM has the following objectives:

- **Establish a prompt, easy to understand and access, consistent and respectful mechanism to support the receiving, investigating and responding to complaints or grievances from communities and other stakeholders;**
- **Ensure proper documentation of complaints or grievances and any corrective actions taken; and**
- **Contribute to continuous improvement in performance of the project by reducing risks and negative environmental and social impacts through analysis of trends and lessons learned**

## Grievance Handling Mechanism Structure

A grievance redress committee (GRC) will be constituted to manage any concerns or complaints emanating from the local communities, projected affected persons and stakeholders at the project level

The local Assistant County Commissioner of the subcounty will be the chairman of the Grievance Redress Committee (GRC), with the Resident Engineer (RE) being the secretary of the committee or a person the RE might appoint as his representative. Other members of the GRC will include but not limited to area administration (chief), community representatives who will include representation from men, women, youth, People Living with Disabilities (PLWDs), representatives from NEMA, NGOs, County, and other stakeholders such as the business leaders, bodaboda sector, among others).

The main role of the committee will be arbitration through mediation and negotiation when complaints arise to ensure that cases are resolved quickly and fairly. The committee shall normally meet once per month and may form special sub-committees or ad-hoc committee that shall meet on a weekly basis or more frequently as the nature of some grievances may demand. Such sub-committees or special ad-hoc committee will report their findings and recommendations to the main committee for ratification or approval. The Resident Engineer will be designated as the person in charge of Grievance Redress by ensuring the GRM is formed and operational, and reporting of grievances received to the client on monthly basis or as needed. The RE and his team will be responsible for creating awareness of the Grievance Redress Mechanism (GRM) amongst all the stakeholders through public awareness campaigns, and providing information on GRC with local communities, including awareness materials that will be distributed at all centres along the road project, through local Administration office, posters, local radio stations, flyers, public gatherings, churches, mosques, and other applicable locations along the project area of influence.

The GRC shall be issued with ToRs by the implementing agency (KeNHA) on their roles and responsibilities, with a clear period of tenure. In addition, facilitation of the GRC shall be done accordingly based on applicable government rates. The budget for this facilitation has been provided for in the ESMP.

The various points of receiving complaints would be as follows: County Governments administration; Local chief's office; KeNHA office (at headquarters and Regional Office), Contractor or RE office, Ministry of Transport, Infrastructure, Housing and Urban Development (MoTIHUD) and Representative at the community level. The

complaints can be made in writing, verbally, over the phone, by fax, emails or any other media such as WhatsApp and KeNHA website.

### ESMP Implementation and Monitoring Arrangements

In order to ensure the sound development and effective implementation of the ESMP, it will be necessary to identify and define the responsibilities and authority of the various persons and organizations that will be involved in the project. In addition, the following entities will be involved in the implementation of the Environmental and Social Monitoring Plan (ESMoP)

- **Kenya National Highways Authority (KeNHA);**
- **Ministry of Transport, Infrastructure, Housing and Urban Development;**
- **National Environment Management Authority;**
- **Supervising Consultant;**
- **Construction Contractor;**
- **Directorate of Safety and Health Services (DOSHS)**
- **Uasin Gishu, Trans Nzoia, and Kakamega county Governments.**

Organization	Role and responsibility
KeNHA	<ul style="list-style-type: none"> <li>• Overseeing or appointing qualified and competent team to oversee environmental, social, health and safety (EHS) during the Project cycle;</li> <li>• Review and approve Contractor's Environmental and Social Management Plan (CESMP);</li> <li>• Carry out targeted Environmental, Social, Health and Safety (ESHS) training to the Supervision Consultant and contractor's teams;</li> <li>• Regular monitoring (monthly) and supervision of Implementation of the ESMP;</li> <li>• Carry out regular compliance ESHS audits including developing corrective action plans;</li> <li>• Ensuring that during construction and operations, the NEMA license conditions are adhered to since it's the principle holder of NEMA license;</li> <li>• Ensure the project is complying with ALL the AfDB Safeguards Policies that are applicable to the project.</li> </ul>
Ministry of Transport, Infrastructure, Housing and Urban Development	<ul style="list-style-type: none"> <li>• Facilitate development and sustenance of transport infrastructure, maritime economy, public works and housing for sustainable socio-economic development.</li> <li>• The State Department for Infrastructure is one of the Departments whose functions include policy management for road development. KeNHA falls under the State Department for Infrastructure.</li> </ul>
National Environment Management Authority (NEMA)	<ul style="list-style-type: none"> <li>• Issue license for the project</li> <li>• Exercise general supervision and co-ordination over all matters relating to the environment and to be the principal instrument of Government in the implementation of all policies relating to the environment and to ensure that all mitigation measures proposed are implemented.</li> </ul>
Construction Contractors	<ul style="list-style-type: none"> <li>• Preparing a Contractor's Environmental and Social Management Plan (CESMP) that will comply with the requirements of the EIA/ESMP and the Standard Specifications for road works in Kenya, which include specifications for environmental and social protection and waste disposal, borrow pit and quarry acquisition and exploitation, landscaping and grassing among others.</li> </ul>

Organization	Role and responsibility
	<ul style="list-style-type: none"> <li>• Carry out environmental and social assessment for the project auxiliary sites</li> <li>• Operationalize, monitor and report on the implementation of the CESMP on monthly and quarterly basis (or as required by the Supervision consultant and KeNHA).</li> <li>• Employ competent and qualified separate environmental and social experts on fulltime basis to manage and monitor implementation of CESMP.</li> <li>• Employ fulltime personnel to manage Occupational Health and Safety issues for the entire duration of the project.</li> <li>• Report any environmental, social, health and safety incidents to the Supervision Consultant</li> </ul>
Supervising Consultant	<ul style="list-style-type: none"> <li>• Oversee the construction programme and construction activities performed by the Contractor, in compliance with the ESMP.</li> <li>• Employ qualified full time Environmental and Social Specialists in its team to co-ordinate all aspects of the environment and social during project implementation.</li> <li>• Review and approve the CESMP and other associated plans (eg rehabilitation/decommissioning plans).</li> <li>• Daily and regular monitoring, reviewing and verifying the implementation of the project's ESMP by the contractor,</li> <li>• Proposing additional appropriate mitigation measures that may be required during the project's implementation.</li> <li>• Keep track of project compliance regarding permits and approvals necessary from the relevant authorities.</li> <li>• Conducting and coordinating training to the contractor's team on issues relating to environmental and social issues.</li> <li>• Report on his monthly and quarterly reports (or as required) on the ESMP aspects throughout the project implementation duration</li> </ul>
Directorate of Safety and Health Services (DOSHS)	<ul style="list-style-type: none"> <li>• Registering and Permitting of work place for all the work sites and camp sites for the project;</li> <li>• Inspection and auditing of workplaces to ensure they are adhering to OSHA 2007.</li> <li>• Receiving and investigating any severe incidents reported on worksites</li> </ul>
Community Based Organizations and Civil Society Groups	<ul style="list-style-type: none"> <li>• Participate in training and enhancing the capacity of the local communities in poverty reduction strategies proposed by the Social Assessment;</li> <li>• Ensure communities are meaningfully consulted on the project;</li> <li>• To encourage ownership of roads by the local communities by involving them directly in the process of monitoring of road construction;</li> <li>• Represent the underrepresented groups such as women and youth, People Living With Disability (PLWD), other interest groups, etc</li> <li>• Oversight role in ensuring that the proposed environmental and social mitigation measures are implemented as proposed (especially if there are any local organizations that deals with local environmental and social issues, wildlife etc).</li> </ul>
County governments	<ul style="list-style-type: none"> <li>• The relevant departmental officers in the County Governments of where project is located should be called upon where necessary during project implementation to provide the necessary permits and advisory services to the project implementers</li> </ul>

## 12. ENVIRONMENTAL AND SOCIAL MONITORING PLAN

The overall objective of environmental and social monitoring is to ensure that mitigation measures are implemented and that they are effective. Environmental and social monitoring will also enable response to new and developing issues of concern during project implementation.



Table 0-2: Environmental and Social Monitoring Plan

Monitoring Item	Monitoring Phase	Parameters	Monitoring Indicators	Location	Frequency	Responsibility
<b>ENVIRONMENTAL IMPACTS</b>						
Vegetation Loss	Construction and Operation	% cover	No. of Trees felled and compensated Areas of land cleared	Entire Site	Weekly	Contractor, KeNHA
Workmen's camps management	Construction	Solid waste, wastewater, sanitation	General camp management and cleanliness	Workers Camp sites	Weekly	Contractor, KeNHA
Excessive Noise and Vibration	Construction	dB and m/s, respectively	Noise levels <sup>1</sup> , complaints log	Active areas	monthly	Contractor, KeNHA
Construction dust and Air Quality	Construction	TSP, NO <sub>x</sub> , SO <sub>2</sub> , CO, Dust particles, particulate matter etc.	Records on issuance and use of PPEs Equipment and Number of times road is sprinkled Safety induction records Compliance with NEMA regulations and WHO guidelines Complaints from community	Active areas	Continuous, with Quarterly air quality measurements	Contractor, KeNHA
Solid Waste management	Construction, Decommissioning and Operation	Domestic refuse, metallic scraps, sludge	Waste management plan Waste collection and disposal records Level of housekeeping Agreements with waste handlers Licenses of waste handlers/transporters engaged	Entire Site	Monthly	Contractor, KeNHA
Soil Erosion	Construction and Operation	Eroded surfaces	Gulley formation; Sedimentation Protection measures in place	Entire Site	Monthly	Contractor, KeNHA
Water Quality and	Construction	Contaminated surfaces	Records on water quality;	Rivers,	monthly	Contractor,

<sup>1</sup> Noise, Air, and Water quality baseline parameters will be undertaken before commencement of the project by the Contractor at agreed monitoring locations with the RE

Monitoring Item	Monitoring Phase	Parameters	Monitoring Indicators	Location	Frequency	Responsibility
Contamination by Liquid Waste and Spills		pH, Total Suspended Solids (TSS) and Total Dissolved Solids (TDS), heavy metals, oils and grease	Compliance with NEMA regulations and WHO guidelines; Soil conditions at the sites; Bunded hydrocarbon storage areas	streams, other water sources including boreholes and water pans; Entire Site		KeNHA
Habitat Loss and Disturbance	Construction and Operation	Vegetation cover and wildlife habitat	Number of seedlings replanted; Percent of ground vegetation cover	Entire Site	Weekly	Contractor, KeNHA
Spread of Invasive and Alien Species	Construction and Operation	% cover	Identified invasive species	Entire Site	Monthly	Contractor, KeNHA
Impact on materials borrow sites	Construction and Operation	Rehabilitation, Landscape restoration	EIA reports and licenses Other relevant permits and authorizations Decommissioning plan Number of material sites restored as recommended	Material sites	Monthly	Contractor, KeNHA
Increased in poaching and Human-Wildlife Conflicts	Construction and Operation	Poaching and Wildlife encounter incidences	Workers Code of conduct Records of encounter incidences Sensitization records Poaching cases	Entire Site	Monthly	Contractor, KeNHA, KWS
Inhibited wildlife and livestock movements	Construction and Operation	Animal crossing	Number of animal crossings provided Installed signages	Entire site	Project life	Contractor, KWS, KeNHA
Increased deadwood collection and charcoal	Construction and Operation	% cover	% cover declining or increasing	Entire site	Project life	KFS, KWS, County government
Environmental and Social Risks	Construction and Operation	Fire outbreaks, floods, terrorism, etc	Areas for potential hazards	Entire site	Continuous during project life	KeNHA
<b>SOCIAL IMPACTS</b>						
Disruption of Livelihood due to land take	Construction	PAPs	RAP implementation progress report	Right of way	Monthly	Contractor, KeNHA

Monitoring Item	Monitoring Phase	Parameters	Monitoring Indicators	Location	Frequency	Responsibility
Increased water demand	Construction	Projected water requirements against available water volumes	Water assessment report; abstraction permits	Entire site	Monthly	Contractor, KeNHA, WRA
Construction induced traffic and disruptions	Construction	Traffic management plan	Number of accidents reported Number of grievances registered;	Entire site	Monthly	Contractor, KeNHA
Disruption of Public Utilities and Accesses	Construction	Utility relocation plans Construction management plans	Number of grievances registered; Communications and agreements with utility companies; Notices to the affected public	Right of way	Monthly	Contractor, KeNHA
Spread of communicable diseases	Construction and Operation	Sensitization and testing campaigns	Number of reported infections; Number of Medical camps held;	Entire site and immediate neighbouring communities	Monthly	Contractor, KeNHA
Spread of HIV/AIDS and Other Sexually Transmitted Diseases (STDs)	Construction	Sensitization and awareness campaigns	Agreements with HIV/AIDS awareness service provider Sensitization and monitoring records; Number of Medical camps for testing and counselling; Campaign materials; Signed code of conduct	Entire site and immediate neighbouring communities	Monthly	Contractor, KeNHA
Conflict with local communities on labour issues	Construction	Social unrest by local communities	Number of social unrest registered Number of Grievances on labour issues	Entire site	Monthly	Contractor, KeNHA
Workers welfare	Construction	Non-compliance with workers safety	Accident reports Number of grievances by workers	Entire site	Monthly	Contractor
Community Health and Safety	Construction	Incidences of injuries to local communities and road users Occupational safety and health advisor engaged; Safety training for	Number of accident cases reported Severity of cases reported Community feedback	Entire site	Daily	Contractor

Monitoring Item	Monitoring Phase	Parameters	Monitoring Indicators	Location	Frequency	Responsibility
		workers				
Labour Influx and Social Change	Construction	Cultural integration and social harmony	Number of awareness trainings and sensitization campaigns Cases of deviant behaviours by immigrant workers reported	Entire site	Monthly	Contractor; Gender Dept, police
Crime Management	Construction and Operation	Incidences	Number of crimes reported	Entire site	Monthly	Contractor, Police Dept
Child Protection, Sexual exploitation and abuse (SEA) of underage girls	Construction	Sexual misconduct of employees	Incidents of sexual exploitation Police records Number of Grievances	Entire site	Monthly	Contractor, Gender dept, police dept
Absenteeism in Schools	Construction	School attendance	Number of absent students in schools Sexual incidences reported	Entire site	Monthly	Contractor / Schools
Gender equity and Mainstreaming	Construction	Participation by women	Number of women benefiting from the project Number of Grievances related to gender equity	Entire site	Monthly	Contractor, Gender Dept
GBV, Rape and Sexual harassment	Construction	Incidences	No of cases reported Number of grievances Number of sensitization and awareness campaigns	Entire site	Monthly	Contractor, Gender Dept
Alcohol and drug abuse by workers	Construction	Workers conduct Drug and alcohol abuse	Number of workers reported on drug and alcohol abuse Police reports	Entire site	Monthly	Contractor
Increase in the prices of goods and services in the community	Construction and Operation	Prices of commodities	Increase in cost of living in the area Increase of key commodities in the region	Entire site	Monthly	Contractor/ County Ministry of Trade
<b>OCCUPATIONAL HEALTH AND SAFETY</b>						
Occupational Safety and Health Hazards	Construction and Operation	Visual inspection; Accident and Incident records	Traffic management Plan No. of OHS trainings and Audit records	Entire site	Daily	Contractor, KeNHA

Monitoring Item	Monitoring Phase	Parameters	Monitoring Indicators	Location	Frequency	Responsibility
		Safety and Health Management Plan with relevant procedures incorporating: Emergency response plan	Health and safety management plan; Compliance with DOSHS regulations and AfDB policies Accident and Incident Register.			
Impacts related to High temperature and Humidity Levels	Construction	Temperature & humidity	Human health change	Entire site	Daily	Contractor, KeNHA
Road safety	Construction and Operation	Road accidents	Traffic management Plan Number of awareness trainings and sensitization campaigns Installed signages and traffic calming devices Accident records	Entire site	Monthly	Contractor; KeNHA, NTSA
Security challenges	Construction and Operation	Incidences	Number of intelligence briefings and reports Incident records	Entire site	Daily	Contractor, KeNHA
Loss of life, injury or damage to people and private property	Construction	Accidents, Fatalities, and property damage	Number of accidents Number of fatalities Number of claims/grievances	Entire site	Daily	Contractor /KeNHA

## Environmental and Social Monitoring Plan (ESMoP) Operation Phase

Monitoring Item	Monitoring Phase	Parameters	Indicators	Location	Frequency	Responsibility
<b>ENVIRONMENTAL IMPACTS</b>						
Vegetation Loss	Operation	% cover	No. of Trees felled and compensated Areas of land cleared	Entire Site	Monthly	KeNHA
Soil Erosion	Operation	Eroded surfaces	Blocked drains Gulley formation; Sedimentation Protection measures in place	Entire road section	Monthly	KeNHA

Monitoring Item	Monitoring Phase	Parameters	Indicators	Location	Frequency	Responsibility
Habitat Loss and Disturbance	Operation	Vegetation cover and wildlife habitat	Number of seedlings replanted; Change in land use Percent of ground vegetation cover	Entire road section	Monthly	KeNHA
Spread of Invasive and Alien Species	Operation	% cover	Identified invasive species	Entire road section	Monthly	KeNHA
Impact on borrow and quarry sites	Operation	Rehabilitation, Landscape restoration	Ponding Accidents and incidents	Material sites	Biannually	KeNHA
Increased poaching in and Human-Wildlife Conflicts	Operation	Poaching and Wildlife encounter incidences	Poaching incidents cases KWS surveys	Entire road section	Biannually	KeNHA, KWS
Inhibited wildlife and livestock movements and crossings	Operation	Animal crossing	Number of animal crossings provided Installed signages	Entire road section	Monthly	KWS, KeNHA
<b>SOCIAL IMPACTS</b>						
Spread of communicable diseases	Operation	Sensitization and testing campaigns	Number of reported infections; Number of Medical camps held;	Entire road section	Annually	KeNHA
Community Conflicts	Operation	Incidences	Number of conflicts reported	Entire road section	Monthly	Police Dept KeNHA
<b>OCCUPATIONAL HEALTH AND SAFETY</b>						
Road safety	Operation	Road accidents	Traffic accident records Police operation book records Installed signages and traffic calming devices	Entire road section	Monthly	; KeNHA, NTSA

### Contractor Clauses

This will include various plans and safeguards the Contractor will be expected to prepare and implement based on the ESMP, during the construction phase of the project. The plans will be prepared by the contractor and will be reviewed by the RE and forwarded for further review and approval by KeNHA before the commencement of the works. These safeguards will be required as a part of the requirements in the bidding documents and contractual obligations. The safeguard documents required will include a Contractors Environmental and social management plan (CESMP) with the following subplans;

- i. Occupational health and safety plan
- ii. Waste management plan
- iii. Traffic management plan
- iv. Borrow pit and quarry site rehabilitation plan
- v. Child Protection Strategy
- vi. HIV/AIDS management plan
- vii. Code of Conduct
- viii. Grievance redress mechanism
- ix. Prevention and protection against gender-based violence and sexual exploitation
- x. Labour influx plan
- xi. Stakeholder engagement plan
- xii. Whistleblower policy

During the bidding process, the Contractor will be expected to include a brief methodology of the implementation of these Environmental and Social Safeguards and attach a cost of implementation of these plans in his proposal bid.

In addition, the Contractor will have to provide relevant staff for the implementation of the safeguards including a Community Liaison Officer and EHS advisor throughout during the construction period of the project.

### SUMMARY BUDGET OF ESMP IMPLEMENTATION

S/N	Item	Description	Cost (KSHS)
1	Sensitization and Awareness	Sensitization of the project activities, including printing of materials of SEAH/GBV, meetings with local communities by an NGO consultant	-
2	Loss of vegetation, Habitat loss & Disturbance	Reforestation, landscaping and planting of trees	
3	Gender Equity & Mainstreaming	Sensitization and awareness materials, Special projects targeting women and vulnerable groups	
4	Workers Welfare and OHS	Operation of clinic at campsite and other OHS arrangements	
5	Stakeholder Engagement	Meetings, venues, allowances, & refreshments	
6	Communicable diseases	Sensitization and awareness materials, COVID 19 protocols	
7	Air Quality	Control and Monitoring of air pollution, including PPEs	
8	Noise Pollution	Control and Monitoring of Noise pollution, including PPEs	
9	HIV/AIDS	Sensitization and awareness materials, Testing, Involvement of NGOs for counselling, provisions of	

		condoms, etc	
10	Solid Waste management	Management of waste, disposal and other costs associated with SWM	
11	Control of Liquid waste and hydrocarbon spills	Waste management arrangements	
12	Grievance Redress Mechanisms	GRC Operations	
		TOTAL ESMP Cost (excluding monitoring)	
	Monitoring Costs	Costs of Monitoring (to be included in the BoQ as Lumpsum)	



# 1. PROJECT INTRODUCTION

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## 1.4 Project Background

The road is located in Elgeyo-Marakwet County in the North Rift region of Kenya National Highways Authority. The road starts at (B16) Biretwo through Arror and runs in a Northerly direction terminating at Chesongoch. Additional security spur roads between Chegilet – Kipyegor – Kapchelal road, Kapkata – Koitilial road, Arror – Sisiya – Kapsowar road. The length of the road is approximately 75 Km.

The (B16) Biretwo – Arror – Tot (B126) road is currently under routine maintenance by the Kenya National Highways Authority – North Rift Region.

## 1.5 Scope of works

The entire road section of 75km is unpaved with no pavement done.

- The existing terrain is relatively rolling along the entire section.
- Road carriageway width is averagely 6.0m.
- Road reserve width is between 40-60m.
- Bushes are grassy intermingled and heavy soft, fast growing heavy bushes.
- Most existing culverts are fully blocked with outlets silted or full of vegetation.
- Culverts are of 600mm and 900mm sizes with varying lengths (141 cross culverts, 4 access culverts & 2 box culverts) of accesses and cross.
- Most drains are undefined and partially blocked with vegetation growth.
- There are no shoulders on the project road.
- There are no warning signs to alert the road users of sharp bends, school ahead and other important information.
- The major drainage feature prominent along the road is drifts where a total of 61No.

## 1.6 Overall Project Objectives and Expected Results

The Biretwo-Arror-Chesongoch Road project aims to address critical transportation challenges and stimulate economic development in Elgeyo-Marakwet County, Kenya. The current 75-kilometer unpaved road faces structural and accessibility issues, hindering economic activities and posing challenges to security and tourism. Upgrade the existing Biretwo-Arror-Chesongoch Road to bitumen standards to improve its structural capacity, accessibility, and safety. The other objectives include:

1. **Enhance Agricultural Connectivity:** - Facilitate the transport of agricultural produce to markets, particularly in anticipation of increased production from the Arror Dam project.
2. **Improve Security Infrastructure:** - Upgrade spur roads like Chegilet-Kipyegor-Kapchelal and Arror-Sisiya-Kapsowar to support security forces in addressing regional insecurity.
3. **Boost Regional Economic Growth:** - Reduce travel time and vehicle maintenance costs, fostering economic activities and trade in Elgeyo-Marakwet and neighboring counties.
4. **Promote Tourism:** - Enhance accessibility to the Rimoi National Reserve, contributing to tourism development and generating revenue for the National and County Governments.

The expected results indicators include:

- 1. Improved Structural Capacity and Accessibility:** - Upgrading the road to bitumen standards will enhance its structural capacity, making it more durable and capable of handling increased traffic:- Improved accessibility will facilitate easier movement of people and goods, addressing current challenges and supporting economic activities.
- 2. Enhanced Agricultural Connectivity:** - The road upgrade will enable efficient transportation of agricultural produce to markets, especially anticipating increased production from the Aror Dam project. - Improved agricultural connectivity can boost the income of local farmers and contribute to the overall growth of the agricultural sector.
- 3. Security Infrastructure Improvement:** - Upgrading spur roads such as Chegilet-Kipyegor-Kapchelal and Aror-Sisiya-Kapsowar will support security forces in addressing regional insecurity. - Better roads can enhance the mobility and response capabilities of security forces, contributing to improved safety in the region.
- 4. Boost to Regional Economic Growth:** - Reduced travel time and vehicle maintenance costs will foster economic activities and trade in Elgeyo-Marakwet and neighboring counties. The improved road network can attract businesses, stimulate investments, and create employment opportunities, contributing to overall economic growth.
- 5. Promotion of Tourism:** - Enhanced accessibility to the Rimoi National Reserve will contribute to tourism development. - Increased tourism can generate revenue for both the National and County Governments, supporting local economies and promoting the conservation of natural resources.

## 1.7 Project Rationale

The rationale for the proposed Biretwo-Arror-Chesongoch Road project is multifaceted and rooted in addressing critical challenges related to transportation, economic development, and connectivity in Elgeyo-Marakwet County, situated in the North Rift region of Kenya. The current state of the road, spanning approximately 75 kilometers, is unpaved and requires substantial improvements. The road serves as a vital link connecting counties such as Elgeyo Marakwet, Baringo, West Pokot, and Turkana County through the Tot-Kopasi River-Lomut-Sigor-Marich Pass route.

The existing road faces numerous issues, including inadequate structural capacity, challenging terrain with sections prone to erosion during heavy rainfall, and the absence of defined drainage systems. This adversely affects the movement of vehicles and goods, hindering economic development in the area and contributing to increased road user costs. The proposed project seeks to rectify these shortcomings by upgrading the road to bitumen standards.

Several factors contribute to the necessity of this road upgrade. Firstly, it serves as a crucial link for transporting agricultural produce and connecting producers to markets, especially in anticipation of the completion of the Aror Dam, which is expected to boost agricultural production in the region. This aligns with the Bottom-Up Transformational Agenda advocated by the Government of Kenya.

Additionally, the proposed project includes spur roads like Chegilet-Kipyegor-Kapchelal, Kapkata-Koitilial, and Aror-Sisiya-Kapsowar, which play a significant role in supporting security forces in the area to address rampant insecurity. Furthermore, the upgraded road is expected to reduce travel time, lower vehicle maintenance costs, and enhance road user comfort, thereby contributing to increased economic activities in the region.

Tourism also stands to benefit from the project, particularly with the Rimoi National Reserve located along the Biretwo-Arror Road. The improved road infrastructure is anticipated to make this tourist attraction more accessible, potentially increasing revenue for both the National and County Governments.

## 1.8 Objectives of the Updated ESIA Study

The main objective of the ESIA study was to identify environmental and social impacts associated with the proposed construction of the proposed road and to recommend an appropriate environmental management strategy for the project. The core outcome of the Study is an Environmental and Social Management and Monitoring Plan, which will be used to enhance and mitigate any positive and negative impacts, respectively, for the project.

The specific objectives of the assignment are:

- To identify all the potential significant positive and adverse environmental and social impacts, including direct, indirect and cumulative impacts associated with the project
- To proposed measures to avoid, reduce, mitigate, manage and/or compensate for such impacts, including the institutional arrangements and required capacity building to implement all such measures and monitor their effectiveness
- To develop an Environmental and Social Management Plan (ESMP)
- This being a marginalized region, ensure that the stakeholder analysis and consultation are conducted as part of the ESIA study, and identify who among the affected population is particularly vulnerable to potential adverse impacts. The project should adopt differentiated measures so that potential adverse impacts do not fall disproportionately on the disadvantaged or vulnerable
- To carry out site investigations to collect primary data and review available relevant secondary data to establish a comprehensive environmental and social baseline, indicators, and data collection methodology
- To conduct public consultations and meaningful stakeholder engagement with project-affected persons and Non-Governmental Organizations (NGOs) about the project's environmental and social impacts, as well as offer opportunity to receive their opinions and feedback so as to take their views into account and reflect the issues raised into the final design for the project.

## 1.9 ESIA Methodology

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### 1.9.1 Inception Stage

The ESIA study process commenced with the review of existing project documentation as well as a site reconnaissance along the project road. Thereafter an ESIA Study Inception Report was compiled by the Proponent.

#### 1.9.1.1 Desktop Review

Desktop review and other relevant documents was done in preparation of updating the ESIA Study Report. KeNHA was able to prepare tools to facilitate the reconnaissance field visit and other follow up visits of the study. Desk study by the safeguards began with review of the following project documentary resources:

- ESIA Study Report Biretwo-Arror-Chesongonch road done during Engineering Design by KeNHA design department
- ESIA Study Report for the Preliminary and Detailed Design Biretwo-Arror-Chesongonch road.

Other reports (with focus on the project area) reviewed by the ESIA Team include:

- County Integrated Development Plan 2023-2027 – Elgeyo Marakwet;
- The 2019 Kenya Population and Housing Census – Population Distribution by Administrative Units. Volume 1, prepared by KNBS;

Current legal, policy and regulatory frameworks were also reviewed. Scientific reports, sectoral reports and authoritative online sources were reviewed to fill in knowledge gaps on the various thematic areas of the ESIA study. The full list of information sources reviewed during the preparation of ESIA study is provided in the Reference Chapter of this Report.

### **1.9.1.2 Site Reconnaissance**

The reconnaissance visit was also undertaken where during the visits, a rapid assessment of the project area was conducted to review and identify the following:

- Vegetation mix and fauna activities;
- Terrain formation and physical features within the project area and its zone of influence e.g. land gradient, surface drainage, edaphic characteristics etc.;
- Existing land uses and related developments;
- Preliminary identification of receptors of potential project biophysical and socio-economic project impacts.

### **1.9.1.3 Stakeholder Consultations**

In addition to stakeholder consultations were carried out by the KeNHA safeguards team. The team conducted the activity with the help of the local administration (County Commissioners and chiefs) who would play an active role in community coordination and mobilization during the project implementation.

## **1.9.2 ESIA Study Phase**

### **1.9.2.1 Baseline Socio-Economic Survey**

#### **Review of Secondary Data**

- The study team undertook desktop reviews of project related documentation to gain understanding of the background of the study area. Information from secondary data provided benchmarks against which the study team analysed relevant parameters.

#### **Field Observations**

- Site walks were conducted to ensure that the entire study team was well versed with the project area. Participatory transect walks were carried out together with community leaders who acted as guides so as to enable collection of qualitative data on the project area. The initial field work (involving household surveys and stakeholder consultations) was undertaken in between January to February 2024.

#### **Household Survey**

- Structured household surveys were conducted among the project beneficiaries in order to capture quantitative information and some qualitative information at household level. The qualitative information was to be verified through information collected during interviews with key informants as well as public meetings. The ESIA study team reviewed household surveys conducted previously to identify if there was any gap on the data collected.
- The baseline socio economic data was collected through questionnaires that were distributed to randomly selected households in the area by trained enumerators who went from door to door.
- Sample data was collected from all different locations spread along the project area from Biretwo through Aror and finally at Chesongoch. Samples were also done at spur roads such as from Chegilet-Kipyegor-Kapchelal road Kapkata-Koitilial road and Aror-Sisiya-Kapsowar road. The Safeguards team collected more than 150 household questionnaires along the road to compare the results from the previous study.
- Sample household surveys were also collected to collect sample socio-economic data for people located along the road project with the help of the local chiefs, village elders and enumerators from the locality.

Stakeholders' consultations and public meetings

Stakeholders' consultations and public meetings were conducted between January to February 2024 through key informant interviews (KII), meetings with institutional representatives and community meetings as elaborated in Chapter Six.

### **1.9.2.2 Baseline Ecological Environment**

Desktop review of existing data and documentation was undertaken for the description of the ecological environment of the project environment. Parameter under review included:

- Habitat classifications;
- Dominant floral species;
- Invasive alien floral species;
- Wildlife (macrofauna – mammals, avifauna) and wildlife issues.

### **1.9.2.3 Assessment of Project Impacts**

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

- Direct or indirect

Direct impacts result from a proposed action and manifest at the present time and place; while indirect impacts are caused by action that manifest at later time or occur remotely from source and are foreseeable.

- Cumulative;

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

Moreover, impacts also vary with:

- Duration, that is long-term or short-term;
- Extent of their effect that is in wide-spread or local; and
- Are positive (beneficial) or negative (adverse).

#### **(i) Impact significance**

The purpose of this ESIA Study Report is to identify the significant impacts related to the project or activity under consideration and then to determine the appropriate means to avoid or mitigate those which are negative.

Significant impacts are defined, not necessarily in order of importance, as being those which:

- Are subject to legislative control;
- Relate to protected areas or to historically and culturally important areas;
- Are of public concern and importance;
- Are determined as such by technically competent specialists;
- Trigger subsequent secondary impacts;
- Elevate the risk to life threatening circumstances; and
- Affect sensitive environmental factors and parameters.

## (ii) Impact identification, Analysis and Mitigation Measures

In this study, impacts were predicted and evaluated using acceptable standard methods of impact prediction and evaluation. Constant reference to project activities was made and scores were assigned in an assessment table in order to make an objective assessment of how each of the project activities would impact on a particular environmental and social medium. The significance of impacts is subjective, but the value judgments required were best arrived at by use of several approaches such as brainstorming and use of checklists and matrices, to establish the potential impacts from the proposed project activities.

## (iii) Impact assessment scoring

The impacts were evaluated using the parameters of magnitude, significance, probability and duration of occurrence. Evaluation of the identified impacts was guided by careful assessment and judgment of anticipated consequences with regard to set standards or pre-development environmental situation of the site. The score of each of the impacts is an average value of scores. Table 1-1 and Table 1-2 show criteria for assessing significance. The assessment and assignment of values to each identified impact was based on the values developed in Table 1-2 which is adapted from the International good practices. Impacts were evaluated by assigning positive or negative scores.

Table 0-1: Criteria for assessing significance

SEVERITY OF IMPACT	RATING	CONSEQUENCE
Insignificant / non-harmful / less beneficial	-1/ +1	
Small/ Potentially harmful / Potentially beneficial	-2/ +2	
Significant / slightly harmful / Significantly beneficial	-3/ +3	
Great/ harmful / beneficial	-4/ +4	
Disastrous/ extremely harmful / extremely beneficial	-5/+5	
SPATIAL SCOPE OF IMPACT	RATING	
Activity specific	-1/ +1	
Right – of – way specific (within right – way)	-2/ +2	
Local area (within 5km of the project)	-3/ +3	
Regional	-4/ +4	
National	-5/+5	
DURATION OF IMPACT	RATING	
One day to one month	-1/ +1	
One month to one year	-2/ +2	
One year to ten years	-3/ +3	
Life of operation	-4/ +4	
Post closure	-5/+5	
FREQUENCY OF ACTIVITY / DURATION OF ACTIVITY	RATING	LIKELIHOOD
Annually or less / low	-1/ +1	
6monthly / temporary	-2/ +2	
Monthly / infrequent	-3/ +3	
Weekly/ life operation/ regularly / likely	-4/ +4	
Daily / permanent / high	-5/+5	
FREQUENCY OF IMPACT	RATING	
Almost never/ almost impossible	-1/ +1	
Very seldom / highly unlikely	-2/ +2	
Infrequent / unlikely/seldom	-3/ +3	
Often / regularly/ likely/ possible	-4/ +4	

Daily / highly likely/ definitely	-5/+5	
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Table 0-2:Significance rating matrix

CONSEQUENCE (Severity+ Spatial Scope + Duration)															
LIKELIHOOD (Frequency of activity Frequency of impact)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
	2	4	6	8	10	12	14	16	18	20	22	24	26	28	30
	3	6	9	12	15	18	21	24	27	30	33	36	39	42	45
	4	8	12	16	20	24	28	32	36	40	44	48	52	56	60
	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75
	6	12	18	24	30	36	42	48	54	60	66	72	78	84	90
	7	14	21	28	35	42	49	56	63	70	77	84	91	98	105
	8	16	24	32	40	48	56	64	72	80	88	96	104	112	120
	9	18	27	36	45	54	63	72	81	90	99	108	117	126	135
	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150

Table 0-3:Negative and Positive Mitigation Ratings

Significance Ratings	Value	Negative Impact Management Ratings	Positive Impact Management Ratings
Very High	126-150	Avoid/Offset/Compensate	Maintain proposed management
High	101-125	Avoid/ Mitigate, Offset./Compensate	Maintain proposed management
Medium-High	76-100	Mitigate and minimize	Maintain proposed management
Low -Medium	51-75	Mitigate and minimize	Maintain proposed management
Low	26-50	Minimize, Avoid	Maintain proposed management
Very low	1-25	Minimize/adapt	Maintain proposed management

### 1.9.3 Preparation of an ESMP and ESMoP

The Environmental and Social Management Plan (ESMP) is developed to demonstrate how site-specific concerns and mitigation measures are addressed during construction and operation of the proposed project development activities. The ESMP has been developed with project knowledge and information available to date. The impacts originating from the project road development (construction, operation and decommissioning phases) have been identified. To ensure that the negative environmental impacts can be controlled and mitigated effectively, a thorough scientific management and monitoring plan has been prepared. This will ensure that all the targets are achieved and that the environmental responsibilities and obligations of ESIA are met during project implementation. As a progressive approach, components of the ESMP may require updating throughout the initiation and scheduling of plans for the project.

The Environmental and Social Monitoring Plan (ESMoP) is prepared with an objective of monitoring to ensure that mitigation measures in the ESMP are implemented and that they are effective. Environmental and social monitoring also enables response to new and developing issues of concern.

#### 1.9.4 Structure of this ESIA Report

This report has been prepared under the following chapters:

**Executive summary:** This section presents a summary of the significant findings and recommended actions, with an emphasis on expected impacts.

**Chapter 1: Introduction:** This chapter gives description of the project background, location, purpose, objectives, NEMA reporting requirements, study methodology and the structure of the report.

**Chapter 2: Project Location and Description:** This chapter presents the project location, design and implementation strategies.

**Chapter 3: Policy, Legal and regulatory framework:** This chapter outlines the overview of legislative regulatory and framework, international guidelines and conventions relevant to this project.

**Chapter 4: Environmental and Social setting:** This chapter gives description of the environmental and social setting of proposed project and surrounding areas, e.g. climate, soils, geology, vegetation, fauna, land use, socio-economic profile and cultural heritage.

**Chapter 5: Stakeholder Consultation and Public Participation:** This chapter gives description of the objectives, methods used and summary of results of the public consultation activities undertaken during the project report stage.

**Chapter 6: Climate Change and Adaptation:** Presents the connection of the proposed project to climate change and the preferred adaptation measures.

**Chapter 7: Alternatives to the Project:** This chapter gives an analysis of project alternatives including the no-project option.

**Chapter 8: Potential Impacts and Mitigation Measures:** This chapter presents the analysis of beneficial and adverse impacts of the project on the biophysical and human (social, cultural and economic) environments. The analysis covers anticipated impacts during the construction, operation phases and decommissioning phases and also describes the measures proposed to enhance benefits or prevent, minimize, mitigate or compensate for adverse impacts.

**Chapter 9: Environmental and Social Management Plan (ESMP):** This chapter presents the proposed ESMP prepared for the project. It also presents strategies for management of specific biophysical and socio-economic management components that should be further developed prior to commencement of the Construction Phase of the Project

**Chapter 10: Grievance Redress Mechanism (GRM):** This chapter outlines the process, procedure and mechanisms for handling possible disputes in the project implementation process.

**Chapter 11: Environmental and Social Monitoring Plans (ESMoP):** This chapter presents the proposed ESMoP prepared for the project.

**Chapter 12: Conclusions:** The conclusion briefly presents the proposed way forward on the project and key deliverables.

**Chapter 13: References:** Presents the sources of information and materials used in the study and review.



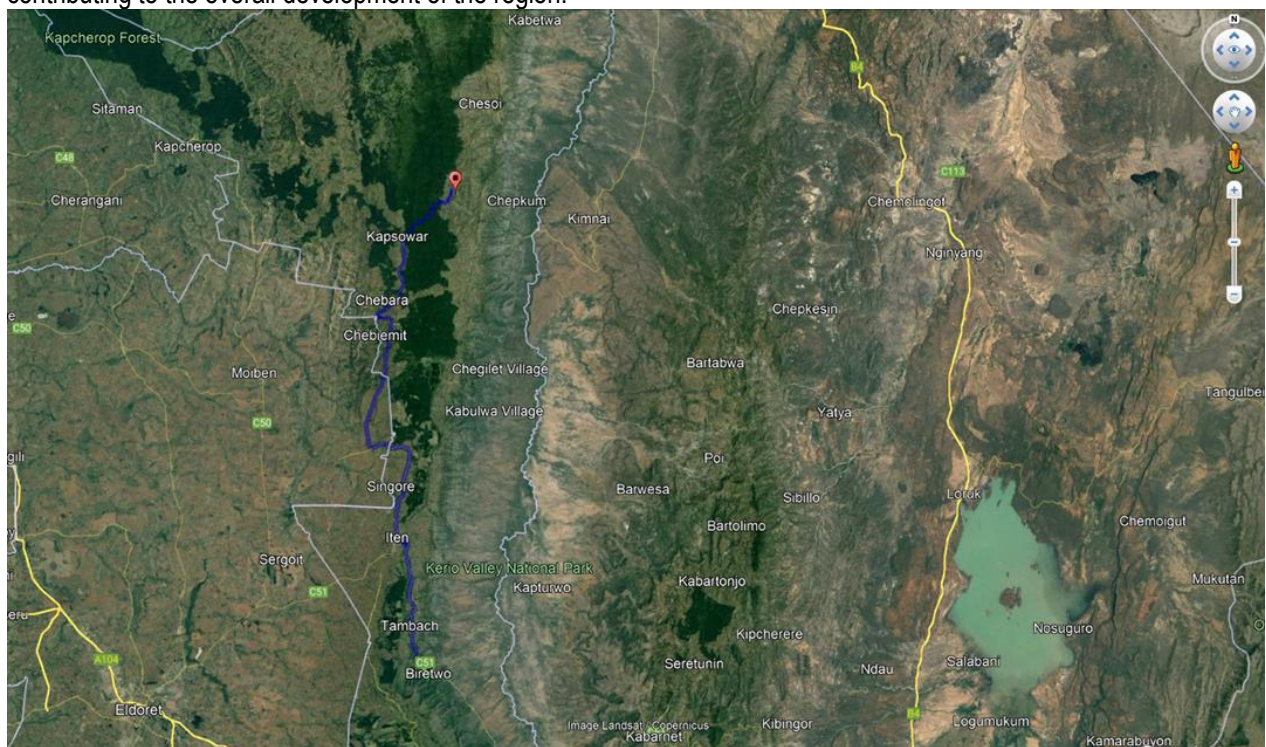


## 2 PROJECT LOCATION AND DESCRIPTION

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The road project is situated in Elgeyo-Marakwet County, located in the North Rift region of Kenya, and falls under the jurisdiction of the Kenya National Highways Authority. Commencing at the junction with B16 in Biretwo, the road spans through Aror and extends in a northerly direction until it reaches its endpoint at Chesongoch. The total length of the road covers approximately 75 kilometers. Additionally, the project involves the creation of additional security spur roads, strategically connecting to the main corridor. These spur roads include Chegilet – Kipyegor – Kapchela, Kapkata – Koitilal, and Aror – Sisiya – Kapsowar. These spur roads are designed to enhance security infrastructure and overall accessibility in the surrounding areas.

This road project is pivotal for addressing transportation challenges and stimulating economic development in Elgeyo-Marakwet County. The geographical location and design considerations of the road, including the integration of security spur roads, underline its significance in enhancing connectivity, promoting economic activities, and contributing to the overall development of the region.



**Figure 2- 1: A Map of the road project**

## 2.1 Project Description

### 2.1.1 Existing road condition

The existing road is approximately 72Km long. The road traverses a terrain that is relatively rolling along the entire section. The entire road is constructed to gravel standards. The carriageway width is averagely 6m wide with no shoulders. The road reserve width is between 40 - 60m.

#### 2.1.1.1 Proposed Alignment

The designed project road follows the existing road alignment as much as possible. Design of the horizontal and vertical alignment is based on detailed survey and site investigations, identifying the alignment design challenges and corresponding suitable solutions.

#### 2.1.1.2 Road Reserve

The road section Biretwo – Arror – Chesongoch is classified as Class B National Trunk Road as defined in Section 2.2 of RDM-1 with a desirable road reserve of 60m although the actual design has provided for a reserve of 40m. However, the following sections require a road reserve wider than 40m;

- U-turn sections
- Major junctions

Some sections of the road traverses developed peri-urban areas such as Arror center, where some structures should be demolished.

#### 2.1.1.3 Existing Drainage Structures

The project road is a currently a Class B road of approximately 80km, starting at Kabarnet– Iten (B16) Road at Biretwo junction traverses through Kerio valley 50km to Arror and then another 30km from Arror to Chesongoch. The project road traverses through a rolling terrain with hills and valleys covered with both manmade and natural vegetation. The existing road is a single carriageway, unpaved road. The Authority intends to upgrade the existing road to single carriageway bitumen standard to in order to spur social and economic development of the region.

The alignment consists of various structures comprising of bridges, box culvert, and drifts as the major structures and concrete precast pipe culverts at various chainages along the alignment. Some of the drainage structures are either partially or fully blocked, while some are no longer hydraulically adequate because of Climate Change and the change in the land use. Some of these structures had valley overgrowths and silts while others needed reinstatement of the outfalls. Being that the alignment is to be upgraded, most of these structures shall require replacement to provide sufficient capacity for the increased surface runoff.

The road has been earmarked for upgrading to bitumen standards, therefore an audit of the existing structures was carried out to determine their functional and structural adequacy. Some of the existing structures along the alignment are identified as below;

CHAINAGE	13. DESCRIPTION
0 + 400	<ul style="list-style-type: none"> <li>• There is an existing drift of about 10m in span.</li> <li>• There is need to replace the drift with a different structure</li> </ul>
0 + 600	<ul style="list-style-type: none"> <li>• There is an existing 900 mm Diameter Cross Pipe Culvert</li> <li>• The cross-pipe culvert is silted and has vegetation outgrowth.</li> </ul>

0 + 800	<ul style="list-style-type: none"> <li>There is an existing 600 mm dia concrete cross pipe culvert.</li> <li>The cross-pipe culvert is fully silted.</li> </ul>
14. 0 + 950	<ul style="list-style-type: none"> <li>The existing structure is a single cell box culvert fully silted</li> </ul>
15. 1+ 100	<ul style="list-style-type: none"> <li>There is an existing 600 mm dia concrete cross pipe culvert.</li> <li>The cross-pipe culvert is fully silted.</li> </ul>
16. 1+ 150	<ul style="list-style-type: none"> <li>There is an existing Cheptem river drift of about 10m in Length</li> <li>There is a perennial river over the drift</li> <li>There is a footbridge across the river</li> </ul>

### 2.1.2 Design Speed and Standards

The key element of design control for geometric design is the design speed. This is mainly influenced by such factors as road classification, nature of terrain, density and character of adjoining land use and traffic volumes expected to use the road, and economic and environmental considerations.

The Road Design Manual (RDM-1 Table 3.7.1) gives guide values to design speed in km/hr depending on the terrain and class of road. The terrain traversed by the project road is mainly rolling to mountainous and average speeds of 80km/hr and 60km/hr have been applied in different sections respectively. The alignment constraints on the project road include some steep gradients encountered at a number of sections and approaches to river crossing points. While every attempt was made to improve the vertical grades and horizontal curves where possible, it was found appropriate to reduce the design speed to 50km/hr in difficult terrains and built-up areas to accommodate the reduced design parameters. Table 4-3 below gives a summary of the main design controls upon which the horizontal and vertical designs of the project road were based: -

Design Criteria	Requirement	Attained
Design Speed	80/60kph	50-60kph
Lane Width	2 x 3.5m- Single carriageway section	2 x 3.5m- Single carriageway section
Cross fall on straight	Min 2.5%	2.5%
Paved Shoulder	1.5m either side	1.5m either side
Cross fall on shoulder	4.0%	4.0%
Design Vehicle	Semi-trailer	Semi-trailer
Stopping sight distance (min/desirable)	70m/80m	80m
Normal passing sight distance	325m	Min 325m
Reduced passing sight distance	225m	Min 225m
Minimum horizontal radii	160m	Min 100m
Minimum horizontal radii without transition	>2000m	>2000m
Maximum super-elevation	6%	6%
Maximum rate of change of super-elevation	1%	Max 1.25%
Minimum rate of change of super-elevation	0.3%	0.3%
Maximum vertical gradient	7%	Max 6.6%
Minimum vertical sag curve radius	1750m	Min 2500m
Minimum vertical sag/ crest curve	120m	Min 151m

length (2 x Design speed)		
Filtered Junctions: left turn diverging section	30m	30m
Filtered Junctions: left turn deceleration section	30m	30m
Acceleration lane section	150-400m	150m
Min Acceleration Lane merging section	30m	30m

### 2.1.3 Pavement Design

The selection of pavement type has been determined by the traffic volumes and composition, soil characteristics, weather, performance of the pavement in the project area, material availability, cost and overall manual maintenance. The type of pavement to be discussed in the later chapters.

#### b. Cross-fall

The single carriageway will have cross fall of 2.5%.

#### c. Lane Width

The width of a basic traffic lane was taken as 3.5/3.25 m on the main Carriageway.

#### d. Horizontal Clearances

The term “clear zone” is used to designate the unobstructed, relatively flat area provided beyond the edge of the traveled way for the recovery of errant vehicles. The clear zone includes any shoulders or auxiliary lanes.

Recommended minimum clearances between the edge of the carriageway and obstructions on the footway, verge or central reserves adopted.

Design Speed k.p.h	Height of object on footway, verge or central reserve	Minimum clearance where carriageway cross fall is		
		Away from objects, or towards object but not steeper than 2.5%	towards object but not steeper than 4%	towards object but and steeper than 4%
50	Less than 3.0m	0.5	0.6	0.6
50	3.0m and above	0.5	0.6	0.8
65	Less than 3.0m	Minimum in all cases .....0.6m Desirable where conditions permit.....1.2m		
80	3.0m and above	Minimum in all cases .....0.9m Desirable where conditions permit.....1.5m		

**Table 4- 4: Minimum Clearance**

#### e. Side ditches

The side ditches were designed to Standard type B3 as per RDM-1 (fig. 4.3.1) be 1:4 side slopes for height of fill < 1m. This is the appropriate side ditch type to match the adjacent flat open terrain and additionally a road safety feature as it allows for safe recovery by vehicles that may veer off the road.

The designed ditch cross section adopted is Type B.3 which has 1:4 side slopes and 2.5m ditch bottom width. Cut off drains have also been introduced to intercept soil and water draining into the side slopes of the cut.

#### **f. Provisions for utilities and services**

Public utility services which include, sewer, water, electricity, gas, telecommunications etc. are essential to the life of the community, more often, their repair and maintenance operations often hinder traffic and accelerate the deterioration of the road structure. Thus, it is imperative that the positions of underground mains be properly located and accurately recorded to facilitate repair works and minimize obstruction and traffic delays.

In the design of the project road, verges have been provided to locate a rectangular duct made of reinforced concrete, which will carry some of these services. Ducts will be provided in particular areas at regular intervals and where the terrain allows for crossing of services across the motorway.

It is recommended that mains should normally be located in the following order between the highway boundary and the Kerb: Electricity, gas, Water, telecommunications etc. Sewers are normally laid in straight lines between manholes; their distances from the side of the road will depend upon individual road curvature. Clearances should always be sufficient for accommodation of other services at the side of the road. Sewers should be deep enough to ensure that branch connections can be made without interference to other services.

#### **g. Adopted Cross-sections**

The Cross-sections provided need to be adequate to cater for the traffic expected over the design period and offer safe and convenient traffic operation at speeds consistent with the terrain conditions.

Major elements of the road cross-section (including lane width) have been standardized in line with the Road Design Manual of Kenya. The element details above concur with the Road Design Manual except that shoulders will be widened to 2.0m from 1.0m specified in the road design manuals.

Cross section type recommended for the road section and its characteristics are summarized in the tables below.

<b>Item</b>	<b>Cross-section Type I</b>
Number of lanes	2
Carriageway width	7.0m
Shoulder	1.5m
Normal cross-fall	2.5%

In addition to the standard cross section, lane widening was applied to the carriageway in accordance to the design standards including 0.5m extra shoulder widths to accommodate guardrails where applicable

## 2.1.4 Proposed General Works

### 2.1.4.1 Construction works

The major items of Works to be executed under the Contract include the following:

- Setting out, referencing and taking cross sections;
- Site clearance and removal of top soil;
- Earthworks;
- Constructing drainage structures (box and pipe culverts including protection works);
- Construction of pavement comprising bitumen surfacing, cement stabilized base and improved material subbase;
- Construction of other road facilities such as lay-bays, bus bays and widening at market centres along the road
- Works necessary to effect the safe and convenient passage of traffic through the Works;
- Construction of pedestrian's crossings
- Provision of road furniture and ancillary services, e.g. signs, guardrails, marker posts, fencing, etc.;
- Operations ancillary to the main Works such as the construction of offices, diversion of services, the operations in quarries and borrow areas, the provision of water supply, the diversion of existing services, spoil areas for disposal of unsuitable or surplus materials, etc.
- Setting up and operation of construction camps, including accommodation of construction workers and Supervising Consultant staff
- Setting up and operation of equipment for materials production such as concrete products (eg pre-cast concrete, paving blocks, etc) and asphalt concrete batching plant. The camp will also be used for stockpiling necessary materials such as bitumen, gravel, sand, etc

### 2.1.4.2 Road Furniture and Ancillary Services

The design Consultant has made the following recommendations on road safety and furniture, which also forms as part of environmental and social mitigation measures:

- Road Reserve Boundary Posts - these are proposed at intervals of 250m on each side of the road reserve edge and details are shown in the book of drawings annexed to this report;
- Edge Marker posts - these are proposed at bridge approaches, pipe culverts, and sharp curves and at locations where sight distance requirements are not complied with. Exact location for the Edge Marker Posts will be determined during the construction phase of the project.
- Kilometre Marker Posts - these are proposed at intervals of 2km staggered on either side of the road.
- Road Signage - these are provided and installed in accordance with the recommendations of Ministry of Works, Roads Department (Kenya); Manual for Traffic' Signs in Kenya, Part I (Road Markings)- 1975;
- Road Marking - Locations for different types of road marking will be determined on site during construction. These are to be determined in accordance with the requirements of Ministry of Works, Roads Department (Kenya); Manual for Traffic Signs in Kenya, Part I (Road Markings)- 1975;
- Guardrails - These road furniture elements, whose exact locations will be determined on site during construction, shall be determined at bridge approaches, box culverts and high fill in accordance with Guardrail Need Index (G .N.I) in Figure 8.5 .1 of the RDM I;
- Kerbs - these are proposed at junctions, bus bays and parking bays. Exact location shall be determined on site during construction;
- Warning Signs and Features: Locations of Reflective Road Stands, Rumble Strips and Speed Bumps shall be determined on site during Construction.
- Pedestrian Crossings: The residents who have settled along the road in town centres will require protection from vehicles with level crossings and foot bridges in various sections of the road, especially in densely populated towns. The design consultant has considered such features in all towns and near institutions (such as mosques, schools, and hospitals) including installation of speed reduction measures such as bumps/humps, road markings and signage, and foot bridges for safety of the local residents.

It is recommended that all road signs shall use pictorial or animated signage as much as possible to compliment written signage along the road project.

### 2.1.4.3 Temporary works

In addition to the permanent works described above, some temporary works will be undertaken to facilitate construction. These include:

- Diversion roads to allow passage of traffic to be maintained along the full length of the construction works;
- A work camp for accommodation, offices, services, stores, workshops and parking of vehicles;
- Production facilities such as concrete precast yard, timber and reinforced steel bending yards;
- Temporary stockpile areas to be set aside for delivered or double-handled materials such as aggregates and sand;
- Spoil areas for disposal of unsuitable or surplus materials.

## **2.1.5 Material Investigations**

### **2.1.5.1. Gravel site identification and sampling**

Ten gravel sites were identified within the project road proximity and each gravel site location defined by use of hand-held GPS. Sampling was done by digging 5 trial pits on a 30-meter by 60-meter grid on the new gravel sites (MS1 – MS 8), while 3 trial pits were done on some existing borrow pits, MS 9 and MS 10. All material sites are situated within the community's land boundaries.

#### **❖ MS 1-Mogil hill**

This material site is a new borrow pit located at Km 62+700 LHS adjacent to the project road. The Borrow pit has a potential gravel. Materials comprises of 1.1m thick greyish gravel mixed with weathered soft rock overlain by an average of 0.3m thick of light brownish soil overburden. It is approximately 30 acres.

#### **❖ MS 2- Runoi hill**

This material site is an existing borrow pit located at Km 62+500 LHS adjacent to the project road. Materials comprises of 1.1m whitish sandy gravel overlain by an average of 0.4m thick overburden of light brownish soil with grass. It is approximately 40 acres.

#### **❖ MS 3 – Chesongoch hill**

This material site is a new borrow pit located at Km 72+500 LHS of the project road. It has a lead of about 300m from the project road. Materials comprises of 1.3m thick whitish sandy gravel overlain by an average of 0.2m thick of light brownish soil overburden. It is approximately 25 acres.

#### **❖ MS 4- Kopongeny area**

This material site is an existing borrow pit located at Km 59+000 RHS of the project road close to Kerio River. It has a lead of 3.0km from the project road. Materials comprises of whitish gravel soil. It is approximately 27.5 acres.

#### **❖ MS 5- Kandau hill (Tunyo)**

This material site is a new borrow pit located at km 59+000 LHS at a junction from Tunyo to Kapsowar Road. Materials comprises of 1.1m thick reddish lateritic gravel mixed with whitish weathered rock overlain by an average of 0.2m thick of soil overburden. It is approximately 30 acres.

#### **❖ MS 6- Koitilial hill**

This materials site is a new borrow pit located at Km 47+600 LHS. It has a lead of about 1.5km from the project road. Materials comprises of 1.0m reddish lateritic gravel overlain by an average of 0.12m thick of soil overburden. It is approximately 35 acres.

#### **❖ MS 7- Kimarock hill**

This material site is a new borrow pit located at Km 35+500 LHS along the road to Kapchelal, 200m from the project road. Materials comprises of 1.2m thick reddish-brown gravel mixed with weathered rock overlain by an average of 0.15m thick of soil overburden. It is approximately 19 acres.

#### **❖ MS 8- Kamaram/Matany area**

This materials site is an existing borrow pit located at Km 25+000 LHS adjacent to the project road. Materials comprises of 1.1m thick whitish brown gravel mixed with weathered rock overlain by an average of 0.3m thick of soil overburden. It is approximately 32 acres.



❖ **MS 9- Kamogich area**

This material site is an existing borrow pit located at Km 16+000 RHS adjacent to the project road. Materials comprises of 1.1m thick greyish brown soil mixed with weathered rock overlain by an average of 0.2m thick of soil overburden. It is approximately 35 acres.

❖ **MS 10- Kapshakei area**

This material site is an existing borrow pit located at Km 3+800 LHS adjacent to the project road. Materials comprises of 1.1m thick reddish-brown gravel mixed with weathered rock overlain by an average of 0.2m thick of soil overburden. It is approximately 33 acres.

Table 4-1 summarizes the locations of the gravel sites and the respective locations of trials pits. The gravel sites' location map is presented as **Annex 6A**.

MS No.	Location	Ownership	Co-ordinates	
			Northings	Eastings
MS 1	Mogil Hill - (Km 62+700 LHS)	Community Land	1.044946°	35.627901°
MS 2	Runoi Hill - (Km 62+500 LHS)	Community Land	1.042396°	35.626781°
MS 3	Chesongoch Hill - (Km 72+500 LHS)	Community Land	1.131977°	35.642741°
MS 4	Kopongeny area - (Km 59+000 RHS)	Community Land	1.014137°	35.643390°
MS 5	Kandau Hill - (Km 59+000 LHS)	Community Land	1.015411°	35.614289°
MS 6	Koitolial Hill - (Km 47+600 LHS)	Community Land	0.934003°	35.619831°
MS 7	Kimarock Hill - (Km 35+500 RHS)	Community Land	0.833777°	35.600125°
MS 8	Kamaram/Matany area - (Km 25+000 LHS)	Community Land	0.747468°	35.578243°
MS 9	Kamogich Area - (Km 16+000 RHS)	Community Land	0.665604°	35.559661°
MS 10	Kapshakei area - (Km 3+800 LHS)	Community Land	0.558763°	35.544375°

**Table 6- 7; Details of Identified Material/Gravel Sites**

## Hard Stone

Three existing quarries were identified: Cibien and Dittman near Eldoret town in Uasin Gishu County, as well as the Rubis quarry located 6 kilometers from the starting point of the project road (Biretwo center) in Baringo County. Additionally, two more hardstone sources were found within close proximity to the project road.

### 6.6.2.1 Coarse aggregates Testing

The aggregate sources sampled were investigated for possible use as follows:

- As coarse aggregates in concrete works;
- Graded Crushed Stones (GCS) for base and sub base layers;
- Bituminous mixes (AC and DBM) work; and,
- Surface dressing.

**Sampling and testing of course aggregates**

Samples of aggregate nominal size 6/10, 10/14 and 14/20 were obtained from quarries, while hardstones were sampled as boulders and taken to MTRD central laboratories for testing. The boulders were first subjected to crushing before testing. The following tests were carried out.

- i. Aggregate Crushing Value (ACV);
- ii. Los Angeles Abrasion (LAA);
- iii. Sodium Sulphate Soundness (SSS);
- iv. Aggregates Impact Value (AIV)
- v. Specific Gravity (SG);
- vi. Water Absorption (WA); and,
- vii. Flakiness Index (FI)
- viii. Bitumen Affinity.

**a) Fine aggregates**

Fine aggregates can either be natural River sand, crushed gravel or crushed rock sand.

**Crushed Rock Sand**

Crushed rock sand samples were collected from existing quarries, Dittman quarry and Cibien quarry and subjected to the following laboratory tests:

- i) Grading;
- ii) Silt & Clay Content;
- iii) Sand Equivalent;
- iv) Bulk Density;
- v) Sulphates as  $\text{SO}_3$  % m/m;
- vi) Chlorides as NaCl % m/m; and,
- vii) Organic Content, % m/m.

**b) Water For Construction**

Five sources of water were identified as follows:

- i. Chesongoch River;
- ii. Mogil River;
- iii. Embotungo River;
- iv. Aror River; and,
- v. Kessup River.

**2.1.5.1 Use of Borrow and Quarry Sites**

The contractor will be entirely responsible for locating suitable sources of materials complying with the Standard and Special Specifications and for the procurement, mining, haulage to site of these materials and all costs involved therein. The Contractor will make available any land for quarries, borrow pits, stockpiles and spoil areas, except for those areas in road reserves specifically approved by the resident engineer. Any areas used for spoil dumps or stockpiles within the road reserve forming the site of the works by the Contractor shall be subject to the approval of the RE. The contractor will also establish and maintain transport routes for transporting any materials to final destinations.

In addition, the contractor will be required to conduct ESIA (which will include rehabilitation plan) for all materials borrow and quarry sites and obtain requisite permits/licenses as per NEMA requirements.

**2.1.6 Project Costs**

The construction of the proposed road project is estimated to cost **KES 11.4 Billion** including the cost of ESMP implementation. This ESMP cost is provided in chapter 9 of this report.

### 3 RELEVANT POLICY, LEGAL AND REGULATORY FRAMEWORK

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#### 3.1 Policy Framework

##### 3.1.1 Environment Policy, 2014

The aim of the Environment Policy (Sessional Paper No.10 of 2014) is to ensure that environmental concerns are part of the national planning and management processes; and that guidelines are provided for environmentally sound development. The policy has seven broad goals under which guiding principles are mainstreamed to achieve conservation and management of the natural resources (forest ecosystems, arid and semi-arid lands ecosystems etc. that have wildlife resources, water resources, grazing lands, minerals, soils therein). Some of the principles outlined in the policy include right to a clean and healthy environment, ecosystem approach, total economic value, sustainable resource use, equity, public participation, precautionary principle, polluter pays principle, international cooperation, community empowerment, benefit sharing and good governance.

##### Relevance

The policy promotes use of EIA as an innovative environmental management tool. It also calls for the Government of Kenya (GoK) to ensure that all significant development projects are subjected to EIA and regular environmental audits. This EIA Study Report (and its ESMP that will be subjected to regular audits) was prepared to promote sustainable development as envisaged in the policy.

##### 3.1.2 Vision 2030

Kenya Vision 2030 is the country's new development blue print covering the period 2008 to 2030. The blueprint aims at transforming Kenya into "a newly industrializing, middle-income country providing a high quality of life to all its citizens in a clean and secure environment." The Vision is anchored on three key pillars: Economic; Social; and Political Governance.

The political governance pillar envisages public participation during project development; while social pillar envisages development through equitable social development. Poor road access to the north-western parts of Kenya constraints the social and economic development prospects of the area. The Vision 2030 policy anticipates possible environmental impacts during roll out of flagship projects requiring mitigation measures be put in place in line with the requirements of the Environmental Management and Coordination Act (EMCA), 1999 and the Environmental Management and Coordination (Amendment) Act, 2015. Hence, KeNHA should ensure environmental care through mitigation of impacts as part of project achievement.

##### Relevance

The preparation of the ESIA for the proposed Road aims at observance of the principle policy directives of Vision 2030.

##### 3.1.3 National Land Policy, 2009

The policy is presented to provide goals and direction for the current and future management of land in Kenya. It outlines the measures and guidelines which the government shall implement to achieve optimal utilization and management of land, and from which laws governing land administration and management shall be drawn. The Policy and its implementation is guided by the philosophy that land is not just a commodity that can be traded in the market but has multiple values which should be protected by both policy and law.

Clause 51(d) of the policy states that government to establish development control standards, processes and procedures that are efficient, transparent and accountable considering International Conventions and national policies relating to the sustainable use of land and the preservation of environmental values. The policy in Section 3.4.3.4 promotes Environmental Management and Audit as land management tools and encourages public participation in the process.

##### Relevance

This ESIA has espoused the policy recommendations key among them compliance with EMCA as the harmonized framework for sustainable use of land.

#### **3.1.4 Integrated National Transport Policy (INTP), 2009**

The policy scopes the main challenges associated with transport infrastructure planning, development and management, sectoral institutional and regulatory frameworks, safety and security, gender mainstreaming, and environmental considerations, among others.

The policy perceives that currently there are inadequate measures to check on the damage on the environment (gaseous pollution, vibration and noise among others) and that efficient road transport management will minimize pollution by traffic. The policy advocates for use of more energy efficient and less polluting modes of transport. It recognizes the need to enforce EMCA at all stages of road infrastructure development and management that will lead to reduced environmental impacts from road infrastructure provision and operation as well as better utilization of road building materials.

##### **Relevance**

The ESIA through the ESMP has scoped foreseeable impacts and corresponding mitigations at construction and operation stages.

#### **3.1.5 The National Biodiversity Strategy, 2007**

The overall objective of the National Biodiversity Strategy and Action Plan (NBSAP) is to address the national and international undertakings elaborated in Article 6 of the Convention on Biological Diversity (CBD). It is a national framework of action to ensure that the present rate of biodiversity loss is reversed and the present levels of biological resources are maintained at sustainable levels for posterity. The general objectives of the strategy are to conserve Kenya's biodiversity to sustainably use its components; to fairly and equitably share the benefits arising from the utilization of biological resources among the stakeholders; and to enhance technical and scientific cooperation nationally and internationally, including the exchange of information in support of biological conservation.

##### **Relevance**

The project falls in an area with no protected habitats. However, there are some wildlife outside the protected areas and should the project encounter endangered flora and fauna then their conservation is of primary importance.

#### **3.1.6 Gender Policy, July 2011**

The objective of this policy is to mainstream gender perspectives in the national development process in order to improve equality and related social, legal/civic, economic and cultural conditions in Kenya. The policy encourages integration of measures that ensure gender-specific vulnerabilities and capacities of men and women are systematically identified and addressed.

The implementation of project will create job opportunities; through gender mainstreaming the problem of marginalizing women during employment may be addressed. Economic empowerment of women in the counties is a concern as most of them are usually housewives as identified in the counties' CIDPs.

### **3.2 Legal Framework**

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#### **3.2.1 The Constitution of Kenya, 2010**

The Constitution of Kenya, 2010; in Part 2 - Environment and Natural Resources stipulates the obligation of the State in respect of the environment. According to Article 69, the State shall:

- Ensure sustainable exploitation, utilization, management and conservation of the environment and natural resources, and ensure the equitable sharing of the accruing benefits;

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

"Every person has the right to a clean and healthy environment", which includes:

- The right to have the environment protected for the benefit of present and future generations through legislative and other measures, particularly those contemplated in Article 69: and
- The right to have obligations relating to the environment fulfilled under Article 70".

Thus, every activity or project undertaken within the republic must be in accordance with the Constitution as well as adherence to the entitlement of every individual to a clean and healthy environment, as envisaged in the Constitution.

This Report seeks to ensure prior identification and adoption of mitigation strategies against impacts to ensure protection of citizen's right to a clean and healthy environment under the Bill of Rights.

### **3.2.2 Environmental Management and Coordination Act (EMCA)**

EMCA, 1999 (The principal Act) and the Environmental Management and Coordination (Amended) Act, 2015 provide the main legal and institutional framework under which the environment in general is to be managed. EMCA is implemented by the guiding principle that every person has a right to a clean and healthy environment and can seek redress through the High court if this right has been, is likely to be or is being contravened.

Section 58 of the Act makes it a mandatory requirement for an EIA study carried out by KeNHA to implement projects specified in the Second Schedule of the Act. Such projects have a potential of causing significant impacts on the environment. Similarly, section 68 of the same Act requires operators of existing projects or undertakings to carry out Environmental Audits (EA) in order to determine the level of conformance with statements made during the EIA study. KeNHA will submit the EIA and EA reports to NEMA for review and necessary action.

The Environmental Management and Co-ordination (Amendment) Act, 2015 has repealed some of the sections in the principal Act. EMCA provides for the establishment of appropriate legal and institutional framework for the management of the environment and for matters connected therewith and incidental thereto. EMCA outlines the requirements for EIA, environmental audits, monitoring procedures and environmental-quality standards.

This ESIA Report has been prepared in accordance with the provisions of EMCA. The following regulations under EMCA operationalize various provisions under the Act.

#### **3.2.2.1 Environmental (Impact Assessment and Audit) Regulations, 2003 and Environmental (Impact Assessment and Audit) (Amendment) Regulations, 2016**

Regulation 3 of the Environmental (Impact Assessment and Audit) Regulations state that "the Regulations should apply to all policies, plans, programmes, projects and activities specified in Part III and V of the Regulations". The road construction project falls under the Medium-Risk Project (4) Transportation and related infrastructure projects including— (a) all new major roads including trunk roads. It is under this premise that this ESIA Report was prepared for submission to NEMA.

#### **3.2.2.2 Environmental Management and Coordination (Air Quality) Regulations, 2014**

These Regulations cover air quality standards that are requisite to protect human health and allow an adequate margin of safety. These Regulations specify priority air pollutants, mobile and stationary sources as well as stipulates emission standards.

The emissions/pollution likely to result from road construction activities (such dust and exhaust emissions from running vehicle and equipment engines) have the potential of polluting the immediate atmospheric environment. Bush clearing, earthworks and bulk delivery of construction material, if unmanaged may result in generation of dust. Thus, need for strict adherence to these Regulations and standards therein in preventing/monitoring possible pollutants and managing sources. The table below shows the WHO 2021 air pollution guidelines.

**Table 3-1 WHO 2021 air pollution guidelines**

POLLUTANT	AVERAGING TIME	WHO 2021 AIR QUALITY GUIDELINE
PM <sub>2.5</sub> (µg/m <sup>3</sup> )	Annual	5
	24-hour	15
PM <sub>10</sub> (µg/m <sup>3</sup> )	Annual	15
	24-hour	45
O <sub>3</sub> (µg/m <sup>3</sup> )	Peak season	60
	8-hour	100
NO <sub>2</sub> (µg/m <sup>3</sup> )	Annual	10
	24-hour	25
	1-hour	200
SO <sub>2</sub> (µg/m <sup>3</sup> )	24-hour	40
	10-minute	500
CO (mg/m <sup>3</sup> )	24-hour	4
	8-hour	10
	1-hour	35
	15-minute	100

### 3.2.2.3 Environmental Management and Coordination (Noise and Excessive Vibration Pollution) (Control) Regulations, 2009

These Regulations provide thresholds within specified environments for noise and excessive vibrations. It includes provisions on noise from related sources such as vibration of machinery, motor vehicles, blasting activities, and construction at night. Sensitive areas such as mosques, schools occur along the project road and may be affected by noisy activities during road construction phase. Construction activities such as compaction of the road surface, blasting activities at quarries, movements of various mobile construction equipment (such as mixing plant) as well as powering generator (at night) have a potential of exceeding permitted levels for residential and mixed residential areas as per the Regulation.

Measures shall be put in place to ensure the permissible noise levels by the NEMA regulation are not exceeded by the project road implementation activities. Where NEMA guidelines has not specified acceptable limitations, the WHO guidelines will be used. These regulations are summarized in the table below.

**Table 3-2 Comparison between WHO and NEMA Noise Guidelines**

Specific Environment	Critical Health Effects	LAeq dB(A) WHO	Time base (hours)	LAeq dB(A) NEMA	Time base (hours)
Outdoor living area	Serious annoyance Moderate annoyance	55 50	16 16	45 35	14 14
Indoor dwelling Inside bedroom	Speech interference Sleep disturbance	35 30	16 8	-	-
Outdoor bedroom	Sleep disturbance	45	8	35	-
School classroom Indoor	Speech and communication	35	During class time	Day 60 Night 35	14 14
School playground outdoor	Annoyance External	55	During play	45	Day
Hospital, treatment room indoor	night time	30	8	-	-

	daytime	30	16		
Industrial, Commercial and traffic areas	Hearing impairment	70	24	60	12
Ceremonies, festivals entertainment events	Hearing impairment	100	4	-	-

### 3.2.2.4 Environmental Management and Coordination (Waste Management) Regulations 2006

These Regulations basically cover all categories of wastes that include solid waste, Industrial waste, hazardous waste, toxic substances and waste, biomedical waste and radio-active substances. These Regulations also vest responsibilities to the generator of the wastes especially with regards to any consequent environmental impacts.

Construction of project road will generate waste at different forms and quantities such as form woodwork, empty bitumen drums, excavated spoil material, wrappers, plastic containers, cuttings (plastic/metal), used vehicle tyres, among others. Wash-down from equipment and vehicle maintenance, waste from septic facilities and used oil and chemical substances are some of the liquid waste expected to be generated at project construction stage. The wastes generated from the activities have the potential of contaminating the immediate ground surfaces and atmosphere; thus, need for strict adherence to these Regulations in dealing with all the wastes and handling of waste streams.

### 3.2.2.5 Environmental Management and Coordination (Water Quality) Regulations 2006

The regulation provides for sustainable management of water resources including prevention of water pollution and protection of water sources (lakes, rivers, streams, springs, wells and other water sources). It is an offence under Regulation No. 4 (2), for any person to throw or cause to flow into or near a water resource any liquid, solid or gaseous substance or deposit any such substance in or near it, as to cause pollution. Regulation No. 11 further makes it an offence for any person to discharge or apply any poison, toxic, noxious or obstructing matter, radioactive waste or other pollutants or permit the dumping or discharge of such matter into the aquatic environment unless such discharge, poison, toxic, noxious or obstructing matter, radioactive waste or pollutant complies with the standards for effluent discharge into the environment. These regulations are summarized in the table on the next page.

The proposed road project will require water and also generate some waste water from vehicles oil, asphalt plant, asphalt products and at the batching site. In addition, the camp sites may also produce waste water inform of effluents and kitchen waste water. There are numerous seasonal water crossings along the project road that need protection from pollution through compliance with the waste water discharge standards specified in this regulation.

Table 3-3: NEMA Waste Water Discharge Guidelines

Parameter	Units	Discharge into public sewers	Discharge into open water bodies
PH	-	6.0 – 9.0	6.0 – 9.0
BOD (5 days at 20o C) not to exceed	Mg/l	500	20
COD not to exceed	Mg/l	1000	50
Total suspended solids not to exceed	Mg/l	500	30
n-hexane extract not to exceed	Mg/l	Nil	30
Oils(mineral, animal & vegetable)	Mg/l	10	5
Total phenol not to exceed	Mg/l	10	2
Copper (Cu) not to exceed	Mg/l	1.0	0.05
Zinc (Zn) not to exceed	Mg/l	5.0	0.5
Lead (Pb) not to exceed	Mg/l	1.0	0.1
Arsenic (As) not to exceed	Mg/l	0.2	0.002
Total Mercury (Hg) not to exceed	Mg/l	0.05	0.005
Alkyl mercury not to exceed	Mg/l	0.01	0.001
PCB (Polychlorinated biphenyl) not to exceed	Mg/l	Nil	0.003
Pesticides residues not to exceed	Mg/l	Nil	0.05
Sulphates not to exceed	Mg/l	1000	500
Dissolved manganese (Mn)	Mg/l	-	1.0
Chromium (total)	Mg/l	1.0	0.1

Parameter	Units	Discharge into public sewers	Discharge into open water bodies
Chloride not to exceed	Mg/l	1000	1000
Fluoride not to exceed	Mg/l	-	2.0
Coliform bacteria	-	-	1000/100ml
Free ammonia not to exceed	Mg/l	2.0	0.2
Sulphides (S) not to exceed	Mg/l	2.0	0.1
Cadmium (Cd) not to exceed	Mg/l	0.5	0.05
Cyanide (CN) total not to exceed	Mg/l	0.5	0.1
Organic phosphorous not to exceed	Mg/l	30	1.0
Chromium six (Cr 6) not to exceed	Mg/l	0.5	0.005
Total dissolved solids not to exceed	Mg/l	3000	1200
Selenium (Se) not to exceed	Mg/l	1.0	0.05
Nickel (Ni) not to exceed	Mg/l	3.0	1.0
Barium (Ba) not to exceed	Mg/l	10	2.0
Temperature not to exceed	-	+/- 2o of the ambient temperature of the sewer	+/- 2o C of ambient temperature of the water body
Oil/ grease	Mg/l	No trace	Nil/ no trace
Toxic substances	Mg/l	Nil	Nil
Odor	-	-	Not objectionable to the nose
Color	-	-	Not objectionable to the eye or not to exceed 5 mg Pt/l

### 3.2.3 Water Act, 2016

The Water Act 2016 provides for the management, conservation, use and control of water resources and for acquisition and regulation of rights to use water; to provide for the regulation and management of water supply and sewerage services. Under this Act, ownership of water resources is vested and held in trust with the national government. Nonetheless, every person has a right to access water resources that is administered by the national government.

Road construction activities will need bulk supply of water for mixing and curing concrete, suppressing dust, cleaning and maintenance of equipment, among others. The Act promotes water resources management through soil and water conservation, protection, development and utilization of water resources. The construction of the project road will have to apply water resource management measures since the project area is predominantly arid.

Various permits from Water Resources Authority (WRA) will be required for proposed water abstraction methods, whether surface or ground water. In consideration that the project will be located in counties that have scarcity of water, the contractors will be required to employ water efficient technologies during construction.

### 3.2.4 Kenya Roads Act, 2007

Provides for the establishment of the Kenya National Highways Authority, the Kenya Urban Roads Authority and the Kenya Rural Roads Authority, to provide for the powers and functions of the authorities and for connected purposes.

The functions of KeNHA include the management, development, rehabilitation and maintenance of international trunk roads linking centres of international importance and crossing international boundaries or terminating at international ports (Class A road), national trunk roads linking internationally important centres (Class B roads), and primarily roads linking provincially important centres to each other or two higher-class roads (Class C roads).

**Part IV, Sections 22 to 28** provides for the powers of the authority as a statutory body to; -

- Maintain, operate, improve and manage the roads under its jurisdiction;
- Construct new roads;



- Measure and assess the weights, dimensions and capacities of vehicles using any road and provide measures to ensure compliance with rules relating to axle load control, other provisions of the Traffic Act (Cap. 403) and any regulations under this Act; and
- Provide such amenities or facilities for persons making use of the services or facilities provided by the Authority as may appear to the Authority necessary or desirable.

**Part IV (29)** on compensation further emphasizes that in exercising the powers conferred by sections 23, 24, 25, and 26, an Authority shall do as little damage as possible, and, where any person suffers damage, no action or suit shall lie against the Authority, but he shall be entitled to such compensation there for as may be agreed between him and the concerned Authority, or, in default of agreement, as may be determined by an arbitrator appointed by the Chief Justice.

#### Relevance

In respect to the above Act, the proposed road is under the jurisdiction of KeNHA. It has identified the proposed road project as a priority project. This will focus on reducing linking up the neighbouring counties and nations which will eventually contribute towards the growth of the national economy. Further to this, KeNHA has adhered to the provisions of Part IV (29) of the Act by requesting for the design department to limit the road design, as far as feasible, within the existing road alignment in order to minimize damage on personal or public property along the project roads.

#### 3.2.5 Traffic Act, 2014

The Traffic Act relates to traffic rules and management of traffic on all public roads. Towards ensuring safety on the roads, the following permits/licenses will be relevant especially for the contractor's compliance during the construction phase.

- Drivers licenses;
- Automobile insurance covers; and
- Permit to transport abnormal loads.

#### 3.2.6 Occupational Health and Safety Act (OSHA), 2007

This Act covers the health, safety and welfare of persons lawfully present at workplaces. Provisions in the Act are designed to allow measures against potential hazards and the absence of risks to health at the workplace. The OSHA 2007 was enacted to assure the health, safety and welfare of persons employed in workplaces, and for matters incidental thereto and connected therewith.

- Part II of the Act provides the General Duties that the Occupier must comply with respect to health and safety in the workplace. Such duties include undertaking S&H risk assessments, S&H audits, notification of accidents, injuries and dangerous occurrences, etc., including ensuring that any incidents are entered in the General Register. In case of a fatal accident, the area Safety and Health Office should be informed within 24 hrs. and a written notice to the same within 7 days. Part II also requires that every occupier shall establish a safety and health committee at the workplace in accordance with regulations prescribed by the Minister if— (a) there are twenty or more persons employed at the workplace; or (b) the Director directs the establishment of such a committee at any other workplace. A number of sections under this part shall be applicable to the proposed project.
- Part III of the Act provides the Administrative framework for supervision of the Act.
- Part IV deals with the enforcement provisions that the DOSHS has been provided with under the Act. It discusses the instances when Improvement and Prohibition Notices can be issued as well as the powers of OSH officers. This part of the Act will be mandatory for the Occupier to comply with for the proposed project.
- Part V of the Act requires all workplaces to be registered with the DOSHS. This part will be applicable for the proposed project as the Occupier will have to apply for registration of their project with the DOSHS on completion of the construction phase and before the operational phase of the project. During the construction phase, the Contractor shall be required to register the project site as a construction site and be registered in the DOSHS database.
- Part VI of the Act lists the requirements for occupational health provisions which include cleanliness, ventilation, overcrowding, etc. This part of the Act will apply to the Occupier during all phases of the project.

- Part VII of the Act contains provisions for the safe operation of machinery and includes all prime movers and transmission equipment. Additionally, this part includes the safe operation of cranes, chains, ropes, lifting tackles, pressure vessels and their statutory examination by DOSHS Approved Persons. This part of the Act will apply to the proposed project during the construction and operational phases respectively.
- Part VIII of the Act contains provisions for general safety of a workplace especially operation and safety of plant, machinery and equipment, including fire safety. This part of the Act will apply to the proposed project during the design, construction and operational phases respectively of the project.
- Part IX of the Act deals with Chemical Safety. This will be applicable to the proposed project as it will receive, store, handle and distribute materials such as bitumen, petroleum fuels, lubricants, chemicals, etc. The Occupier will be required to have MSDS sheets for all hazardous materials handled in the workplace including labeling of all receptacles containing such hazardous materials.
- Part X of the Act deals with the General Welfare conditions that must be present during the construction and operational phase of the project. Such conditions include first aid facilities and equipment, supply of drinking water, accommodation for clothing, ergonomics, etc. This section of the Act will be applicable to the proposed project.
- Part XI of the Act contains Special Provisions on the management of health, safety and welfare. These include work permit systems, PPE requirements and medical surveillance. All sections of this part of the Act will be applicable to the proposed project during the construction and operational phase.
- Part XII of the Act deals with Special Applications such as platforms erected over water and workplaces where steam boilers or hoists and lifts are used. This part of the Act will be applicable to the proposed project.
- Part XIII of the Act stipulates various fines and penalties associated with non-compliance with the Act. It includes those fines and penalties that are not included in other sections of the Act and will be important for the Occupier to read and understand the penalties for non-compliance with S&H provisions.

During the implementation of the project road, the project contractor will occupy construction camps, mobilize equipment and hire construction workforce. Specific health, safety and welfare measures to be implemented include:

- Ensure all relevant permits and licenses are obtained prior to commencement of the works,
- Train all workers on OHS measures;
- Provision of First Aid kits, and training of First Aiders
- Establishing the Safety and Health Committees
- Carry out medical examinations (Pre- employment and Annual Audiometric, Lung function and Clinical) for specific workers exposed to specific work-related hazards
- Appointment of qualified Safety and Health adviser
- Avail required personal protective equipment (PPE) at workplaces such as hand gloves, safety boots, reflective jackets, nose mask and helmet.
- Inspection of construction equipment to ensure that they are in good working condition before beginning a job. In addition, the contractor will ensure that regular inspections and maintenance of the equipment are conducted accordingly
- Carry out Annual OSH Audit & Fire Audits
- Obtain relevant Permits and licenses

### **3.2.7 Subsidiary Legislations under OSHA Chapter 514**

#### **3.2.7.1 The Factories and Other Places of Work (Hazardous substances) Rules 2007**

These Rules are prepared to:

- Mitigate against workplace exposure of persons to potentially hazardous substances;
- Put in place safety standards against hazardous exposure; and
- Lower performance of work in hazardous conditions or circumstances.

There is need to properly handle all the hazardous Substances that result from the construction activities of the project road. The provisions will help to curb against health hazards arising from any of the harmful substances that may be in use.

### **3.2.7.2 The Factories and Other Places of Work (Noise Prevention and Control) Rules L.N 25 Of 2005**

These Rules make a provision for the noise levels that a worker should be subjected to at the workplace. Further, the Rules provide for noise prevention program where noise levels exceed 85 dB (A) at the workplace. In situations where the noise levels exceed permissible levels, the occupier is required to develop, rollout and implement a written hearing conservation program.

Deployment of earth moving machines and vehicles at the onset of implementation of project road (during clearing works and bulk delivery of material) has the potential of emitting noise. This legislation provides mitigation to excessive noise levels especially those beyond 85 dB(A) at the workplace.

### **3.2.7.3 The Factories and Other Places of Work (Medical Examinations Rules) Rules L.N.24 of 2005**

These Rules provide for the conducting of medical exams on various occupations including work involving exposure to noise. There should be Pre-employment and annual repeat examinations within two weeks where abnormal examination results are noted. This is to ensure consistency. Examinations are to involve clinical examinations, biological monitoring and other necessary tests depending on the type of exposure.

The regulations and OSHA prescribe the activities under which workers shall undergo medical examination. These include noisy workplaces exceeding threshold limits, and work involving exposure to tar pitch, bitumen and creosote.

### **3.2.7.4 The Factories and Other Places of Work (Fire Risk Reduction) Rules L.N.59/2007**

These Rules seek to promote fire safety measures at every workplace, process and operations by:

- Vesting some responsibilities to the occupier;
- Recommendations on flammable substances on storage, marking and labelling, handling, monitoring (flammable substances), ventilation;
- Housekeeping as well as removal of products and waste;
- Machinery/equipment layout as well as Fire escape exits;
- Control of spread of smoke;
- Means of evacuation;
- Formation of fighting teams;
- Training in fire safety;
- Functions of firefighting team;
- Fire detection system; and
- Maintenance inspection & testing of cylinders.

During implementation of the project road, the employer/contractor will be required to comply with these regulations by conducting annual fire audits (site offices, camps and establishments), acquiring fire safety certificates, provision of trained fire marshals and conduct of annual fire drills of the resident workforce will have more than 100 staff including the employer's representative; the contractor is expected to form representative SHE committees to perform their roles in accordance with the Rules.

### **3.2.8 Employment Act, 2007**

The Act declares and defines the fundamental rights of employees, to provide basic conditions of employment of employees, to regulate employment of children, and to provide for matters connected with the foregoing. The provides the basic minimum conditions for employment to include hours of work, water (for use at the place of work), food (employee properly fed) and medical attention.

At construction stage, the project contractor will hire both full-time and casual staff and the prevailing basic minimum conditions of employment will have to observed.

### **3.2.9 The Labour Institutions Act**

The Act provides for establishment of labor institutions in Kenya such as the National Labor Board, Labor Committees (e.g. the Work Permits Committee, Trade Disputes Committee etc.), The Industrial Court and the Wages Council.

The applicable minimum wage requirements in Kenya classified by urban, per-urban and rural areas are usually gazetted every year or every other year as regulations under this Act. It will be important for the selected project contractor to abide by this law for fair wages of those engaged.

### **3.2.10 The Labour Relations Act**

This is an Act of Parliament to consolidate the law relating to trade unions and trade disputes, to provide for the registration, regulation, management and democratisation of trade unions and employers organisations or federations, to promote sound labour relations through the protection and promotion of freedom of association, the encouragement of effective collective bargaining and promotion of orderly and expeditious dispute settlement, conducive to social justice and economic development and for connected purposes.

Workers freedom of association, procedures for establishment and registration of trade unions and employers' organisations and related mechanisms are provided in this Act.

KeNHA, its contractors and sub-contractors will be expected to comply with the provisions of this act when their employees exercise these rights.

### **3.2.11 Work Injury Benefits Act (WIBA) Chapter 236**

This Act provides for compensation to employees for work related injuries and diseases contracted in the course of their employment and for connected purposes.

In the event of injury, during the implementation of the project road, the employer/contractor will be required to compensate workers in accordance with the Act. The contractor must therefore obtain and maintain relevant insurance policies in respect of this liability.

### **3.2.12 Wildlife Conservation and Management Act, 2013**

This Act through rules and regulations seeks to promote the protection, sustainable conservation and management of wildlife resources within the Country and related matters. The Act recognizes and vests a range of responsibilities to different agencies associated with management of biodiversity and their refugia. The Act takes cognizance that the conservation, protection and management of the wildlife environment shall be in conformity with the provisions of the Environmental Management and Coordination Act. In addition, the Act in its schedules have listed legally protected areas and various species of wildlife under differing categories of conservation significance (i.e. vulnerable, endangered etc.) and whose handling requires authority from the Kenya Wildlife Service (KWS).

Although there is no legally protected wildlife area in the immediate project alignment, sections of the road traverse some areas with wild vegetation and inhabited by some wildlife species like wetlands, although not close to the road. These areas are of interest with regard to wildlife conservation and protection.

### **3.2.13 Public Health Act, Chapter 242**

The Act seeks to protect and promote human health as well as prevent, restrain or suppress infectious, communicable or preventable diseases throughout the Country. This Act provides the impetus for a healthy environment and gives regulations to waste management, pollution and human health.

The Act makes it an offence for any landowner or occupier to allow nuisance or any other condition liable to be injurious or dangerous to health to prevail on his land. This would include effluent and solid waste as sources of nuisance.

#### **3.2.13.1 The Public Health (Drainage and Latrine) Rules**

Rule 85 provides that every owner or occupier of every workshop, workplace or other premises where persons are employed shall provide proper and sufficient latrines for use by employees.

Rule 87 requires every contractor, builder or other person employing workmen for the demolition, construction, reconstruction or alteration of any building or other work in any way connected with building to provide in approved position sufficient and convenient temporary latrines for use by such workmen. Rule 91 provides that no person shall construct a latrine in connection with a building other than a water closet or a urinal, where any part of the site of such building is within 200 feet of a sewer belonging to the local authority which is at a suitable level, and where there is sufficient water supply.

The project appointed contractor is expected to observe these provisions including ensuring adequate temporary sanitation facilities for workers.

### **3.2.14 HIV/AIDS Prevention and Control Act, 2006**

This law requires HIV/AIDS education to be conducted in the work place. Road construction works by their nature increase risks of HIV/AIDS spread between workers and host communities and even among workers themselves in camps.

The project appointed contractor is expected to institute HIV/AIDS awareness and prevention plan among his staff and the host communities through service providers approved by the local public health departments. This requirement shall be incorporated in the tender documents to ensure compliance is achieved by bidders.

### **3.2.15 National Construction Authority Act, 2011**

This Act establishes the National Construction Authority (NCA), meant to oversee the construction industry and coordinate its development. The authority is meant to promote quality assurance of the construction industry; accredit and register contractors as well as accredit and certify skilled construction workers and construction site supervisors.

During project implementation, the appointed contractor and conduct of construction works will be required to meet registration and approval requirements with NCA.

### **3.2.16 Land Act (No.6 of 2012)**

This Act is intended to create harmony among the land laws to allow for a sustainable administration and management of land and related resources such as environmentally sensitive areas, heritage sites within public land. As part of environmental management of land resources in areas earmarked for development, the Act requires an Environmental Impact Assessment as per EMCA Act.

The pastoralist lifestyle of the locals in the project area and the reliance on land resources (pasture and water sources) in an arid environment makes it primary to sustainably utilize the resources during project activities especially identified material sites and water sources.

### **3.2.17 The National Lands Commission Act, 2012**

This is an Act of Parliament to make further provisions as to the functions and powers of the National Land Commission (NLC), qualifications, and procedures for appointments to the commission; to give effect to the objects and principles of devolved government in land management and administration, and for connected purposes.

Compulsory land Acquisition in Kenya is handled by the NLC. Other mandates of the Commission include management of public land on behalf of the national and county governments.

The Act also mandates the Commission to:

- ensure that public land and land under the management of designated state agencies are sustainably managed for their intended purpose and for future generations;
- administer all unregistered trust land and unregistered community land on behalf of the county government;
- initiate investigations, on its own initiative or on a complaint, into present or historical land injustices, and recommend appropriate redress. To this end, it is empowered to encourage the application of traditional dispute resolution mechanisms in land conflicts.

These roles are all relevant to the planning, implementation, monitoring and evaluation of the envisaged project resettlement process and are elaborated in the separate project RAP document.

### **3.2.18 The Prevention, Protection and Assistance to Internally Displaced Persons and Affected Communities Act, 2012**

This is an Act of parliament that applies to all internally displaced and affected communities by the development projects or programmes. The prevention, protection and assistance to internally displaced persons and affected communities are outlined in the following sections of the Act;

Part II: Principle of prevention, protection and assistance; The Government and any other organization, body or individual when responding to a situation of internal displacement and the needs of internally displaced persons under this Act, shall consider their rights and freedoms as set out in the Bill of Rights of the Constitution.

Part IV: Public awareness, sensitization, training and education; The national Government, in order to prevent future instances of internal displacement in Kenya, shall promote public awareness about the causes, impact, and consequences of internal displacement as well as on means of prevention, protection and assistance to internally displaced persons through a comprehensive nation-wide education and information campaign.

Part V: Provisions relating to development and displacement; 21. (1) Subject to the Constitution, the Government shall abstain from displacement and relocation due to development projects or projects to preserve the environment and protect persons from displacement by private actors. Finally, (4) The Government shall ensure that the displacement is carried out in manner that is respectful of the human rights of those affected; taking in particular into account the protection of community land and the special needs of women, children and persons with special needs. This requires in particular-(a) Full information of those affected and their effective participation, including by women, in the planning, management of the displacement, and in defining suitable durable solutions; and (b) Provision of safe, adequate and habitable sites.

The proposed project will result in some unavoidable land take and economic displacement of individuals trading along the road reserves. The RAP study and implementation shall consider provisions of this Act in addition to the relevant AfDB policy OS 2 - Involuntary resettlement land acquisition, population displacement and compensation.

### **3.2.19 The Land Registration Act, 2012**

This is an Act of Parliament intended to revise, consolidate and rationalize the registration of titles to land, to give effect to the principles and objects of devolved government in land registration, and for connected purposes.

The project is envisaged to affect some private properties and communal land. Provisions under this Act are essential to the project RAP as it is expected that the documentation for the affected land parcels will have to be updated in line with the laws of Kenya to show the changes due to the sections acquired for the road implementation. Such provisions are elaborated separately in the project RAP report.

### **3.2.20 Land and Environment Court Act, 2012**

A Land and Environment Court is established under section 4 of the Environment and Land Court Act No. 19 of 2011. The court has the jurisdiction to hear any other dispute relating to environment and land. The Court has original and appellate jurisdiction to hear and determine all disputes in accordance with Article 162(2)(b) of the Constitution and with the provisions of the Act or any other written law relating to environment and land. The court is also empowered to hear cases relating to public, private and community land and contracts, choses in action or other instruments granting any enforceable interests in land.

#### **Relevance**

In matters relating to land disputes that may arise between KeNHA and the local community or county government during requisite private or community land acquisition for the road development or local material sites, the court has powers to deal with such disputes relating to land administration and management.

**3.2.21 Land Laws (Amendment) Act, 2016**

This Act amends the laws relating to land to align them with the Constitution, to give effect to Articles 68(c)(i) and 67(2)(e) of the Constitution, to provide for procedures on evictions from land, and for connected purposes. The Act has repealed sections of the following Acts:

- Land Registration Act, 2012
- Land Act, 2012
- National Land Commission Act, 2012

At implementation stage, the project will adhere to land requirements under the Act especially where land take is necessary from private owners.

**3.2.22 Physical Planning Act, 2019**

This is the main Act that governs land planning and it is required that all proposed developments must be approved by the respective local authority and certificate of compliance issued accordingly. Section 30(1) requires a developer in any local authority to be granted development permission by the respective local authority, failure to which heavy fines will ensue; and the land registrar shall decline to register such a document. No sub-division of private land shall take place within a local authority unless the sub-division is in accordance with the requirements of an approved local physical development plan.

The project appointed contractor will seek approval for the construction of the temporary camp (s) KeNHA will be required to discuss its development plans (road designs) with the respective County Physical Planning Officers, Liaise with the local governments in development control along the corridor.

**3.2.23 Climate Change Act, 2016**

This is 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 purposes. Part IV section 15 provides on how Climate change should be integrated in every public-sector entity. A public entity is expected to observe the Act together with provisions of the National Climate Change Action Plan. The National Climate Change Action Plan Section 4.3.1 (d) has specified how the road infrastructure sector can contribute towards the achievement of low carbon climate resilient sustainable development.

**Relevance**

KeNHA will be required to work closely with the counties to ensure that the project is in line with the set-out strategies by the county in mitigating climate change as per the Act.

**3.2.24 Urban Areas and Cities Act, No. 13 of 2011**

In Sections 27 and 28, the Act empowers County Government to appoint a Manager to manage or prohibit all places of work that by reason of smoke, fumes, or chemical gases, dust smell, noise or vibration or other cause may be a source of danger, discomfort, or annoyance to the neighborhood, and to prescribe the conditions subject to which businesses, factories and workshops shall be carried on.

The county governments will thus be instrumental, with mandates derived from this Act, in monitoring works to ensure that environmental nuisances are controlled.

**3.2.25 The National Museums and Heritage Act (2006)**

Provides for the establishment, control, management and development of national museums and the identification, protection, conservation and transmission of the cultural and natural heritage of Kenya.

The Act also establishes a notification of discovery requirement and sets restrictions on moving objects of archaeological or paleontological interest. It is administered by the National Museums of Kenya (NMK). Authority to move any encountered objects of archaeological importance or the implementation of a chance find procedure must be done in liaison with NMK.

**3.2.26 Energy Act, 2019**

Energy Act makes provisions that shall apply to every person or body of persons importing, exporting, generating, transmitting, distributing, supplying, using electrical energy, importing, exporting, transporting refining, storing and selling petroleum or petroleum products, producing, transporting, distributing and supplying of other forms of energy, and to all works or apparatus for any or all of these purposes”.

This Act also created the Energy Petroleum Regulatory Authority (EPRA) whose functions and powers include issuance of licenses, permits and exemptions for electric power and petroleum undertakings, review and approval of the electric power tariffs, imposition and collection of penalties and fines for non- compliance in the energy sector, investigation and resolution of conflicts, formulation of regulations and enforcement of standards in the Energy Sector, formulation and co- ordination of a disaster preparedness plan for the energy sector, ensuring fair play and competition within the Energy sector.

Given the heavy use of fuel for construction works and remote location of project road relative to major points of fuel supply, the contractor will require bulk storage of fuel on site. Permit for Bulk fuel storage on site from ERC shall be required in line with this Act.

**3.2.27 Mining Act, 2016**

This Act regulates the development of the mining and mineral (including construction minerals) industry including health, safety and environment issues related to mining.

The proposed road is expected to place a lot of demand on natural resources to be mined at quarries and borrow sites. In some instances, rock blasting may be required. The mining of these natural resources is regulated by this act among other legislations. Some of the permits/license triggered by this project under the mining act include:

- Rock mining permit; and
- Permits for blasting and storage of mining explosives from Department of Mines

**3.2.28 The National Sand Harvesting Guidelines, 2007**

The National Sand Harvesting Guidelines (2007) are secondary legislation that apply to all sand harvesting activities in Kenya and is aimed at ensuring sustainable utilization of sand resources and proper management of the environment.

The key provisions are:

- a. The Guidelines establish the Technical Sand Harvesting Committee (TSHC) whose main mandate is to be responsible for the proper and sustainable management of sand harvesting within the County, designate sand harvesting sites, ensure that sand dams and gabions are constructed in designated areas, designate sand transportation roads, ensure EIA/EA are undertaken, undertake dispute resolution, fix minimum sand prices, monitor restoration of sites and allocate areas to the Riparian Resource Management Association (RRMA).
- b. The Guidelines establish a Riparian Resource Management Association (RRMA) which comprises community leaders with the mandate to require EIA before sand harvesting operations start, annual environmental audits, sustainable management, provide access to sites, collection of revenues to be employed in rehabilitation of sites and revenue sharing with the community.
- c. It places responsibilities on sand dealers and transporters to comply with the Guidelines and the law.
- d. It identifies the social impacts of sand harvesting and bans child labour, requires fair wages, the organization of loaders for self- regulation and establishes a revenue sharing mechanism.
- e. It requires sand harvesting to occur in designated areas only and under an environmental management plan.
- f. The said guidelines provide for Farm, Lakeshore/Seashore and Riverbed sand harvesting as follows: it shall not exceed six (6) feet in depth, on-farm sand harvesting must be carried out at designates sites with a buffer zone of at least 50 metres from the riverbanks or dykes for, restoration will be undertaken concurrently with harvesting and under guidance from the Technical Sand Harvesting Committee, open-cast harvesting is recommended and underground tunneling must employ appropriate extraction technology to safeguard human safety.
- g. Riverbed sand harvesting is banned on riverbanks, and must be carried out in designated sites, must retain adequate reserves of sand to ensure water retention and maintain a buffer zone of 100 metres from any infrastructure.



- h. The Guidelines require any person who wishes to remove and/or transport sand to obtain a written approval from the County Environment Officer, NEMA.
- i. The Guidelines bar harvesting or transporting sand during the night.

#### Relevance

This project might be required to harvest sand for its use in structural works in rivers and other sources, and will therefore be required to adhere to the requirements of these guidelines.

### **3.2.29 Technical Guidelines on The Management of Used Oil and Oil Sludge In Kenya (2016)**

NEMA developed technical guidelines on the management of used oil and oil sludge in Kenya so as to assist all used oil and oil sludge handlers meet their requirements under the Environmental Management and Coordination (Water Quality) Regulations of 2006, Environmental Management and Coordination (Waste Management) regulations of 2006 and Occupational Safety and Health Requirements among others.

The guidelines provides direction on safe management of used oil and oil sludge in Kenya and shall be the main regulatory reference material for management of used oil in Kenya.

#### Relevance

This project will use be using and generating used oil which some are categorized as hazardous and will be required to adhere to these guidelines for proper disposal.

### **3.2.30 Intergovernmental Relations Act**

The Intergovernmental Relations Act of Parliament to establish a framework for consultation and cooperation between the national and county governments and amongst county governments; to establish mechanisms for the resolution of intergovernmental disputes pursuant to Articles 6 and 189 of the Constitution, and for connected purposes.

The objects and purposes of this act are to:

- Provide a framework for consultation and cooperation between the national and county governments;
- Provide a framework for consultation and cooperation amongst county governments;
- Establish institutional structures and mechanisms for intergovernmental relations;
- Provide a framework for the inclusive consideration of any matter that affects relations between the two levels of government and amongst county governments;
- Give effect to Articles 187 and 200 of the Constitution, in respect of the transfer of functions and powers by one level of government to another, including the transfer of legislative powers from the national government to the county governments; and
- Provide mechanisms for the resolution of intergovernmental disputes where they arise.

#### Relevance

This project section starts in Egeryo Marakwet county and terminates at Baringo county. It will be necessary for KeNHA to work with both county governments consistently throughout the project period as the act may require.

## **3.3 Institutional framework**

The main administrative structures are described in the following sections.

### **3.3.1 The Ministry of Transport, Infrastructure, Housing and Urban Development**

The Ministry has three Departments relevant for road transport development namely; State Department of Transport, State Department of Infrastructure and State department for public works. Ministry is mandated to perform the following functions:

- National Roads Development Policy Management
- Transport Policy Management
- Rail Transport and Infrastructure Management
- Development, Standardization and Maintenance of Roads
- Mechanical and Transport Services
- Enforcement of Axle Load Control
- Materials Testing and Advice on Usage
- Standardization of Vehicles, Plant and Equipment
- Registration of Roads Contractors
- Protection of Road Reserves
- Maintenance of Security in Roads
- National Road Safety Management
- National Transport and Safety Policy

#### Relevance

All the functions listed above are relevant to the project's construction and operation phases.

### 3.3.2 Kenya National Highways Authority

KeNHA was established by the Kenya Roads Act 2007. It is an autonomous road agency. The functions of KeNHA include the management, development, rehabilitation and maintenance of international trunk roads linking centres of international importance and crossing international boundaries or terminating at international ports (Class A road), national trunk roads linking internationally important centres (Class B roads), and primarily roads linking provincially important centres to each other or two higher-class roads (Class C roads).

The main functions of KeNHA are:

- Constructing, upgrading, rehabilitating and maintaining roads Class A, B, C roads
- Implementing road policies in relation to national roads
- Ensuring adherence to the rules and guidelines on axle load control prescribed under the traffic act and any regulations under this act
- Ensuring that the quality of roads works is in accordance with such standards as may be defined by the minister
- Collecting and collating all such data related to the use of national roads as may be necessary for efficient forward planning under the Act

KeNHA has established Planning and Environment Department headed by a director and has, among others, the following functions:

- Implementation of policies for the efficient planning, survey services, road reserve protection, monitoring, evaluation and socio-environmental management for the roads under the Authority;
- Preparation of the annual work programmes and budgets for road planning, surveying, road reserves protection and socio-environmental management;
- Preparation and monitoring of the road investment programme for the road network under the Authority;
- Undertaking studies, designs and preparation of tender documentation for operations relating to planning, surveying, road reserve protection and socio-environmental management;
- Effectively supervising works and consultancies relating to road planning, surveying, road reserve protection and socio-environmental management and ensuring the works and services are executed in accordance with the standards and specifications;
- Administering and protecting road reserves;
- Liaison with Ministry for the time being responsible for road safety;
- Undertaking of road safety audits for road designs and implementation of road safety measures;
- Coordination of the Performance Contracts of the Authority;
- Monitoring and evaluation of road projects;

- Preparation and collection of economic, environmental and social data and information;
- Liaison with internal and external financing agencies;
- Preparation of monthly, quarterly, twice yearly, annual and ad-hoc reports for the Department

In regard to this project, this department will play a key role in setting standards for compliance with the Environment and Social Management Plan (ESMP) produced in this Report. This will include but not limited to ensuring the contractor prepares the CESMP and approving the same, induction and training of the contractors and supervision consultants, participating in monthly site meetings, monitoring and supervision of the ESIA/ESMP, carrying out compliance EHS audits, and reporting of the implementation of project safeguards.

### **3.3.3 The National Environment Management Authority**

The responsibility of the National Environmental Management Authority (NEMA) is to exercise general supervision and co-ordination over all matters relating to the environment and to be the principal instrument of Government in the implementation of all policies relating to the environment.

In addition to NEMA, the Act provides for the establishment and enforcement of environmental quality standards to be set by the Cabinet Secretary in consultation with the Authority, which will govern the discharge limits to the environment by the proposed project.

#### **Relevance**

NEMA must approve the project through issuance an ESIA license before implementation. It will also participate in subsequent stages of construction environmental management and annual environmental audits review.

### **3.3.4 Water Resource Authority (WRA), formerly WRMA**

WRA is responsible for regulation of water resources through water allocation, source protection and conservation, water quality management and pollution control and international waters. Its roles and responsibilities are as follows:

- Planning, management, protection and conservation of water resources;
- Planning, allocation, apportionment, assessment and monitoring of water resources;
- Issuance of water permits;
- Water rights and enforcement of permit conditions;
- Regulation of conservation and abstraction structures;
- Catchment's and water quality management;
- Regulation and control of water use; and
- Coordination of the Integrated Water Resource Management (IWRM) Plan.

#### **Relevance**

Project construction will require substantive water inputs. The contractor will need to get authorization from WRA to abstract any underground or surface water resources.

### **3.3.5 National Transport and Safety Authority**

The National Transport and safety Authority (NTSA) was established through an Act of Parliament; Act Number 33 on 26 October 2012. The objective of forming the Authority was to harmonize the operations of the key road transport departments and help in effectively managing the road transport sub-sector and minimizing loss of lives through road accidents. Some of its key mandates are the development of road safety strategies and facilitating education of the general public on road safety.

#### **Relevance**

NTSA has set various road safety standards, rules and motor vehicle licensing requirements which the contractors vehicles and drivers are expected to adhere to. In addition, all vehicles which will be using the road will be required to adhere to the set rules.

Similarly, KeNHA should liaise with NTSA in conducting road safety education along the project corridor, to sensitize the local population on road safety.

### **3.3.6 Kenya Roads Board**

The main objective of KRB is to oversee the road network in Kenya and thereby coordinate its development, rehabilitation and maintenance and is the principal adviser to the Government on all matters related development, rehabilitation and maintenance. It ensures prudent Sourcing and Optimal Utilization of Resources for Socio-economic Development.

#### **Relevance**

It is necessary that KeNHA and the Contractor incorporate the principles integrated National transport policy in the construction and maintenance of the road.

### **3.3.7 Elgeyo Marakwet and Baringo County Governments**

The County Governments are a creation of the Constitution of Kenya 2010 and successor of the defunct Municipal authorities. They operate under the auspices of the Cities and Urban Areas Act, The Devolved Governments Act and a host of other Acts.

The County Governments are charged, among others, with the responsibility of providing a variety of services to residents within its area of jurisdiction. These include the services that were hitherto provided by the defunct County Council and the ones that have been transferred from the national government. The former includes Physical Planning, Public Health, Social Services and Housing, Primary Education Infrastructure, Inspectorate Services, Public Works, Environment Management while the latter include Agriculture, Livestock Development and Fisheries, Trade, Industrialization, Corporate Development, Tourism and Wildlife, Public Service Management.

The Fourth Schedule of the Constitution of Kenya 2010 Part 2 (3) provides for devolved environmental functions to be undertaken by the County Governments and includes; control of air pollution, noise pollution, and other public nuisances.

#### **Relevance**

The county governments will thus be crucial in issuing trade licenses to the contractor (s), issuing temporary facilities construction plan approvals, monitoring environment protection within the project, and general development control along the road.

### **3.3.8 Directorate of Occupational Safety and Health Services (DOSHS)**

DOSHS is responsible for the enforcement of Occupational Safety and Health Act (OSHA),2007 and associated regulations. Construction sites must be registered with the Directorate and safety management plans, training and emergency preparedness done in accordance with the relevant guidelines issued by DOSHS.

#### **Relevance**

The contractor should be required to register construction sites with this authority as work places before the commencement of the construction works. DOSHS will also undertake workers safety and health inspections at its own initiative or upon receiving reports on any associated issues.

## **3.4 International Treaties and Conventions**

A treaty is a binding agreement under International Law concluded by subjects of International Law, namely states and international organizations. Treaties can be called by many names including; International Agreements, Protocols, Covenants, Conventions, Exchanges of Letters, Exchanges of Notes, etc. However, all of these are equally treaties and the rules are the same regardless of what the treaty is called.

Treaties can be loosely compared to contracts; both are means of willing parties assuming obligations among themselves, and a party to either that fails to live up to their obligations can be held legally liable for that breach. The central principle of treaty law is expressed in the maxim *pacta sunt servanda*, translated as "pacts must be respected."

Kenya has ratified the following Project-relevant international conventions:

#### **3.4.1 The 1985 Vienna Convention for the protection of the Ozone Layer**

The Vienna Convention for the Protection of the Ozone Layer, 1985 was adopted after consensus was reached on 22 March 1985. Kenya ratified the convention on November 9 1988. The overall objective of the Vienna Convention is to protect human health and the environment against the effects of ozone depletion. As a framework convention, it does not establish any specific controls on ozone depleting substances. Instead, it establishes a general obligation upon the parties to protect the ozone layer (article 2) and emphasizes the need for international cooperation. For instance, Green House Gases might be released from the asphalt fumes at the asphalt plants.

##### **Relevance**

KeNHA and the contractor will be required to observe the above convention in all its operations throughout the project cycle in reducing emission of Greenhouse Gases.

#### **3.4.2 The 1987 Montreal Protocol on Substances that Deplete the Ozone Layer**

The Montreal Protocol on Substances that Deplete the Ozone Layer was adopted on 15 September 1987 and is a significant milestone in international environmental law, and Kenya ratified the agreement on 9 November 1988. It establishes firm targets for reducing and eventually eliminating consumption and production of a range of ozone depleting substances. These substances are enumerated in Annexes A-E to the Protocol and are to be phased out within the schedule given in article 2A-2I.

##### **Relevance**

The appointed project contractor will be required to observe the above convention in all its operations throughout the project cycle in reducing emission of Ozone Depleting Substances (ODS). The contractor will ensure he does not use equipment such as A/C units running on hydrochlorofluorocarbon (R22 gas) or other refrigerants with a high ozone-depleting potential.

#### **3.4.3 The United Nations Convention on Climate Change ("1992 UNFCCC")**

The objective of the 1992 UNFCCC is to tackle the negative effects of climate change. The Conventions' stated aim is to stabilize greenhouse gas concentrations at a level that allows ecosystems to adapt naturally to climate change so that food production is not threatened, while enabling economic development to proceed in a sustainable manner (article 2).

Kenya signed the UNFCCC on 12 July 1992, ratified it on 30 August 1994 and started enforcing it on 2 November 1994. In 2016, Kenyan parliament passed a law on Climate change, the Climate Change Act further reiterating the country's commitment to this convention.

##### **Relevance**

KeNHA and the contractor will be required to observe the above convention in all its operations throughout the project cycle in reducing emission of Green House Gasses leading to climate change.

#### **3.4.4 The Paris Agreement, 2015**

The Paris Agreement was an agreement within the United Nations Framework Convention on Climate Change (UNFCCC), dealing with greenhouse-gas-emissions mitigation was adopted on 12 December 2015 and entered into force on 4 November 2016 requiring required both developing and developed nations to reduce their greenhouse emissions (Carbon dioxide, Methane, Nitrous oxide, Hydro chlorocarbons, Perfluorocarbons and Sulphur hexafluoride). to fight against rising global temperatures.

Kenya is a signatory to the agreement (April 2016) and submitted its Updated Nationally Determined Contribution (NDC) in December 2020 committing to abate Green House Gases (GHGs) by 32% by 2030.

#### Relevance

The contractor will be required to carry out regular inspection and maintenance of construction equipment in order to reduce the levels of GHGs emissions into the atmosphere.

#### 3.4.5 CITES Convention (1975)

**CITES (the Convention on International Trade in Endangered Species of Wild Fauna and Flora)** is an international agreement between governments (where Kenya signed as party in March 1979), which aim to ensure that international trade in specimens of wild animals and plants does not threaten the survival of the species. Although CITES is legally binding on the Parties – in other words they have to implement the Convention – it does not take the place of national laws. Rather it provides a framework to be respected by each Party, which has to adopt its own domestic legislation to ensure that CITES is implemented at the national level

#### Relevance

The project will pass through areas with wildlife such as elephants and other species, and therefore the contractor and KeNHA should ensure that there will be no trade of specimens from wild animals and/or plants as a result of the project, including poaching.

#### 3.4.6 Convention on Biological Diversity

The Convention entered into force on 29 December 1993, which was 90 days after the 30<sup>th</sup> ratification. The first session of the Conference of the Parties was scheduled for 28 November – 9 December 1994 in the Bahamas. Kenya is a signatory of the convention which has three main goals; namely;

- Conservation of biological diversity (or biodiversity)
- Sustainable use of its components; and
- Fair and equitable sharing of benefits arising from genetic resources

#### Relevance

The contractor and KeNHA should look out for species of conservation importance as established in the baseline environmental study in liaison with Kenya wildlife Service.

## **4 BASELINE ENVIRONMENTAL AND SOCIAL SETTING**

### **4.1 Physical Environment**

Elgeyo-Marakwet County, located in the Rift Valley region of Kenya, boasts a distinctive physical environment characterized by rugged topography, deep valleys, and steep escarpments. The county's highland areas feature diverse elevations, offering scenic views and a temperate climate with temperatures ranging from 18°C to 22°C. In contrast, the Kerio Valley, traversing the county, introduces a semi-arid climate with temperatures between 25°C and 28°C. Elgeyo-Marakwet's geological composition is rooted in ancient basement systems overlaid by recent volcanic flows, resulting in isolated phonolite outcrops. The region supports varied flora and fauna, with forests and grasslands in the highlands and more arid conditions in the valley. The Kerio River, a significant watercourse, flows through the valley, contributing to the diverse water network. The Rimoi National Reserve, an underutilized tourist attraction, showcases the county's biodiversity. This nuanced understanding of Elgeyo-Marakwet's physical environment is pivotal for effective development planning, infrastructure projects, and environmental conservation initiatives.

#### **4.1.1 Climatic Conditions**

Elgeyo-Marakwet County experiences diverse climatic conditions attributed to its varied topography. The county receives varying levels of rainfall, with the highlands receiving more precipitation compared to the semi-arid valley.

**Temperature.** The highland areas of the county maintain a temperate climate, with annual mean temperatures ranging from 18°C to 22°C. In contrast, the Kerio Valley introduces a semi-arid climate characterized by higher temperatures, ranging from 25°C to 28°C annually.

#### **Rainfall**

The average annual rainfall ranges from 700 mm in the semi-arid Kerio Valley to 1700 mm in the highlands, particularly on the Keiyo and Marakwet hills (Cherangany Hills). Understanding these climatic nuances is essential for various sectors, including agriculture, water resource management, and environmental planning in Elgeyo-Marakwet.

#### **4.1.2 Topography**

The topography of the Biretwo – Arror – Chesongoch (B126) Road project area in Elgeyo Marakwet County poses distinct challenges for road construction. Characterized by hilly terrain, the region demands careful engineering to address issues related to stability, soil erosion, and drainage. The presence of rivers, including Arror River, Kerio River, and Kipcheptem River, necessitates the incorporation of bridges or culverts in the construction plan to accommodate water flow and prevent erosion. The area's susceptibility to heavy rainfall, indicated by the observed deep gullies and soil erosion during the rainy season, emphasizes the need for erosion control measures, proper grading, and the use of suitable materials to ensure the road's resilience. Cultural considerations, such as clan boundary marks along the road, add another layer of complexity, requiring construction plans to respect and potentially adapt to these cultural markers. Proximity to Ririmoi National Game Reserve introduces wildlife-related considerations, necessitating coordination with relevant authorities and environmental impact assessments to mitigate potential impacts on wildlife migration patterns and habitat. Additionally, the road's passage through settlements, schools, and health facilities underscores the importance of minimizing disruption to communities during construction and providing alternative access routes. In summary, the topography of the area significantly influences road construction, demanding thorough planning and the implementation of mitigation measures to ensure the road's durability while minimizing environmental and social impacts.

#### **4.1.3 Drainage and Hydrology**

The Biretwo – Arror – Chesongoch (B126) Road project in Elgeyo Marakwet County traverses several rivers, each contributing to the unique topography and environmental considerations of the area. The identified rivers along the road route include Arror River, Kesup River, Kerio River, and Kipcheptem River. These water bodies are pivotal features that demand careful planning and engineering solutions during the road construction process. Potential measures such as the construction of bridges or culverts are essential to facilitate the safe and sustainable passage of the road across these rivers, ensuring minimal disruption to aquatic ecosystems and surrounding landscapes. Addressing the challenges posed by these rivers is crucial for the successful implementation of the road project, taking into account both environmental preservation and the safety and durability of the infrastructure.





Seasonal River Kipcheptem



River Arror



River Kerio



River Kesup

**Figure 4- 1 :Drainage along the road****4.1.4 Water Resources**

The Biretwo – Arror – Chesongoch (B126) Road project in Elgeyo Marakwet County is situated in an area rich in water resources, as evidenced by the presence of significant rivers along the road route. The primary water resources identified include the Arror River, Kerio River, and Kipcheptem River. These water bodies play a vital role in sustaining local communities, providing essential resources for various purposes.

The rivers serve as sources of water for both domestic and agricultural needs. Local communities depend on these water resources for activities such as irrigation, supporting the cultivation of crops like maize, millet, tomatoes, and fruits. Additionally, the water resources contribute to the overall resilience and development of the communities by ensuring a stable water supply for livestock keeping, encompassing goats, cows, sheep, and camels.



In addressing water challenges in the area, the community has implemented initiatives such as the Kimwarrar-Arror Irrigation Scheme, highlighting efforts to enhance water availability and support agricultural practices. The significance of these water resources extends beyond basic needs, as they contribute to the economic development of the region and play a pivotal role in shaping the local ecosystem.

However, challenges related to water accessibility are noted, prompting the implementation of water projects to address the community's difficulties in obtaining water. Some residents travel to nearby rivers for water collection, emphasizing the need for sustainable water management practices.

As the road project progresses, it is essential to consider the impact on water resources, ensuring that construction activities do not compromise the quality or availability of water for local communities. Sustainable water management practices, in conjunction with the preservation of the rivers' ecological integrity, are crucial for fostering responsible and sustainable development in the area.



**Figure 4- 2: Berese Water Project**

#### **4.1.5 Waste Management**

The potential waste management challenges are particularly prominent in urban centers and settlement areas along the road corridor. The types of waste generated include organic matter, papers, plastics, polythene materials, and fabrics. Additionally, hazardous materials, such as those from health facilities, service stations, motor vehicle repair shops, and garages, pose a concern. An observed issue is the inadequate management of used oil at various centers, particularly those where boda boda (motorcycle taxis) are repaired.

Notably, the towns and markets in the project area lack effective solid waste management systems or sewage disposal facilities. This gap raises concerns about the proper disposal of urban and settlement waste, emphasizing the need for comprehensive waste management strategies. Furthermore, the utilization of dry vegetation materials from agricultural farms for soil conditioning indicates a local waste management practice related to agricultural activities.

The road construction activities themselves generate waste materials similar to those in urban and settlement areas. However, the current capacity of corridor towns, camp sites, and other work areas lacks established waste management mechanisms, requiring the establishment of effective systems. Additionally, the construction-specific waste, such as spoil earth materials, represents a unique challenge associated with road construction. This waste, generated during excavation and construction

processes, requires specialized management approaches to minimize environmental impact and promote responsible waste disposal practices in the project area.

#### **4.1.6 Geology and Soils**

Elgeyo-Marakwet County exhibits diverse geology and soil characteristics. The region is situated in the western part of the Kerio Valley, which originated from ancient basement systems overlain with more recent volcanic flows. The predominant rock in the area is isolated phonolite outcrops. This geological composition contributes to the unique landscape and terrain found in the county.

Regarding soil, the county's soils are influenced by both the highland and valley terrains. The soils in the highland areas are generally fertile, supporting agriculture and vegetation. In contrast, the Kerio Valley, being semi-arid, may have soils that are less fertile and suitable for certain types of vegetation. The specific soil types can vary across different parts of the county, influencing land use patterns and agricultural practices. Understanding the geology and soil composition is crucial for sustainable land management, agriculture, and infrastructure development in Elgeyo-Marakwet County.

The project area faces issues with soil erosion and poor drainage systems. The poor drainage leads to increased erosion of the soil and eventually creation of deep galleys. This not only poses a threat to the environment but also has potential risk for infrastructure and local communities. Without proper drainage system, excess water during rainfall cannot be efficiently directed away, resulting in soil erosion and increased vulnerability to environmental degradation. Implementing effective drainage solutions is imperative to mitigate soil erosion and its associated impacts on both the natural and human aspects of the area. Moreover, during the rainy seasons, residents encounter difficulties crossing the roads.

Understanding the geology and soil composition of the County is crucial for the Biretwo – Arror – Chesongoch (B126) Road project. The geological information provides insights into potential challenges related to excavation, foundation stability, and the presence of natural hazards. Additionally, the soil characteristics are essential for assessing the feasibility of construction activities, such as determining suitable foundation types and understanding the impact on water drainage. This knowledge guides engineering decisions, ensuring that road construction aligns with the geological and soil conditions of the area, ultimately contributing to the project's success and long-term sustainability.

#### **4.1.7 Air Quality**

The Biretwo – Arror – Chesongoch (B126) Road project traverses vast sections of rural areas characterized by sparse settlements and minimal anthropogenic activities that would contribute to elevated air pollution levels beyond natural background levels. Currently, the primary source of air pollution in these rural areas is occasional dust generated by traffic on gravel or earth roads, along with intermittent whirlwinds sweeping across bare land. Town centers along the route exhibit limited air pollution, primarily associated with local vehicular movements, market activities, and winds passing over open land, with no significant industrial activities contributing to major point sources of air pollution.

During the construction phase of the road, an increase in dust pollution is anticipated due to excavations, movement of construction vehicles, and general traffic along the roads. This heightened pollution has the potential to impact public health, as well as soils, livestock, and water supplies in the project area. Recognizing these potential impacts, baseline data on air quality will be collected before the commencement of civil works, enabling regular monitoring throughout the construction period. Monitoring activities will encompass all construction sites, including areas around plants, quarries, and borrow sites, with sampling and monitoring points determined collaboratively between the client representative and the contractor.

The air quality along the project corridor is influenced by transport activities, agricultural practices, and urban-related emissions, particularly emissions from farm machinery and domestic sources. Given the anticipated high traffic volumes, including heavy trucks, vehicular emissions are expected to be relatively high. The key pollutants associated with the project road include carbon dioxide (CO<sub>2</sub>), carbon monoxide (CO), nitrogen oxides (NO<sub>x</sub>), sulfur oxides (SO<sub>x</sub>), and particulate matter (PM<sub>2.5</sub>, PM<sub>5</sub>, and PM<sub>10</sub>), comprising hydrocarbons, fuel aerosols, and soot. However, the overall concentration of these pollutants in the air is expected to be relatively low due to the high dispersal rates and substantial tree cover throughout the entire corridor.

#### **4.1.8 Noise and Vibrations**

Noise levels along the Biretwo – Arror – Chesongoch (B126) Road corridor are predominantly ambient, influenced by the nature of human settlement. Slightly elevated noise levels are observed in proximity to markets and urban centers where

economic activities such as workshops, commercial enterprises, and entertainment points are concentrated. Vehicular traffic, especially heavy trucks, is identified as the main source of noise along the corridor, with these noise levels typically confined within the vicinity of the carriageway.

The primary contributors to noise pollution include vehicles traversing the road, motorcycles, prayers from churches, and human noise generated by traders and consumers during regular business hours. For the majority of the road corridor, noise levels remain extremely low. However, areas close to market centers experience increased noise levels due to the concentration of people, vehicles, motorcycles, and business activities.

Key sensitive points, particularly schools situated near the proposed project road, are identified as potential areas where noise levels could have a critical impact, particularly during the construction and operational phases of the road. These schools include Walbei High School at Km 0+300, Kaptubei Mixed Secondary School at Km 1+800, Emkong Primary School at Km 10+800, St. Thomas Secondary School at Km 30+400, Kapkata Secondary School at Km 46+100, and St. Anthony School at Km 54+500. Recognizing these sensitive points, measures to mitigate noise impacts may be necessary to ensure the well-being and conducive learning environments for students in these areas. The relevance of addressing noise pollution is integral to fostering community well-being, especially in areas where the road project may intersect with educational institutions.

## **4.2 Biological Environment**

### **4.2.1 Flora and Fauna**

Elgeyo Marakwet County has three distinct ecological zones, the Highlands, the Escarpment, and the Valley. The Highlands, which constitute 49% of the county's total land area, are suitable to produce dairy cows, wool from sheep, potatoes, maize, wheat, and beans. In the Escarpment, which makes up 11% of the total land area, crops such as maize, millet, sorghum, and beans are grown despite the risk of soil erosion, landslides, and rock falls. Meanwhile, in the semi-arid Valley, which covers 40% of the county's land area, farmers raise zebu cattle, poultry, goats, and sheep and grow crops such as fruits, millet, sorghum, groundnuts, and green grams. Most of the farmers in the county are smallholders, with an average of 1.36 ha of land, while large scale farmers have an average of 17.3 ha of land. (GOK 2013).

#### **1.4 Administrative and Political Units**

**Vegetation**

The Road project winds through diverse ecosystems, showcasing a rich variety of flora. Indigenous trees, shrubs, and grasses adorn the region, with notable species like the Logoinywet tree (Mugumo tree) at Chepsigot Centre, representing the presence of indigenous vegetation. The corridor also features cultivated areas, including banana plantations, reflecting a harmonious blend of cultivated and wild plant life. The road crosses significant water bodies, such as the Kerio River, Kessup River, and Aror River, enhancing the overall ecological richness of the area. These rivers not only sustain local communities by providing water for various purposes but also contribute to the resilience and development of the communities along the road. The interconnectedness of the road project with the natural environment underscores the importance of considering the ecological impact during the construction and operation phases.





Logoinywet tree-Mugumo tree at Chepsigot Centre



**Figure 1**

**Figure 4- 3 : Trees along the road project**

### Wildlife

The road project is in close proximity to the Ririmoi National Game Reserve, situated just 2.5 kilometers away. This reserve hosts a captivating array of wildlife, including elephants, monkeys, and various other species. The reserve actively engages with local communities, promoting awareness and sustainable tourism. Recognizing the interaction between the road corridor and the game reserve is crucial, emphasizing the need for wildlife conservation and protection measures during road construction and operation.



**Figure 4- 4 :Entrance gate to Ririmoi National Game Reserve 2.5 km from the road**

Comprehending the local flora and fauna is pivotal for implementing effective environmental safeguards. Ensuring the conservation of biodiversity during and after road construction involves minimizing disturbances to existing ecosystems, protecting wildlife habitats, and promoting sustainable practices. The road project should incorporate measures that prioritize the preservation of the region's natural diversity.

### 4.3 Social and Economic Baseline Conditions

#### 4.3.1 Administration

The county is divided into four sub-counties, which are: Keiyo North, Keiyo South, Marakwet West, and Marakwet East. Each of these sub-counties is further divided into 20 wards, with 72 locations and 206 sub-locations

**Table 4- 1: Area (Km<sup>2</sup>) by sub-County**

Sub County	No. of Divisions	No. of locations	No. of sublocations	Area (Km <sup>2</sup> )
Keiyo North	3	10	35	541.0
Keiyo South	3	18	58	899.7
Marakwet East	6	22	53	784.3
Marakwet West	5	22	60	804.6
Total	17	72	206	3029.6

Marakwet East has the highest number of divisions, six (6) while Keiyo South and Keiyo north have the least, three (3) each. Marakwet West sub county has the highest number of sub locations at sixty (60) while Keiyo north has the lowest at thirty-five (35). Marakwet East and Marakwet West have the highest number of locations.

#### 4.3.1.1 County Government Administration Wards by constituency

The table below shows the number of sub counties and respective county wards per sub county. The county has not established village units

**Table 4- 2: County Government Administrative Wards**

SNO	Sub county	Number of wards
1	Keiyo North	4
2	Keiyo South	6
3	Marakwet East	4
4	Marakwet West	6
TOTAL		20

(Source: KNBS 2019 and IEBC Reports)

#### 4.3.1.2 Political units (constituencies and Wards)



Politically, the county is divided into four constituencies namely, Keiyo North, Keiyo South, Marakwet West and Marakwet East. It has twenty (20) electoral wards which are distributed among the four constituencies as shown in Table below.

**Table 4- 3: County's Electrol Wards by Constituency**

Constituency	County Assembly Wards
Keiyo North	Emsoo
	Tambach
	Kamariny
	Kapchemutwa
<b>Constituency</b>	<b>County Assembly Wards</b>
<b>Total</b>	<b>4</b>
Keiyo South	Kaptarakwa
	Kabimit
	Chepkorio
	Metkei
	Soy south
	Soy North
<b>Total</b>	<b>6</b>
Marakwet West	Sengwer
	Lelan
	Cherangany/ Chebororwa
	Arror
	Kapsowar
	Moiben/Kuserwo
<b>Total</b>	<b>6</b>
Marakwet East	Kapyego
	Embobut/ Embolot
	Endo
	Sambirir
<b>Total</b>	<b>4</b>

(Source: KNBS 2019 and IEBC Reports)

Marakwet East and Keiyo North have four (4) electoral wards each while Marakwet West and Keiyo South have six (6) electoral wards each respectively. In addition, Marakwet East has a land area of 784.3Km<sup>2</sup> (25.9%), Keiyo North 541.0Km<sup>2</sup> (17.9%), Keiyo South 899.7Km<sup>2</sup> (29.7%) and Marakwet West 804.6Km<sup>2</sup> (26.6%).

### 4.3.2 Demography Trends

The demographic context along the Road corridor is characterized by a diverse population comprising various ethnic groups, including the Marakwet, Elgeyo, Pokot, Sabot, Tugen, Nandi, and Terik communities. Settlements are dispersed yet interconnected, with small centers serving as focal points for economic exchanges and essential services. The road's construction is expected to impact settlements positively by improving accessibility and fostering economic growth. Understanding the population composition is crucial for engaging key stakeholders and ensuring the project aligns with community needs. The diverse population dynamics influence the demand for essential services, and improved road infrastructure can enhance access to healthcare and education. However, potential challenges related to increased population movement must be considered, emphasizing the need for a holistic approach to ensure a positive and sustainable impact on the communities along the road corridor.

#### 4.3.2.1 Population

**Table 4- 4: Population Projections (by Sub-County and sex )**

Sub County	Census (2019)				2022 (Projection)				Projection (2025)				Projection (2027)			
	M	F	I	T	M	F	I	T	M	F	I	T	M	F	I	T
Keiyo North	49,601	49,574	1	99,176	53,292	53,263	1	106,557	61,519	61,486	1	123,007	74,498	74,457	2	148,957
Keiyo South	60,919	59,827	4	120,750	65,453	64,279	4	129,736	75,557	74,203	5	149,765	91,497	89,857	6	181,359
Marakwet East	47,849	49,190	2	97,041	51,410	52,851	2	104,263	59,346	61,010	2	120,359	71,866	73,881	3	145,750
Marakwet West	68,948	68,560	5	137,513	74,079	73,662	5	147,747	85,515	85,034	6	170,556	103,556	102,973	8	206,537

Source: County Statistical office (CSO) Marakwet, KNBS 2019

In Elgeyo Marakwet County, the distribution of sub-counties reflects a balanced gender ratio, with both males and females contributing significantly to the population. Marakwet West and Keiyo South sub-counties exhibit a higher population, with 68,948 males and 68,560 females in Marakwet West, and 60,919 males and 59,827 females in Keiyo South. In comparison, Keiyo North and Marakwet East sub-counties have slightly lower populations, with 49,601 males and 49,574 females in Keiyo North, and 47,849 males and 49,190 females in Marakwet East.

As of the 2019 population census, the national inter-censal population growth rate stands at 2.3%, marking an increase from 38.6 million in 2009 to 47.6 million in 2019. In the 2009 census, the combined population of Marakwet and Keiyo districts was 369,298, while the 2019 population census records a population of 454,480. This reflects a notable population increase of 18.74% and an inter-censal growth rate of 1.87%.

Despite Elgeyo Marakwet County's population growth rate being lower than the national average, it still poses significant pressure on the county's resources. In light of this growth, the county government should prioritize strategic planning in crucial areas such as healthcare, employment, and food production to effectively address the evolving needs of the expanding population. This proactive approach is essential to ensure the sustainable development and well-being of the county's residents in the face of demographic changes.

#### 4.3.2.2 Urban And Rural Populations and Settlement Patterns

Within Elgeyo Marakwet County, Iten emerges as the most populous urban center, boasting a population of 12,630, while Chepkorio stands as the least populous with 1,676 residents. Recognizing the strategic importance of urban centers, the major towns of Iten, Kapsowar, Flax, Chebiemit, and Kapcherop demand focused urban planning efforts. These key centers exhibit well-developed structures and present attractive opportunities for employment and revenue generation, making them prime targets for potential investors and entrepreneurs. Simultaneously, emerging urban centers like Cheptongei, Kamwosor, and Tot are undergoing upgrades to integrate urban plans, aiming to enhance access to county services for residents and augment revenue collection.

Marakwet West and Keiyo North sub-counties, characterized by high population density, hold considerable potential for revenue generation. In contrast, Keiyo South and Marakwet East, with lower population density, demand increased investment in resources to address fundamental needs such as employment, food, water, and education. Marakwet West and Keiyo North, featuring the strategically located urban centers of Iten and Kapsowar, stand as significant revenue contributors, warranting dedicated planning efforts. Keiyo South, rich in agricultural potential, could benefit substantially from increased investment in the agricultural sector.

However, Marakwet East faces challenges due to insecurity, negatively impacting its population and deterring potential investors, particularly in fruit farming. Collaborative efforts between the county and national government are essential to ensure security, fostering a conducive environment for residents and investors alike. The settlement pattern in the area should be considered, ensuring that development initiatives align with the unique characteristics of each sub-county. This holistic approach to urban and rural planning is crucial for the sustainable development, security, and prosperity of Elgeyo Marakwet County.

The demographic and urban landscape information within Elgeyo Marakwet County holds direct relevance to the Biretwo – Aror – Chesogoch Road project. Understanding the population distribution, particularly in major urban centers like Iten and Kapsowar, is crucial for anticipating and planning road traffic. Upgrading the road infrastructure between these centers aligns with the economic goals, supporting increased trade, employment, and revenue generation. The county's focus on integrating urban plans for key towns emphasizes the need for the road project to align seamlessly with these development initiatives. Moreover, the identification of emerging centers and recognition of Keiyo South's agricultural potential present opportunities for

the road project to stimulate economic growth and investment. The acknowledgment of insecurity challenges in Marakwet East underscores the importance of security measures along the road corridor, ensuring safety and fostering investor confidence. In essence, the road project serves as a critical enabler for regional development, connecting urban centers, supporting economic activities, and addressing specific challenges for the overall well-being of Elgeyo Marakwet County.

**Table 4- 5: Population projected by Urban Area**

Urban Area	Census (2019)			2022 (Projection)			Projection (2025)			Projection (2027)		
	M	F	T	M	F	T	M	F	T	M	F	T
Iten	6,126	6,504	12,630	6,582	6,988	13,570	7,072	7,508	14,580	7,418	7,876	15,294
Kapsowar	2,295	2,412	4,709	2,466	2,591	5,057	2,649	2,784	5,434	2,779	2,921	5,700
Kapcherop	1,552	1,687	3,240	1,667	1,813	3,480	1,792	1,947	3,739	1,879	2,043	3,922
Chepkorio	817	859	1,676	878	923	1,801	943	992	1,935	989	1,040	2,030
Flax	2,206	2,107	4,313	2,370	2,264	4,634	2,547	2,432	4,979	2,671	2,551	5,223
Chebiemit	1,832	1,914	3,746	1,968	2,056	4,025	2,115	2,209	4,324	2,218	2,318	4,536
Cheptongei	1,002	1,030	2,032	1,077	1,107	2,183	1,157	1,189	2,346	1,213	1,247	2,461
Bugar	1,493	1,378	2,871	1,604	1,481	3,085	1,723	1,591	3,314	1,808	1,669	3,477
Kamwosor	1,405	1,284	2,689	1,510	1,380	2,889	1,622	1,482	3,104	1,701	1,555	3,256
Tot	1,049	1,078	2,127	1,127	1,158	2,285	1,211	1,244	2,455	1,270	1,305	2,576
Error	1,419	1,496	2,915	1,525	1,607	3,132	1,638	1,727	3,365	1,718	1,812	3,530

Source: KNBS 2019

### 4.3.3 Livelihoods of the Project counties

In the projected project area along the Biretwo – Aror – Chesongoch (B126) Road corridor, the livelihoods are diverse and intricately tied to the rural setting of Elgeyo Marakwet County. Agriculture plays a central role, where farming activities like crop cultivation and livestock rearing serve as common sources of income for the local population. Subsistence farming is prevalent, with households growing crops for personal consumption, while others engage in small-scale commercial farming.

Given the County's geographical context, communities along the project corridor likely rely on natural resources and ecosystem services for their livelihoods. This may include activities such as forestry, beekeeping, and the collection of non-timber forest products. The local economy is further supported by small businesses and informal trade, with market centers acting as vital hubs for commercial activities.

Recognizing these existing livelihood patterns is crucial for the successful implementation of the Biretwo – Aror – Chesongoch Road project. The improvement of infrastructure can have both positive and negative impacts on livelihoods. While enhanced road connectivity can boost market access, facilitate transportation, and stimulate economic activities, it's essential to mitigate potential negative effects such as disruptions to local businesses during construction and changes in land use patterns.

An in-depth understanding of the current economic activities in the area is vital for effective project planning. This ensures that development initiatives align with the needs and aspirations of the local communities, fostering sustainable economic growth. Specifically, along the road corridor, economic activities revolve around farming, with an emphasis on planting mangoes. The agricultural landscape is further enriched by a variety of crops, including papaya, passion fruit, banana, tomatoes, maize, millet, and sorghum. Livestock keeping, comprising goats, cows, sheep, and camels, forms an integral part of the economic activities. Traditional beekeeping also contributes to the diverse economic development of the communities, with farmers utilizing water furrows and irrigation schemes for agricultural products.





Figure 4- 5 : Banana plantation along the road

Figure 4- 6: livestock - sheep along the road

Figure 4- 7: Bee hives along the road

#### 4.3.4 Land Tenure and Ownership

The County, land ownership includes a mix of communal, private, and public lands. Communal lands are often held and used collectively by communities, while private lands are owned by individuals or entities. Public lands may be owned by the government or other public institutions. The specific land tenure arrangements, such as freehold or leasehold, can vary.

In the context of a road project, understanding these land ownership and tenure structures is crucial. The project might require acquiring land for the construction of the road, which involves negotiations and possibly compensations with private landowners. Additionally, the project may impact communal lands, and proper consultation with the affected communities is necessary. If there are specific details about land ownership and tenure in The County provided in the project documents, those details would be essential for a more accurate and context-specific analysis.



Figure 4- 8: Temporary and permanent structures at Biretwo Centre

#### 4.3.5 Education

The educational profile of Elgeyo-Marakwet County, with only 18% of residents having a secondary level of education or above, underscores the need for infrastructure development that can enhance educational opportunities. The significant variation among constituencies, with Keiyo North having the highest share at 23%, highlights the disparities that the Biretwo – Aror – Chesongoch Road project could address. By improving connectivity, the road project could facilitate easier access to educational institutions, especially in areas with lower educational attainment.

The fact that Marakwet East constituency has the lowest share of residents with a secondary level of education emphasizes the importance of considering educational accessibility in the development plans related to the road project. Improving transportation infrastructure can positively impact education by reducing barriers for students in reaching schools or educational facilities.

Similarly, the substantial percentage (62%) of residents with only primary-level education indicates a need for infrastructure that supports educational institutions at this level. The road project can contribute to the improvement of access to primary schools, particularly in constituencies like Marakwet West, which has the highest share of residents with primary-level education only.

Moreover, the 20% of residents with no formal education, especially in Marakwet East constituency, highlights the potential impact of the road project on educational equity. Improving road connectivity can facilitate access to literacy and skills development programs, contributing to the overall upliftment of communities with lower educational attainment.

In conclusion, the road project has the potential to address educational disparities by improving access to schools and educational resources. It can play a crucial role in promoting educational opportunities and contributing to the overall socio-economic development of Elgeyo-Marakwet County.



**Figure 4- 9: Sampled schools along the road section**

#### 4.3.6 Health

During the plan period, there was a commendable increase in the proportion of skilled deliveries conducted in health facilities in Elgeyo-Marakwet County, rising from 52.4% to 98%. This achievement can be attributed to various factors, including the continuous enrollment of mothers in the Linda Mama program, the implementation of Respective Maternity Care, and the expansion of Basic Emergency Obstetric and Newborn Care (BEmONC) and Comprehensive Emergency Obstetric and Newborn Care services (CEmONC). The Linda Mama program, providing free ANC, delivery, and PNC services, has significantly boosted demand for maternal and neonatal healthcare.

Additionally, community health interventions, such as incentives for Community Health Volunteers (CHVs) identifying and referring pregnant women, played a crucial role in improving maternal health indicators. Despite facing challenges in achieving the target for the completion of four or more ANC visits, the county plans to enhance primary care to ensure early initiation of ANC.

The report indicates a high contraceptive prevalence rate of 59%, surpassing the set target and national average. However, cultural beliefs and stigma, particularly in certain regions, hinder the uptake of modern family planning. The prevalence of low birth weight increased, possibly influenced by factors like poor maternal nutrition and diseases.

Immunization coverage saw a slight increase, but challenges like healthcare worker strikes and the COVID-19 pandemic impacted the rates. HIV prevalence remained constant, and TB cases and treatment success rates demonstrated both improvement and challenges.

The report highlights various health concerns, including non-communicable diseases, malaria, and sanitation issues. Notably, the county's educational initiatives, community health units, and improved health workforce have contributed to positive health outcomes.

Relating this to the road project, enhanced transportation infrastructure could facilitate better access to healthcare facilities, improving maternal and child health outcomes. Additionally, by addressing sanitation concerns and increasing accessibility to health services, the road project can indirectly contribute to the overall health and well-being of the population in Elgeyo-Marakwet County.





**Figure 4- 10: Arror Mission Health Centre and Songeto dispensary along the road**

#### **4.3.7 Trade and Industry**

In a bid to stimulate economic growth and empower local entrepreneurs, Elgeyo-Marakwet invested in business development. Entrepreneur training initiatives, construction of 63 lockable shops for small-scale traders, and the establishment of modern public toilets at market centers contribute to the overall enhancement of the business environment. These efforts resonate with the economic development objectives of the road project, fostering sustainability and prosperity for the local population.

Recognizing the vitality of the informal business sector, particularly juakali workshops, Elgeyo-Marakwet took steps to empower and equip these enterprises. The upgrading of three Constituency Industrial Development Centres aims to bolster informal businesses and promote entrepreneurship. Strengthening the informal sector aligns with the economic resilience sought by the road project, creating additional opportunities for income generation along the project route.

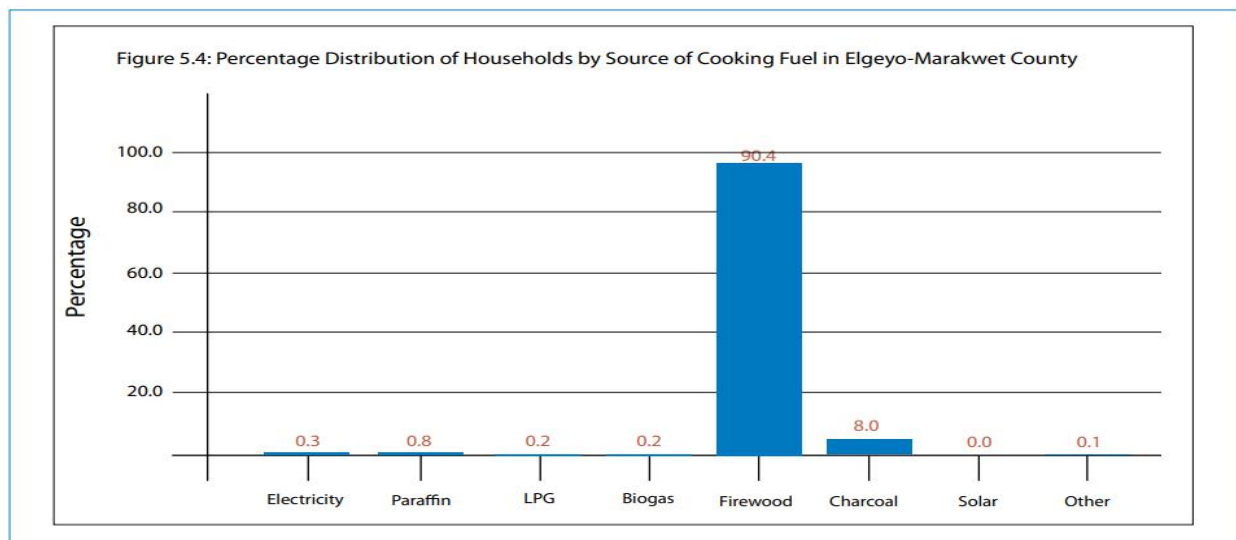
Through a comprehensive approach that encompasses tourism, business empowerment, and informal sector development, Elgeyo-Marakwet seeks to create a well-rounded and sustainable environment. These initiatives not only contribute to the prosperity of the county but also align with the overarching goals of the road project, ensuring a harmonious and balanced approach to development.

#### **4.3.8 Transport, Information and Communication**

The County in Kenya possesses a diverse infrastructure network that plays a crucial role in facilitating transportation, information dissemination, and communication within the region. The county is likely to have a well-established road network connecting its towns and rural areas, serving as a vital means of transportation. Public transportation, including buses and matatus, contributes to the mobility of the local population. The presence of airports or airstrips may further support air travel needs. In terms of information and communication, internet connectivity is fundamental, with both wired and wireless options available. Mobile phone networks are essential for communication, while local media outlets, such as radio stations and newspapers, contribute to information dissemination. Government offices and educational institutions also serve as sources of information. While ongoing infrastructure projects and government initiatives aim to enhance these services, challenges may exist, including limited access to remote areas and technological disparities, particularly in rural communities. To obtain the most up-to-date and detailed information, referencing local government reports and official publications is recommended.

#### **4.3.9 Energy**

**Figure 4- 11: Percentage Distribution of Households by Source of Cooking Fuel in Elgeyo-Marakwet County**



Source: KNBS Elgeyo Marakwet

Less than 1% of residents in Elgeyo-Marakwet County use liquefied petroleum gas (LPG), and 1% use paraffin; 90% use firewood and 8% use charcoal. Firewood is the most common cooking fuel by gender at 90% in male headed households and 91% in female headed households. Marakwet East constituency has the highest level of firewood use in Elgeyo-Marakwet County at 95%.

This is 12 percentage points above Keiyo North constituency, which has the lowest share. Marakwet East constituency is about 5 percentage points above the county average. Emsoo ward has the highest level of firewood use in Elgeyo-Marakwet County at 98%. This is 35 percentage points above Kapchemutwa ward, which has the lowest share. Emsoo ward is 8 percentage points above the county average. Keiyo North constituency has the highest level of charcoal use in Elgeyo-Marakwet County at 15%.

This is almost four times Marakwet East constituency, which has the lowest share. Keiyo North constituency is 7 percentage points above the county average. Kapchemutwa ward has the highest level of charcoal use in Elgeyo-Marakwet County at 33%. This is 31 percentage points more than Emsoo ward, which has the lowest share. Kapchemutwa ward is 25 percentage points above the county average.

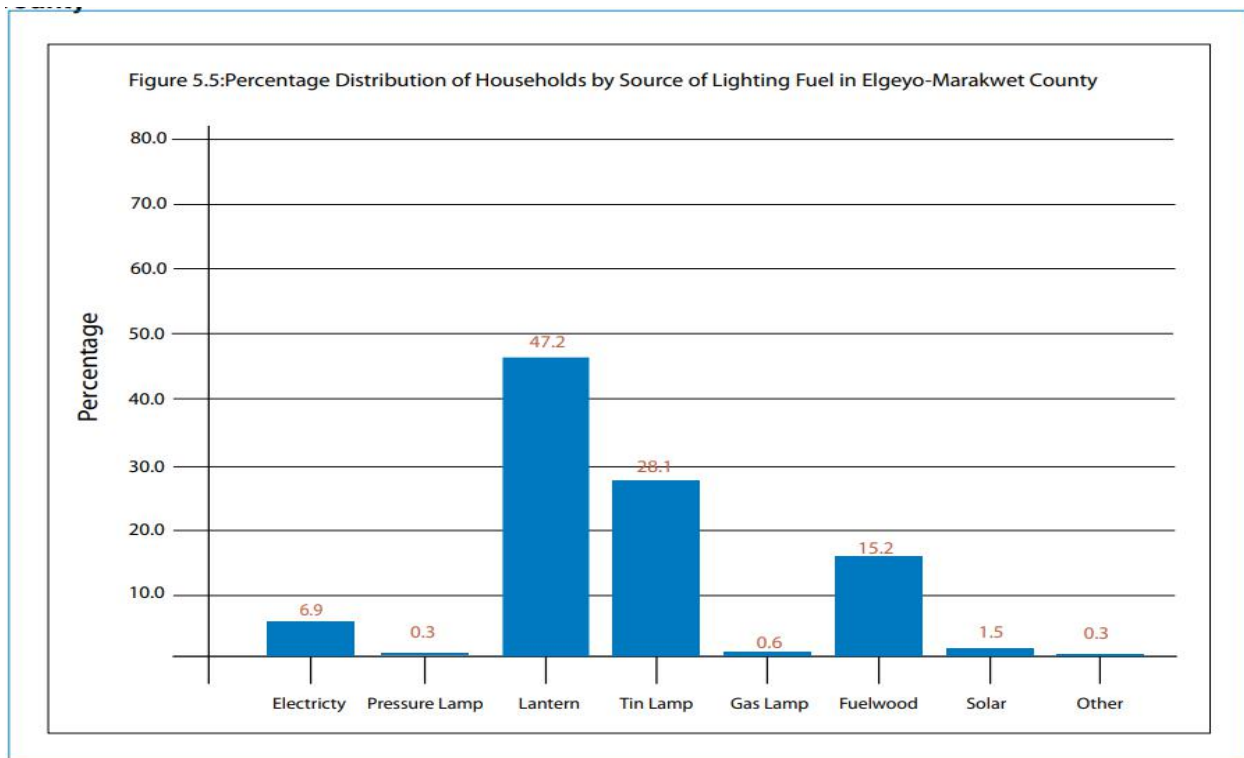
In the project area, household cooking primarily relies on traditional sources such as firewood, charcoal, and paraffin due to limited access to electricity in certain parts. Solar energy has gained prominence as an alternative, with many households installing solar panels for their energy needs.



Figure 4- 12: Solar panel

#### 4.3.9.1 Lighting

Figure 4- 13: Percentage Distribution of Households by Source of Lighting Fuel in Elgeyo Marakwet County



Source: KNBS Elgeyo Marakwet

Only 7% of residents in Elgeyo-Marakwet County use electricity as their main source of lighting. A further 47% use lanterns, 28% use tin lamps and 15% use fuel wood. There is no gender differential with the use of electricity, at 7% in households headed by either gender. Keiyo North constituency has the highest level of electricity use at 14%.

That is 14 percentage points above Marakwet East constituency, which has the lowest level of electricity use. Keiyo North constituency is 7 percentage points above the county average. Kapchemutwa ward has the highest level of electricity use at 26%. That is 26 percentage points above Kapyego, Embobut/Embulot and Aror wards, which have no levels of electricity use. Kapchemutwa ward is 19 percentage points above the county average.

#### **4.3.10 Mode of transport**

In the County, Kenya, the prevailing modes of transport are intimately connected with the county's road network, a vital element that influences the accessibility and connectivity of the region. The road infrastructure, including the ongoing road project such as the JCT (B16) Biretwo – Aror – Tot (B124) road, plays a crucial role in facilitating transportation within the county. The road project, managed by the Kenya National Highways Authority (KeNHA), contributes to the overall enhancement of road transportation by addressing maintenance needs and potential upgrades.

Residents and commuters in The County likely rely on this road network, encompassing routes like Chegilet-Kipyegior-Kapchelal, Kapkata-Koitilial, and Aror-Sisiya-Kapsowar, to connect towns and rural areas. Modes of transport, including buses, matatus, and motorcycles, are integral for commuting along these roads, fostering economic activities and supporting the daily lives of the local population.

The successful implementation of the road project aligns with the county's broader efforts to improve transport infrastructure, ensuring safer and more efficient mobility for the residents. For the most accurate and current information on the interplay between transport modes and the road project, consulting local authorities, transportation departments, or project updates from the Kenya National Highways Authority is recommended.

#### **4.3.11 Social Welfare**

##### **4.3.11.1 Waste Management**

Nestled in Kenya, Elgeyo Marakwet County stands as a treasure trove of tourism potential, adorned with picturesque landscapes and rich cultural heritage. The ongoing road project, weaving through key areas like Aror and Chesongoch as highlighted in earlier references, emerges as a pivotal link connecting diverse tourist destinations within the county.

This well-maintained road infrastructure not only augments accessibility but also elevates the overall tourism experience for visitors. The road's trajectory opens up previously hard-to-reach sites, including scenic viewpoints, historical landmarks, and cultural events, potentially drawing an increased flow of tourists. The road project itself becomes an attraction, winding through captivating landscapes and linking isolated regions.

This heightened accessibility stimulates economic prospects, fostering the establishment of accommodations, eateries, and recreational services tailored to the needs of tourists. Beyond the economic advantages, the road project becomes a catalyst for cultural exchange, providing a platform for visitors to engage with local communities and gain a deeper appreciation for the region's traditions and heritage. As tourism traffic is expected to surge, the resulting revenue has the potential to spur community development initiatives, contributing to local infrastructure, education, and healthcare.

Consequently, the road project not only enhances connectivity but also emerges as a catalyst for positive transformations in Elgeyo Marakwet County, promising sustainable community development. For the most recent and accurate information on the county's dynamic tourism landscape, it is advisable to consult local tourism boards, government authorities, or pertinent tourism agencies.

##### **4.3.11.2 Tourism**

Elgeyo Marakwet County in Kenya boasts a tourism potential enriched with scenic landscapes and cultural treasures. The ongoing road project, traversing areas like Aror and Chesongoch as mentioned in previous references, serves as a crucial link to various tourist destinations within the county. The well-maintained road infrastructure not only enhances accessibility but also contributes to the overall tourism experience. Scenic viewpoints, historical sites, and cultural events along the road's route become more accessible, potentially attracting a higher influx of tourists. The road project itself may evolve into a point of interest, particularly if it winds through picturesque landscapes or connects previously remote areas.



This improved accessibility fosters economic opportunities, encouraging the development of accommodations, eateries, and recreational services that cater to the needs of tourists. Beyond economic benefits, the road project can facilitate cultural exchange between visitors and local communities, promoting a deeper understanding of the region's traditions and heritage. Furthermore, the anticipated increase in tourism traffic may contribute to community development by generating revenue that can be reinvested in local infrastructure, education, and healthcare.

Rimoi National Game Reserve, located just 2.5km from the road, is a captivating wildlife sanctuary jointly managed by the County Government of Elgeyo Marakwet and the Kenya Wildlife Service (KWS). The reserve is home to elephants, monkeys, and a variety of wildlife, making it an important tourist attraction. Tourist can enjoy game drives, immersive camping experiences, guided nature walks, and educational tours that highlight conservation efforts. Beyond its ecological significance, the reserve actively engages with local communities well, fostering awareness and creating sustainable tourism opportunities. The road project, therefore, holds the potential to not only improve connectivity but also to positively impact The County's tourism sector and foster sustainable community development. For the latest and most accurate information on the county's tourism initiatives, it is recommended to consult local tourism boards, government authorities, or relevant tourism agencies.



**Figure 4- 14: Rimoi National Game reserve 2.5KM from the road**



**Figure 4- 15: Reserves signage along the road**

#### 4.3.12 Religion

The prevailing religion along the road is Christianity, The Africa Inland Church (AIC) holds a significant presence, particularly in the northern parts, while Catholics and Anglicans (ACK) also play a substantial role in the other parts. Additionally, there are few Seventh-day Adventists (SDAs) along the project area. This illustrates diverse religious composition within the local community, highlighting the coexistence of various Christian faiths in the area.



**Figure 4- 16: church signage along the road**



**Figure 4- 17: church signage along the road**



### 4.3.13 Tribe/clans

Along proposed project area, the inhabitants belong to the Marakwet, Elgeyo, Pokot, Sabot, tugen, Nandi, and Terik. Territorially, the Marakwet are organized into clans, and along the road, there are clan boundary marks, serving as significant cultural markers in the area.



**Figure 4- 18: Clan boundary Mark**

### 4.3.14 security and public safety

Security along the road is enhanced by the presence of police stations located to ensure public safety. These stations serve as essential institutions for law enforcement, contributing to the maintenance of peace and order in the community and fostering a secure environment for all.



**Figure 4- 19: Signage of Chepsigot police post at Biretwo Centre**

## 4.4 Cross-Cutting Issues

### 4.4.1 Livelihoods and Poverty Analysis

Access to employment is a cornerstone in addressing inequality and alleviating poverty, as it enables individuals to generate income to meet basic needs and safeguard their families from economic uncertainties. Recognizing the diverse needs of individuals based on factors like age, gender, height, and weight, it is essential to establish an adult equivalent that considers average requirements across various populations.

The poverty line serves as a critical threshold, delineating those considered poor. In 2005/06, the poverty line was set at Ksh1,562 and Ksh2,913 per adult equivalent per month for rural and urban households, respectively. Nationally, the proportion of people living below the poverty line decreased from 46 percent in 2005/06 to 45.2 percent in 2009.



Unemployment emerges as a significant vulnerability, rendering individuals susceptible to poverty. Employment levels and wage structures play pivotal roles in shaping the extent of poverty and inequality. Effective macroeconomic policies should prioritize the creation of regular, high-quality employment opportunities accompanied by basic labor protections.

The 2009 Population and Housing Census focused on labor and employment among individuals aged 15-64. Although not a dedicated labor survey, it included categories such as work for pay, family business, family agricultural holdings, intern/volunteer, retired/home maker, full-time student, incapacitated, and no work. The tabulation was intertwined with education levels, encompassing none, primary, and secondary education. This comprehensive approach enables a nuanced understanding of the employment landscape, shedding light on the intersection of education and occupation.

#### **4.4.2 Gender Issues**

Gender issues encompass a broad spectrum of social, economic, and cultural challenges arising from the historical and systematic differences between men and women. These issues are rooted in societal expectations, norms, and power dynamics that shape the roles and behaviors of individuals based on their gender. Gender inequality is manifested in various forms, including disparities in access to education, employment opportunities, healthcare, and political representation.

Discrimination, gender-based violence, and stereotypes further contribute to the perpetuation of gender issues. Addressing gender concerns involves promoting equality, challenging stereotypes, dismantling systemic barriers, and fostering an inclusive and diverse society that recognizes and respects the rights and contributions of all genders. The pursuit of gender equality is a fundamental aspect of global efforts towards social justice and human rights.

##### **4.4.2.1 Inequality**

Inequality is characterized by the existence of unequal opportunities or life chances and unequal conditions such as incomes, goods and services. Inequality, usually structured and recurrent, results into an unfair or unjust gap between individuals, groups or households relative to others within a population. There are several methods of measuring inequality. In this study, we consider among other methods, the Gini-coefficient, the difference in expenditure shares and access to important basic services.

##### **4.4.2.2 Equality and Equity**

Although the two terms are sometimes used interchangeably, they are different concepts. Equality requires all to have same/equal resources, while equity requires all to have the same opportunity to access same resources, survive, develop, and reach their full potential, without discrimination, bias, or favoritism. Equity also accepts differences that are earned fairly.

#### **4.5 Housing Conditions (Roof)**

Housing conditions are an indicator of the degree to which people live in humane conditions. Materials used in the construction of the floor, roof and wall materials of a dwelling unit are also indicative of the extent to which they protect occupants from the elements and other environmental hazards. Housing conditions have implications for provision of other services such as connections to water supply, electricity, and waste disposal. They also determine the safety, health and wellbeing of the occupants. Low provision of these essential services leads to higher incidence of diseases, fewer opportunities for business services and lack of a conducive environment for learning. It is important to note that availability of materials, costs, weather and cultural conditions have a major influence on the type of materials used

## 5 STAKEHOLDER CONSULTATION AND PUBLIC PARTICIPATION

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### 5.1 Introduction

This chapter describes the process of public consultation and participation that were followed to identify the key issues and impacts of the proposed project. Stakeholder consultation is an important process through which stakeholders including beneficiaries and members of public living in project areas (both public and private), are given an opportunity to contribute to the overall project design by making recommendations and raising concerns projects before they are implemented. In addition, the process creates a sense of responsibility, commitment and local ownership for smooth implementation.

Stakeholder Engagement and Public Participation Process is an integral aspect of successful decision making in the ESIA processes for major developments. Public participation is a key requirement as stipulated in Article 69 Section 1 of the Kenyan Constitution, 2010, Legal Notice 101 of the Environmental Management and Coordination Act (EMCA), 1999, Section 3 of the EIA/EA regulations, 2003 and Section 87 & 113 of the County Governments Act, 2012.

Stakeholder Engagement and Public Participation is also necessary for Category '1' projects provided under AfDB Safeguards Policies. OS 1 Environment and Social Assessment requires stakeholder engagement with project affected persons (PAPs) and other stakeholders in the preparation/designing and implementation of AfDB financed projects. To fulfil this condition, consultations were done by the design engineer during initial ESIA preparation, and further consultations done by the KeNHA safeguards team. Further consultations have been done by the Design Review department as part of this ESIA updating.

Disclosure requirements will also be met by disclosing the ESIA on the KeNHA's website and AfDB external website.

### 5.2 Objectives of Stakeholder Participation

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

Stakeholder consultation during ESIA process is undertaken during the design, implementation and initial operation stages of the Project. The aim is to disseminate information to interested and affected parties (stakeholders), solicit their views and consult on sensitive issues.

The specific aims of the Public Consultation and Participation process during the Preparation of the ESIA at the design stage include:

- To inform the local people, leaders and other stakeholders about the proposed Project and its objectives
- Obtain the main concerns and perception of the community and their representatives of the Project
- To promote Project ownership by the operator and beneficiaries in order to minimize conflicts
- Obtain opinions and suggestions from the directly affected persons on the Project impacts and best suited measures to mitigate them
- Obtain opinions and suggestions on the Project Concepts, Designs, etc. and therefore minimize conflicts and delays in implementation
- To facilitate the development of appropriate and acceptable mitigation options
- To increase long term Project sustainability and ownership

### 5.3 General information

The public participation program conducted during the Environmental and Social Impact Assessment (ESIA) and Resettlement Action Plan (RAP) Studies was guided by a comprehensive set of considerations aimed at ensuring inclusivity and transparency. The structured community engagement sought to facilitate discussions and secure consent on several key aspects:

1. General Project Acceptance:- Initiating discussions and recording consent on the overall acceptance of the project within the community.

2. Proposed Project Design:- Engaging the community in practical considerations related to the alignment design and the footprint of the right of way for the project.
3. Relocation Process:- In cases involving persons to be relocated, providing options on the relocation process and securing acceptance of the relocation itself.
4. Impact Identification:- Enabling community participation in identifying both positive and negative impacts of the project, with a focus on the bio-physical and socio-cultural environment guided by the proposed design.
5. Alternative Alignments and Design:- Creating a platform for the identification of the need for alternative alignments and design approaches in specific areas, allowing the community to influence the proposed project design.
6. Risk Assessment:- Providing a platform for the community to inform the study team of potential environmental and social risks that the project may face.
7. Expected Project Benefits:- Facilitating discussions and recording community expectations regarding the benefits anticipated from the project.
8. Mitigation Measures:- Engaging in discussions on possible and practical mitigation measures informed by the experiences and insights of the community, government agency officials, and civil society representatives.
9. Land Take and Resettlement:- Addressing aspects specific to land take and resettlement, including disclosure of information on land take, RAP studies, potential grievances, and modalities for resolution.
  - Exploring existing and emerging issues related to land tenure, land use, and land management within the project area, with a specific focus on the proposed road alignment.
  - Assessing the status of land adjudication and registration in the area.

This comprehensive approach aimed to foster a collaborative decision-making process, incorporating the perspectives and concerns of the community, government, and civil society, ensuring a well-informed and participatory ESIA and RAP studies.

## 5.4 Methodology

### 5.4.1 Stakeholder Identification

In general, the following steps were followed in carrying out the entire consultation process: -

- vi. Courtesy visits to County Government offices –Elgeyo Marakwet County
- vii. Courtesy visits to County Commissioner - Elgeyo Marakwet County
- viii. Courtesy visits at the Deputy County Commissioners offices and Assistant County Commissioners offices
- ix. Setting meeting with the Governor, CECS, county commissioner and County technical team
- x. Setting dates for public Barazas and technical meetings at various levels and with different target groups

Target groups

*Table: The table below summarizes stakeholders identified and how they were consulted.*

Stakeholder	Identified Stakeholders	Consultation Method
National Government	Senator Member of Parliament Representatives County Commissioners Officer Commanding Station (OCS) Deputy County Commissioners Assistant County Commissioners Area Chiefs Police Representatives Sub-County Administrators	Introduction letter and one-on-one consultations

<b>County Government</b>	Governor of Elgeyo Marakwet County Deputy Governor Elgeyo Marakwet County Members of County Assembly (MCA) County Executive Committee Members from various County Departments County Chief officers from various Departments	Introduction letter and one-on-one consultations
<b>Project areas residents</b>	The General Public residing along Biretwo – Arror - Chesongoch	Stakeholder Engagement Meetings Public Meetings ( <i>Baraza</i> )

### Key Informant Meetings

#### Approach

The KeNHA team of the project held Stakeholders engagement meetings and public Barazas where they explained the objective and purpose of the engagement to the local residents and PAPs along the road from 5<sup>th</sup> -9<sup>th</sup> February, 2024. The objective of the activity was to gather the opinions and suggestions of the respondents. Through the public barazza the project's stakeholders i.e. the local community, business community (Biretwo, Rimoi, kabulwo and Chesongoch Centres), learning institutions, Private Sector Transporters, Matatu operators and motorists were able to provide their views and opinions on the project.

The meetings were held at the following venues:

*Table: Location of the stakeholder Engagement meetings public Barazas and number of participants*

Meeting Date	County	Venue	Male	Female	Total
5/02/2024	Elgeyo Marakwet	County Government offices-Iten	30	9	39
6/02/2024	Elgeyo Marakwet	Keiyo South Sub-County Senior chief's office (Chepsigot)	201	68	269
6/02/2024	Elgeyo Marakwet	Keiyo North Sub-County Chiefs office (Kabulwo)	187	44	231
7/02/2024	Elgeyo Marakwet	Marakwet West Sub-County Ward Administrators office Tunyo (Arror )	147	40	187
7/02/2024	Elgeyo Marakwet	Marakwet East Sub-County Murukuti junction (Chesongoch)	155	93	248
<b>Total</b>			<b>720</b>	<b>244</b>	<b>964</b>

*Table: Summary of the benefits and issues / concerns raised during the meetings*

<b>ENGAGEMENT WITH THE COUNTY GOVERNMENT OF ELGEYO MARAKWET LEADERSHIP</b>	
<b>STAKEHOLDERS</b>	<b>BENEFITS AND ISSUES / CONCERNS</b>
<ul style="list-style-type: none"> <li>KeNHA Representatives</li> <li>Representatives from the Ministry of Interior and National Coordination</li> <li>Governor Elgeyo Marakwet</li> <li>Senator Elgeyo Marakwet</li> <li>Deputy Governor Elgeyo Marakwet</li> <li>Member of Parliament Representatives</li> <li>Members of the County Assembly</li> </ul>	<p>xii. The Governor emphasized that the Biretwo-Arror-Chesongoch road project aligns with the County Integrated Development Plan (CIDP) spanning the years 2013, 2017, and 2022. Expressing optimism and confidence in the project's progress, the Governor highlighted that the envisioned benefits were becoming tangible. The county government pledged unwavering support throughout the construction process.</p> <p>xiii. Senator Elgeyo Marakwet proposed an alternative route for the project, diverting the road away from Arror Center and suggesting the original path at Kinyech Junction to reach Biretwo Health Center. Simultaneously, there was a recommendation to reconfigure Arror Center into a loop road, exploring potential</p>

<ul style="list-style-type: none"> <li>County Executive Committee Members from various County Departments</li> <li>County Chief officers from various Departments</li> </ul>	<p>options for addressing project needs more effectively or overcoming challenges linked to the current road alignment.</p> <p>xiv. The Governor recommended the upgrading of escarpment roads at Kabulwet, Chegilet, and Koitilial. Further suggestions included improvements to transportation infrastructure and the promotion of connectivity, particularly focusing on roads leading to Rimoi National Park and Biretwo Museum.</p> <p>xv. The initiative has reached a critical stage, marked by collaborative efforts and suggestions that underscore the shared commitment of both KeNHA and the County Government to ensure the success of the Biretwo-Arror-Chesongoch road project.</p> <p>xvi. It was proposed that KeNHA should integrate social infrastructure into the road and improve existing markets, including Biretwo, Kabulwo, Arrior, and Mogut.</p> <p>xvii. Mentioned during discussions was the absence of a scanning hospital along the entire road project in case of accidents. Therefore, it was proposed to construct at least two trauma centers along the project road to address emergency issues in case of accidents.</p> <p>xviii. Given the water scarcity in the area and the reliance on clean water from Arrior, it was proposed that the contractors drill boreholes at intervals of 6km in public institutions. This way, the contractor could share the resource with the community and hand it over to the community upon completion of the road project.</p> <p>xix. A proposal was made to integrate in-built fiber optic cable into the road for internet connectivity in the region, addressing issues of insecurity in Kerio Valley.</p> <p>xx. Recommendations included the improvement of access roads to all social amenities along the project road.</p> <p>xxi. Additionally, it was proposed to improve existing water furrows along the road, ensuring efficient water management and preservation of vital resources in the community.</p> <p>xxii. In regards to the proposed CSR initiatives the Authority requested the County Government of Elgeyo Marakwet to develop a write up with a list of CSR Initiatives and share with the authority.</p>
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### Summary of the benefits and issues / concerns raised during the public consultation meetings

#### Direct benefits

The stakeholders indicated that the improvement of the road will greatly enhance the economic development of the area, and reduce travel time enhanced security and vehicle maintenance costs experienced along the section of the road. Others key benefits noted by the stakeholders include:

1. Enhance Agricultural Connectivity: Streamline the transportation of agricultural produce to markets, especially in anticipation of the heightened production expected from the Arrior Dam project. This initiative aims to bolster the agricultural sector by ensuring efficient and timely transportation of goods.
2. Improve Security Infrastructure: Elevate the status of spur roads like Chegilet-Kipyegor-Kapchelal and Arrior-Sisiya-Kapsowar to enhance the capabilities of security forces in addressing regional insecurity. This strategic improvement in infrastructure supports the broader goal of ensuring the safety and well-being of the local population.
3. Boost Regional Economic Growth: Alleviate travel time and reduce vehicle maintenance costs, thereby catalyzing economic activities and trade in Elgeyo-Marakwet and neighboring counties. By enhancing transportation efficiency, this project directly contributes to economic growth and prosperity in the region.
4. Promote Tourism: Improve accessibility to the Rimoi National Reserve, a step that not only contributes to tourism development but also generates revenue for both the National and County Governments. This facet of the project aligns with broader efforts to showcase the region's natural beauty and cultural heritage while fostering economic sustainability through tourism.

5. **Reduced Travel Time and Maintenance Costs:** Stakeholders expect a notable reduction in travel time and vehicle maintenance costs along the road section.
6. **Improved Transportation Networks:** The road improvement will enhance transportation for people and goods, connecting urban markets, hospitals, schools, and administration centers.
7. **Cost Savings in Travel Time:** Anticipated reduction in the costs associated with travel time.
8. **Decreased Vehicle Maintenance Costs:** Stakeholders foresee a decrease in vehicle maintenance costs as a direct result of the road improvement.
9. **Air and Dust Pollution Reduction:** The project aims to reduce air and dust pollution along the road, contributing to environmental well-being.
10. **Employment Opportunities:** The road project is expected to provide employment and income-generating opportunities, especially for the youth in the communities.
11. **Business Advantages:** Businesses located along the road are poised to benefit from the overall improvement.
12. **Investment Opportunities:** The project is seen as a catalyst for greater internal and external investment opportunities.
13. **Boost to Farming:** Improved transportation is expected to stimulate farming activities, minimizing losses and facilitating the transportation of farm products.
14. **Enhanced Living Standards:** The living standards of people along the entire project corridor are anticipated to improve with the road enhancement.
15. **Improved Area Image:** The overall image of the area is expected to undergo a significant improvement.
16. **Enhanced Security in the Area:** Upgraded infrastructure, like improved roads, contributes to heightened security through improved surveillance, quicker response times, and increased community engagement.
17. **Growth of Centers in the Area;** Better roads stimulate the growth of urban centers, fostering development in markets, education, healthcare, and administration, enhancing overall urbanization.
18. **Improved tourism:** Improved infrastructure, particularly roads, facilitates access to new tourist destinations, driving tourism growth and offering economic opportunities for local businesses and communities.

Sub-County	Venue	Summary of issues raised and discussed
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<b>Keiyo South Sub County Public Baraza</b>	<b>Biretwo</b>	<ul style="list-style-type: none"> <li>xvi. The residents of Keiyo South emphasized the importance of implementing soil control measures during construction, particularly in this high escarpment area prone to erosion.</li> <li>xvii. The community's recommended prioritizing the construction of an access road to significant locations like the Biretwo Museum, Biretwo slaughterhouse, Chepsigot Chief's office, and the Blind Special School.</li> <li>xviii. The residents articulated a need for a proposed loop road to Biretwo Center to enhance overall traffic flow in and around Biretwo Centre.</li> <li>xix. In alignment with the community suggested that it is essential to install streetlights at major road centers and public institutions to ensure safety and convenience.</li> <li>xx. The residents emphasized the importance of water provisions, advocating for the drilling of boreholes along the project route, especially at public institutions.</li> <li>xxi. The residents emphasized addressing the community's vision for inclusive development, creating job opportunities for locals and Persons Living with Disabilities (PLWDs) should be integrated into the project.</li> <li>xxii. The residents stressed the significance of education and community support, suggesting the enhancement of schools situated along the project route as part of corporate social responsibilities (CSR).</li> <li>xxiii. Keiyo South Residents explained that Preserving cultural sites, including the Arrow River, is a priority for the community, and measures should be taken to ensure the site's integrity.</li> <li>xxiv. In promoting a sustainable future, the residents recommend that the contractor sets up campsites on public land for future use by the community.</li> <li>xxv. In addressing drainage issues along the road, the community advocated for the involvement of experts to ensure that the road design effectively mitigated flood concerns</li> <li>xxvi. The community requested KeNHA to adhere to legal requirements for any land acquisition or demolition of houses within the road reserve. Promoting transparency.</li> <li>xxvii. Emphasizing the benefits of past public participation meetings, residents requested that their opinions and grievances be taken into consideration, even if they differed from official perspectives.</li> <li>xxviii. Kenya National Highways Authority (KeNHA) was urged to design an advanced drainage system, avoiding diversions into private lands, and ensuring fair compensations in case of past land acquisitions.</li> <li>xxix. Expressing concerns about safety, the community highlighted issues related to bumps, over-speeding drivers, and suggested the installation of more permanent bumps. They also called for the improvement of the drainage system to prevent floods and soil erosion.</li> <li>xxx. The community raised concerns about the maintenance of road markings, signages, and the drainage system designed to control flooding, emphasizing the need for sustained functionality</li> </ul>
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<b>Keiyo North Sub-County Public Baraza</b>	<b>Kabulwo</b>	<ul style="list-style-type: none"> <li>xi. Keiyo North Subcounty residents strongly advocate for the tarmacking of security roads in the area, including the construction of Chepkundo and Tawilale access roads. Additionally, they underscore the importance of considering other feeder roads during the construction process.</li> <li>xii. Addressing security concerns, the residents recommend the installation of streetlights in the area to enhance overall safety, emphasizing the need for well-lit public spaces.</li> <li>xiii. Expressing concerns about child protection, the residents urge the implementation of comprehensive safety measures to ensure the well-being of children and to alleviate fears of potential abuse by project workers during road construction.</li> <li>xiv. In an effort to promote local community involvement, the residents suggest sourcing workers and construction materials locally, fostering economic empowerment and community engagement.</li> <li>xv. Emphasizing fairness, the residents recommend a compensation strategy based on fair market value for affected property owners, ensuring just and equitable compensation for any land acquisition or property adjustments.</li> <li>xvi. The residents express a desire for Corporate Social Responsibility (CSR) activities, including the improvement of existing markets, especially Kabulwo, and the enhancement of Chegilet health center through equipping. They also request the provision of scholarships to needy students as part of the community support initiatives associated with the construction project.</li> <li>xvii. The community requested KeNHA to adhere to legal requirements for any land acquisition or demolition of houses within the road reserve. Promoting transparency.</li> <li>xviii. Emphasizing the benefits of past public participation meetings, residents requested that their opinions and grievances be taken into consideration, even if they differed from official perspectives.</li> <li>xix. Kenya National Highways Authority (KeNHA) was urged to design an advanced drainage system, avoiding diversions into private lands, and ensuring fair compensations in case of past land acquisitions.</li> <li>xx. Expressing concerns about safety, the community highlighted issues related to bumps, over-speeding drivers, and suggested the installation of more permanent bumps. They also called for the improvement of the drainage system to prevent floods and soil erosion.</li> </ul>
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<b>Marakwet West Sub-County Public Baraza</b>	<b>Error</b>	<ul style="list-style-type: none"> <li>xiv. Marakwet West Subcounty residents raised critical concerns regarding compensation for land encroachment, emphasizing the need for fair and transparent processes in addressing these compensation issues.</li> <li>xv. Acknowledging the community's expectations, Corporate Social Responsibility (CSR) considerations included prioritizing the upgrading of health facilities and educational institutions along the project route, reflecting the residents' commitment to holistic community development.</li> <li>xvi. In the interest of road safety, participants advocated for the installation of speed bumps along the project route, contributing to safer travel conditions and accident prevention.</li> <li>xvii. Recognizing the importance of local community empowerment, there was a consensus among residents that local employment opportunities should be prioritized, ensuring that the community benefits directly from the project.</li> <li>xviii. Highlighting environmental concerns, residents expressed the need to minimize tree cutting along the project route, particularly emphasizing the preservation of mango trees that serve as a vital livelihood source for the locals.</li> <li>xix. To enhance safety and visibility, the installation of sufficient streetlights was recommended, especially at public institutions and market centers. Additionally, preserving existing furrows and streams for agricultural use aligned with the residents' commitment to sustainable land utilization.</li> <li>xx. Addressing route adjustments, residents proposed reinstating the original route from Kinyech Junction to Biretwo Health Center. This adjustment aimed to minimize land take while simultaneously upgrading Aror Center as a loop road for the project route, addressing both community and infrastructure needs.</li> <li>xxi. Residents advocated for the improvement of escarpment roads, specifically the Koitilial-Kapsowar road (30km) and Tunyo-Kapsowar road, recognizing the significance of well-maintained roads for accessibility and transportation efficiency.</li> <li>xxii. The community highlighted the need for the improvement of access roads to social amenities, including hospitals, schools, and market centers, emphasizing the importance of accessible infrastructure for the well-being of the residents.</li> <li>xxiii. The community requested KeNHA to adhere to legal requirements for any land acquisition or demolition of houses within the road reserve. Promoting transparency.</li> <li>xxiv. Emphasizing the benefits of past public participation meetings, residents requested that their opinions and grievances be taken into consideration, even if they differed from official perspectives.</li> <li>xxv. Kenya National Highways Authority (KeNHA) was urged to design an advanced drainage system, avoiding diversions into private lands, and ensuring fair compensations in case of past land acquisitions.</li> <li>xxvi. Expressing concerns about safety, the community highlighted issues related to bumps, over-speeding drivers, and suggested the installation of more permanent bumps.</li> </ul>
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<b>Marakwet East Sub-County Public Baraza</b>	<b>Chesongoch</b>	xii.	Residents in Marakwet East Subcounty to be involved in the construction activities, leveraging the skilled and unskilled labor available in the area, ensuring a collaborative effort and promoting community participation.
		xiii.	Throughout the construction process, the residents asked for commitment to the preservation of water furrows, acknowledging their significance and ensuring minimal disruption to the local water supply infrastructure.
		xiv.	Access roads along the project route to be upgraded, enhancing connectivity within the community and facilitating smoother transportation for residents.
		xv.	To address water needs in the area, the establishment of boreholes was recommended by the residents, providing a sustainable solution and improving water accessibility for the residents.
		xvi.	The residents suggested that the constructor source materials locally, contributing to the improvement of livelihoods in the community and fostering economic empowerment among the residents.
		xvii.	Responding to a specific community request, Corporate Social Responsibility (CSR) initiatives suggestions were directed towards the Queen of Peace Secondary School at Chesongoch. This school, renamed after more than 70 students were massacred, now serves as a center of peace and hosts students from West Pokot, Elgeyo Marakwet, and Baringo County. The requested CSR activities included dumping material and grading of a playground, the construction of a dormitory for the girls, and scholarships for female students, reflecting the community's commitment to education and memorializing the tragic event.
		xviii.	The community requested KeNHA to adhere to legal requirements for any land acquisition or demolition of houses within the road reserve. Promoting transparency.
		xix.	Emphasizing the benefits of past public participation meetings, residents requested that their opinions and grievances be taken into consideration, even if they differed from official perspectives.
		xx.	Expressing concerns about safety, the community highlighted issues related to bumps, over-speeding drivers, and suggested the installation of more permanent bumps. They also called for the improvement of the drainage system to prevent floods and soil erosion.
		xxi.	The community raised concerns about the maintenance of road markings, signages, and the drainage system designed to control flooding, emphasizing the need for sustained functionality
		xxii.	Ensure the proper handling and utmost care in the process of relocating the grave, with a focus on maintaining respect of culture and sensitivity throughout the entire procedure.

### Anticipated Environmental and Social impacts

#### Positive Impacts

1. Traffic Management: Mitigating congestion not only improves daily commutes but also contributes to a more sustainable and efficient transportation network.
2. Economic Growth: Streamlined transportation fosters a conducive environment for businesses, promoting economic growth through the efficient movement of goods and services.
3. Agricultural Trade: Facilitating the transport of agricultural products supports local farmers, enhancing trading opportunities and economic development.
4. Employment Opportunities: Actively involving local communities in project implementation creates job opportunities, contributing to community welfare.
5. Improved Safety: Enhanced safety measures can significantly reduce accidents along the project road, promoting overall well-being.

6. **Urban Development:** The project can stimulate the growth of urban centers, fostering infrastructure development and improving living standards.
7. **Security Measures:** Installation of security and street lighting enhances safety, creating a secure environment for residents and businesses.
8. **Investment Attraction:** Well-constructed road networks attract investors, spurring commercial activities and contributing to the economic vitality of the area.
9. **Aesthetic Enhancement:** The project can contribute to the visual appeal of the surroundings, creating aesthetically pleasing landscapes.
10. **Infrastructure Efficiency:** Improving road functionality ensures a more effective transportation system, benefiting both residents and businesses.
19. **Enhanced Security in the Area:** Upgraded infrastructure, like improved roads, contributes to heightened security through improved surveillance, quicker response times, and increased community engagement.
20. **Growth of Centers in the Area:** Better roads stimulate the growth of urban centers, fostering development in markets, education, healthcare, and administration, enhancing overall urbanization.
21. **Increased tourism activities:** Improved infrastructure, particularly roads, facilitates access to new tourist destinations, driving tourism growth and offering economic opportunities for local businesses and communities.

### **Negative Impacts**

1. **Business Disruption:** Displacement of businesses during construction may have short-term negative effects, requiring mitigation strategies and compensation mechanisms.
2. **Dust Emission:** The emission of dust during construction poses environmental concerns, necessitating dust control measures to minimize impact.
3. **Project Delays:** Delays in project completion can lead to increased costs and inconvenience for both stakeholders and the community.
4. **Vehicle Damage:** Poorly excavated diversions may result in damage or breakdown of vehicles, emphasizing the need for careful construction planning.
5. **Navigational Challenges:** Users may face difficulties navigating diversions during construction, requiring effective communication and signage to minimize disruptions.
6. **Increased Occurrence of Accidents:** Construction activities may lead to a rise in accidents, emphasizing the need for heightened safety measures during the project's execution.
7. **Loss of Vegetation:** The project may result in the removal of vegetation, necessitating careful planning and potential replanting efforts to mitigate environmental impact.
8. **Loss of Land:** The acquisition of land for road development may pose challenges, emphasizing the importance of fair compensation and thoughtful land-use considerations.
9. **Social Disruption:** The construction phase could contribute to social disruption, including the spread of communicable diseases and potential impacts on vulnerable populations like sex workers.
10. **Potential Risk of Soil Erosion:** The project may introduce a risk of soil erosion, highlighting the importance of implementing effective erosion control measures to safeguard the environment.
11. **Disruption of Utilities:** Excavation work may disrupt water, power, and other utility lines, necessitating coordination with relevant entities to minimize service interruptions.
12. **Conflicts and Delays:** Possible conflicts and delays in construction could arise, underscoring the need for robust conflict resolution mechanisms to ensure the project progresses smoothly.

13. Increased Insecurities and Theft Cases: Construction areas may experience heightened insecurities and theft, emphasizing the deployment of security personnel to safeguard both the project and the surrounding community

### **Mitigation Measures**

14. Alternate Trading Locations: Provide alternative trading spaces and offer compensation to traders affected by the project's construction.
15. Dust Emission Control: Implement dust control measures, such as sprinkling water on excavated areas, to minimize environmental impact and health concerns.
16. Project Timeline Management: Implement strict project management practices to minimize delays, ensuring efficient completion without unnecessary disruptions.
17. Diversions: Ensure well-planned and properly excavated diversions to prevent damage or breakdown of vehicles, prioritizing safety and convenience for road users.
18. Effective Communication: Clearly communicate diversion routes and potential challenges to road users, minimizing navigational issues and promoting awareness during construction.
19. Road Safety: Implement stringent safety measures to reduce the occurrence of accidents during construction, prioritizing the well-being of workers and the public.
20. Vegetation Conservation: Develop strategies to preserve and replant vegetation affected by the project, promoting environmental sustainability.
21. Land Management: Minimize land loss by optimizing construction plans and exploring alternative layouts to preserve valuable land.
22. Community Health Measures: Implement health protocols to mitigate the spread of communicable diseases, addressing social disruption concerns during construction.
23. Erosion Control Measures: Implement soil erosion prevention techniques, such as retaining walls or vegetation cover, to mitigate potential risks.
24. Utilities Coordination: Coordinate with utility providers to minimize disruptions to water, power, and other essential services, ensuring seamless continuity during construction.
25. Conflict Resolution Mechanisms: Establish effective conflict resolution strategies to address potential conflicts and prevent delays in construction.
26. Security Measures: Enhance security in the construction area to minimize theft cases and maintain a secure environment for workers and nearby residents by security personnel throughout the construction phase.

### **Proposed Improvements on the Road project**

The suggestions proposed in the provided for improvement to the road construction project are as follows:

1. Promote awareness among motorists and road users

Promoting awareness is a vital component of road safety initiatives. This involves educating both motorists and other road users about the importance of safe driving practices and adherence to traffic rules. Such awareness campaigns contribute to a safer road environment by fostering a culture of responsibility and compliance among all stakeholders.

2. Introduce speed bumps in densely populated areas

In densely populated areas, controlling vehicle speeds is crucial for the safety of residents. The introduction of speed bumps serves as a physical deterrent, encouraging drivers to reduce their speed. This measure not only enhances safety but also contributes to a more secure and livable environment for those living in close proximity to the road.

3. Construct effective drainage systems

The construction of effective drainage systems, including access culverts, is essential for preventing flooding and ensuring proper water flow. Proper drainage infrastructure minimizes the risk of water-related damage to the road and surrounding areas, contributing to the longevity of the road and reducing the potential for accidents.

#### 4. Install well-defined road signs

Well-designed and prominently placed road signs play a crucial role in providing clear directions and information to drivers. Proper signage enhances navigation, reduces confusion, and ultimately contributes to a safer road environment by ensuring that drivers have the necessary information to make informed decisions.

#### 5. Establish zebra crossings near schools, hospitals, and markets

Zebra crossings near key locations such as schools, hospitals, and markets are essential for facilitating safe pedestrian crossings. These designated crossing points enhance pedestrian safety by providing a clearly marked and protected pathway, reducing the risk of accidents involving pedestrians and vehicles.

#### 6. Widen roads and create additional lanes

To accommodate increased traffic flow, widening roads and creating additional lanes are effective measures. This infrastructure improvement not only addresses congestion but also enhances traffic flow, reducing the likelihood of traffic jams and improving overall road efficiency and safety.

#### 7. Install bus stops at strategic points

Placing bus stops at strategic points along the road is crucial for providing convenient public transportation access. Well-designed bus stops contribute to efficient public transportation services, encouraging their use and reducing the number of unscheduled stops, thus improving overall traffic flow.

#### 8. Incorporate climbing lanes on uphill stretches

In hilly terrain, incorporating climbing lanes on uphill stretches improves traffic flow. This design feature helps vehicles maintain a steady speed on inclines, reducing the risk of congestion and promoting safer driving conditions on challenging topography.

#### 9. Introduce pedestrian walkways and zebra crossings in busy areas

Introducing pedestrian walkways and zebra crossings in busy areas enhances overall traffic and pedestrian movement. These designated areas prioritize pedestrian safety, providing clear pathways for foot traffic and reducing conflicts between pedestrians and vehicles.

#### 10. Construct shelters at bus stops and designated areas for motorcycle riders

Constructing shelters at bus stops and designated areas for motorcycle riders, known as boda bodas, enhances the comfort and safety of public transportation users. These shelters provide protection from the elements and contribute to a more organized and secure transportation infrastructure.

#### 11. Develop parking lots for trucks and trailers

Developing parking lots specifically designed for trucks and trailers addresses the parking needs of larger vehicles. This measure reduces congestion on the main road, enhances traffic flow, and contributes to overall road safety by providing designated spaces for these vehicles.

#### 12. Create service lanes alongside the main road and access roads to public institutions

Creating service lanes alongside the main road facilitates smoother traffic flow during various activities. Service lanes are especially beneficial for activities such as loading and unloading, reducing disruptions to the main traffic flow and enhancing overall road efficiency.

#### 13. Build a market space for roadside vendors

Building a market space for roadside vendors helps alleviate congestion along the road. By providing a designated area for vendors, the road environment becomes more organized, reducing the risk of accidents and enhancing safety for both vendors and road users.

#### 14. Ensure proper demarcation, marking, and labeling of road features

Proper demarcation, marking, and labeling of road features and lanes are crucial for improving visibility for motorists and road users. Clear and visible markings contribute to safer driving conditions by reducing the likelihood of confusion and improving overall traffic management.

#### 15. Implement appropriate waste disposal methods during construction

Implementing appropriate waste disposal methods during construction is essential for maintaining cleanliness and reducing negative environmental impacts. Proper waste management practices contribute to a healthier environment, minimizing the ecological footprint of road construction projects.

## 16. Plant trees along the project area

Planting trees along the project area enhances the environment and aesthetics of the road. Beyond visual appeal, trees contribute to improved air quality, provide shade, and support biodiversity, creating a more pleasant and sustainable road environment.

## 17. Erect speed bumps designed for minimal discomfort

Erecting speed bumps designed to minimize discomfort for road users serves as an effective speed reduction measure. These carefully designed bumps encourage drivers to slow down without causing excessive discomfort, striking a balance between traffic control and user convenience.

## 18. Commit to continuous maintenance after road construction

Committing to continuous maintenance after road construction is crucial for ensuring the longevity and safety of the constructed road. Regular maintenance activities address wear and tear, preventing deterioration and preserving the road's functionality and safety features over time.

## 19. Conservation of Cultural Sites

In the road development process, it is imperative to prioritize the conservation of cultural sites along the project area. Recognition and preservation of cultural heritage contribute to the identity and history of communities. If any cultural sites are identified within the project scope, efforts will be made to conserve them. In instances where conservation might be challenging, the elders or relevant authorities will be respectfully notified, highlighting the cultural significance of these sites. This communication ensures that the elders are informed about the importance of these cultural landmarks and can offer valuable insights for their protection and preservation.

## 20. Corporate Social Responsibility (CSR) Initiatives

Incorporate CSR initiatives, focusing on education, healthcare, and environmental conservation, to positively impact local communities and promote sustainable development

The above provides a valuable insight into the impacts of the proposed road project on the environment and Society as a whole. It's crucial to weigh these concerns comprehensively in the decision-making process to ensure a balanced approach that maximizes positive outcomes while mitigating potential negative impacts.

In conclusion, continuous engagement with the public and stakeholders is a crucial part of any project's lifecycle. The team will hold regular stakeholder meetings to gather more information and comments. These sessions can also be used to validate the collected data. These sessions are also intended to enhance the design and minimize any potential impacts.

*Table Summary of General Comments and Concerns from the Public Consultation*

	ISSUES	COMMENTS	RESPONSE TO COMMENTS
1.	<b>Road Safety</b>	<ul style="list-style-type: none"> <li>The design should incorporate road safety especially at main centres along the road</li> </ul>	The participants were informed that during the design, areas with high accidents and risks will be identified and incorporate road safety measures in the road design, including installation of speed calming measures, foot bridges, and signage. In addition, footpaths and service roads will be constructed in major centres to ease traffic flow at these areas
2.	<b>Corporate Social responsibility</b>	<ul style="list-style-type: none"> <li>Incorporate CSR initiatives, focusing on education, healthcare, and environmental conservation, to positively impact local communities and promote sustainable development</li> </ul>	KeNHA acknowledges the importance of Corporate Social Responsibility (CSR) in their initiatives. Once the road construction commences, the Authority will use the right criteria to identify key CSR initiatives to be incorporated to meet the needs of the residents.
3.	<b>Child protection</b>	<ul style="list-style-type: none"> <li>How will KeNHA deal with the Gender Based Violence and Sexual Harassment and Exploitation cases</li> </ul>	KeNHA will address employee morals through strict enforcement of a code of conduct and monitoring plans, ensuring professionalism and ethical behavior during road construction projects.
4.	<b>Cultural sites</b>	<ul style="list-style-type: none"> <li>Conservation of Cultural</li> </ul>	In the road development process, it is imperative to prioritize

	ISSUES	COMMENTS	RESPONSE TO COMMENTS
		Sites	the conservation of cultural sites along the project area. Recognition and preservation of cultural heritage contribute to the identity and history of communities. If any cultural sites are identified within the project scope, efforts will be made to conserve them. In instances where conservation might be challenging, the elders or relevant authorities will be respectfully notified, highlighting the cultural significance of these sites. This communication ensures that the elders are informed about the importance of these cultural landmarks and can offer valuable insights for their protection and preservation.
5.	<b>Environmental and Social mitigation measures</b>	<ul style="list-style-type: none"> <li>The meetings highlighted the need for proper environmental and social mitigation measures, for issues like dust, safety of community members, drainage, among others to be incorporated and enforced during construction</li> </ul>	The Authority is conducting the ESIA (and RAP) to identify impacts of the project, and will come up with mitigation measures to eliminate or minimize negative impacts of the project. The Contractor will be required to adhere to the mitigation measures proposed throughout the project duration.
6.	<b>Employment of local staff during road construction</b>	<ul style="list-style-type: none"> <li>The locals requested that their youth get formal and casual employment in the project so as the community can benefit further economically.</li> <li>The community asked that the government give their youth priority.</li> </ul>	<p>At the construction phase, the Contractor will be required to have a policy that prioritizes qualified locals and that they get:</p> <ul style="list-style-type: none"> <li>Casual Labor opportunities as supplementary income sources;</li> <li>Equal opportunities to both men and women as the women are very interested in these jobs</li> <li>For women who would like to provide support services to the construction workers, they will be assisted to understand the procedures required to legalize their small businesses.</li> </ul>
7.	<b>Decision making</b>	Involvement of the local leadership when coordinating issues affecting the locals is very critical. Chiefs should be involved in coordinating any involvement with the community since they are impartial.	<p>On discussions with PAPs on grievance resolution, GRC will comprise of administration, and members to be selected by the affected persons, with representatives of women, men, youth and PLWD.</p> <p>This system has been adopted into the project's grievance resolution mechanism as presented in both the RAP and ESIA Reports.</p>
8.	<b>Population influx</b>	The communities acknowledged that with road construction there was bound to be population influx of people from other areas coming in search of jobs during project construction.	Contractor shall be encouraged to local labor as feasible. An open and transparent employment policy especially for semiskilled and unskilled workers shall be required of the contractor.

### 5.5 Analysis of Questionnaires

This survey was conducted to gather opinions about the various effects of road construction on the people who live and work within the project areas as well as the impact of the environment. The **Table 6-1** below summarizes the respondents' concerns.



Table 5-2: Summary of Issues Raised by the Respondents

No.	Respondents	Gender	Telephone Number	Location/Area of residence	Comments and issues raised
<b>KEYO SOUTH</b>					
1	Izena Kandie	Female	0725027679	Chepsigot	<b>Positive Socio-economic Impacts</b> <ul style="list-style-type: none"> <li>• Improve access to markets and services</li> <li>• Job opportunities during construction</li> </ul> <b>Negative Environmental Impacts</b> <ul style="list-style-type: none"> <li>• Soil erosion</li> <li>• Air pollution</li> <li>• Noise pollution</li> </ul>
2	Wiliam Too	Male	07224220012	Chepsigot	<b>Positive Socio-economic Impacts</b> <ul style="list-style-type: none"> <li>• Improve access to markets and services</li> <li>▪ Job opportunities during construction</li> <li>▪ Increase road safety</li> <li>▪ Save time of travel</li> </ul> <b>Negative Environmental Impacts</b> <ul style="list-style-type: none"> <li>• Air pollution</li> <li>• Loss of vegetation</li> <li>• Noise pollution</li> </ul>
3	Joel Cherugat	Male	0725200625	Chepsigot	<b>Positive Socio-economic Impacts</b> <ul style="list-style-type: none"> <li>• Improve access to markets and services</li> <li>• Job opportunities during construction</li> <li>• Increase road safety</li> </ul> <b>Negative Environmental Impacts</b> <ul style="list-style-type: none"> <li>• Air pollution</li> <li>• Noise pollution</li> </ul>
4	Amos Morori	Male	0720722130	Chepsigot	<b>Positive Socio-economic Impacts</b> <ul style="list-style-type: none"> <li>• Improve access to markets and services</li> <li>• Job opportunities during construction</li> <li>• Increase road Safety</li> <li>• Improve business in the area</li> </ul> <b>Negative Environmental Impacts</b> <ul style="list-style-type: none"> <li>• Air pollution</li> <li>• Loss of vegetation</li> <li>• Noise pollution</li> </ul>
5	Timothy Kemboi	Male	0717612380	Chepsigot	<b>Positive Socio-economic Impact</b> <ul style="list-style-type: none"> <li>• Improve access to markets and services</li> <li>• Job opportunities during construction</li> <li>• Increase road Safety</li> </ul>

					<b>Negative Environmental Impacts</b> <ul style="list-style-type: none"> <li>▪ Soil erosion</li> <li>▪ Water pollution</li> <li>▪ Air pollution</li> <li>▪ Loss of Vegetation</li> <li>▪ Noise pollution</li> </ul>
6	Kiprop David	Male	0713525792	Epke	<b>Positive Socio-economic Impact</b> <ul style="list-style-type: none"> <li>• Improve access to markets and services</li> <li>• Job opportunities during construction</li> </ul>
					<b>Negative Environmental Impacts</b> <ul style="list-style-type: none"> <li>▪ Soil erosion</li> <li>▪ Water pollution</li> <li>▪ Air pollution</li> <li>▪ Loss of Vegetation</li> <li>▪ Noise pollution</li> </ul>
7	Timothy Murkomen	Male	0722603617	Kabito	<b>Positive Socio-economic Impact</b> <ul style="list-style-type: none"> <li>• Job opportunities during construction</li> </ul>
					<b>Negative Environmental Impacts</b> <ul style="list-style-type: none"> <li>▪ Air pollution</li> <li>▪ Noise pollution</li> </ul>
8	Jeniffer Kigen	Female	0727230363	Koroben	<b>Positive Socio-economic Impact</b> <ul style="list-style-type: none"> <li>• Improve access to markets and services</li> <li>• Job opportunities during construction</li> <li>• Development and growth of the area</li> </ul>
					<b>Negative Environmental Impacts</b> <ul style="list-style-type: none"> <li>▪ Air pollution</li> <li>▪ Loss of Vegetation</li> <li>▪ Noise pollution</li> </ul>
9	Flora Kibet	Female	0715379739	Kibei	<b>Positive Socio-economic Impact</b> <ul style="list-style-type: none"> <li>• Improve access to markets and services</li> <li>• Job opportunities during construction</li> </ul>
					<b>Negative Environmental Impacts</b> <ul style="list-style-type: none"> <li>▪ Soil erosion</li> <li>▪ Water pollution</li> <li>▪ Air pollution</li> <li>▪ Loss of Vegetation</li> <li>▪ Noise pollution</li> </ul>

10	Selly Sergon	Female	0714718774	Chebinyiny	<b>Positive Socio-economic Impact</b> <ul style="list-style-type: none"><li>• Improve access to markets and services</li><li>• Job opportunities during construction</li></ul>
					<b>Negative Environmental Impacts</b> <ul style="list-style-type: none"><li>▪ Soil erosion</li><li>▪ Water pollution</li><li>▪ Air pollution</li><li>▪ Loss of Vegetation</li><li>▪ Noise pollution</li></ul>
Keyo North					
11	Olover Kipchumba	Male	0728238846	Keu Location	<b>Positive Socio-economic Impact</b> <ul style="list-style-type: none"><li>• Increase road Safety</li></ul>
					<b>Negative Environmental Impacts</b> <ul style="list-style-type: none"><li>▪ Air pollution</li></ul>
12	Obadiah Kiprotich	Male	0707042024	Wetani	<b>Positive Socio-economic Impact</b> <ul style="list-style-type: none"><li>• Reduce time of travel</li></ul>
					<b>Negative Environmental Impacts</b> <ul style="list-style-type: none"><li>▪ Air pollution</li></ul>
13	Raphael Cheruiyot	Female	0758572350	Keu	<b>Positive Socio-economic Impact</b> <ul style="list-style-type: none"><li>• Job opportunities during construction</li></ul>
					<b>Negative Environmental Impacts</b> <ul style="list-style-type: none"><li>▪ Air pollution</li></ul>
14	Peris Ruto	Female	0721567264	Keu	<b>Positive Socio-economic Impact</b> <ul style="list-style-type: none"><li>• Improve access to markets and services</li></ul>
					<b>Negative Environmental Impacts</b> <ul style="list-style-type: none"><li>▪ Air pollution</li></ul>
15	Nathaniel Kandie	Male	0727046031	Keu	<b>Positive Socio-economic Impact</b> <ul style="list-style-type: none"><li>• Job opportunities during construction</li></ul>
					<b>Negative Environmental Impacts</b> <ul style="list-style-type: none"><li>▪ Air pollution</li><li>▪ Loss of Vegetation</li></ul>
16	Gristen Amtan	Female		Kabulwo	<b>Positive Socio-economic Impact</b> <ul style="list-style-type: none"><li>• Job opportunities during construction</li><li>• Increase road Safety</li></ul>
					<b>Negative Environmental Impacts</b> <ul style="list-style-type: none"><li>▪ Air pollution</li><li>▪ Loss of Vegetation</li></ul>

17	Kipruto Oliver	Male	0727653238	Kamaingon	<b>Positive Socio-economic Impact</b> <ul style="list-style-type: none"><li>• Improve access to markets and services</li><li>• Job opportunities during construction</li></ul>
					<b>Negative Environmental Impacts</b> <ul style="list-style-type: none"><li>▪ Air pollution</li><li>▪ Loss of Vegetation</li></ul>
18	David Andany	Male	0727573846	Kabulwo	<b>Positive Socio-economic Impact</b> <ul style="list-style-type: none"><li>• Job opportunities during construction</li></ul>
					<b>Negative Environmental Impacts</b> <ul style="list-style-type: none"><li>▪ Air pollution</li></ul>
19	Samuel K.	Male	0795644288	Kokwad	<b>Positive Socio-economic Impact</b> <ul style="list-style-type: none"><li>• Improve access to markets and services</li><li>• Job opportunities during construction</li><li>• Increase road Safety</li></ul>
					<b>Negative Environmental Impacts</b> <ul style="list-style-type: none"><li>▪ Air pollution</li><li>▪ Loss of Vegetation</li><li>▪ Noise pollution</li></ul>
20	Henry Kwambai	Male	0728238846	Keu Location	<b>Positive Socio-economic Impact</b> <ul style="list-style-type: none"><li>• Job opportunities during construction</li><li>• Reduce time of travel</li></ul>
					<b>Negative Environmental Impacts</b> <ul style="list-style-type: none"><li>▪ Air pollution</li></ul>
Marakwet East					
21	Joseph Cheptumo	Male	0724603522	Marakwet East Murkutwo	<b>Positive Socio-economic Impact</b> <ul style="list-style-type: none"><li>• Improve access to markets and services</li><li>• Job opportunities during construction</li><li>• Increase road Safety</li></ul>
					<b>Negative Environmental Impacts</b> <ul style="list-style-type: none"><li>▪ Soil erosion</li><li>▪ Water pollution</li><li>▪ Air pollution</li><li>▪ Loss of Vegetation</li><li>▪ Noise pollution</li></ul>
22	Timothy Kipkeu	Male	0797003491	Chewwonyo	<b>Positive Socio-economic Impact</b> <ul style="list-style-type: none"><li>• Improve access to markets and services</li><li>• Job opportunities during construction</li></ul>
					<b>Negative Environmental Impacts</b> <ul style="list-style-type: none"><li>▪ Soil erosion</li><li>▪ Water pollution</li></ul>

					<ul style="list-style-type: none"> <li>▪ Air pollution</li> <li>▪ Loss of Vegetation</li> <li>▪ Noise pollution</li> </ul>
23	Francis Kirop	Male	071470790	Murkutwo	<b>Positive Socio-economic Impact</b> <ul style="list-style-type: none"> <li>• Improve access to markets and services</li> <li>• Job opportunities during construction</li> <li>• Increase road Safety</li> <li>• Less travel time</li> </ul>
					<b>Negative Environmental Impacts</b> <ul style="list-style-type: none"> <li>▪ Soil erosion</li> <li>▪ Water pollution</li> <li>▪ Air pollution</li> <li>▪ Loss of Vegetation</li> <li>▪ Noise pollution</li> </ul>
24	Raphale Too	Male	0723451231	Chechaw	<b>Positive Socio-economic Impact</b> <ul style="list-style-type: none"> <li>• Improve access to markets and services</li> <li>• Job opportunities during construction</li> </ul>
					<b>Negative Environmental Impacts</b> <ul style="list-style-type: none"> <li>▪ Soil erosion</li> <li>▪ Water pollution</li> <li>▪ Air pollution</li> <li>▪ Loss of Vegetation</li> <li>▪ Noise pollution</li> </ul>
25	Kisagan Marko	Male	0745882551	Murkutwo	<b>Positive Socio-economic Impact</b> <ul style="list-style-type: none"> <li>• Improve access to markets and services</li> <li>• Job opportunities during construction</li> <li>• Increase road Safety</li> <li>• Centres will come up</li> </ul>
					<b>Negative Environmental Impacts</b> <ul style="list-style-type: none"> <li>▪ Soil erosion</li> <li>▪ Water pollution</li> <li>▪ Air pollution</li> <li>▪ Loss of Vegetation</li> <li>▪ Noise pollution</li> </ul>
26	Kisang Jeniffer	Female	0727085691	Murkutwo	<b>Positive Socio-economic Impact</b> <ul style="list-style-type: none"> <li>• Improve access to markets and services</li> <li>• Job opportunities during construction</li> <li>• Increase road Safety</li> </ul>

					<b>Negative Environmental Impacts</b> <ul style="list-style-type: none"> <li>▪ Soil erosion</li> <li>▪ Water pollution</li> <li>▪ Air pollution</li> <li>▪ Loss of Vegetation</li> <li>▪ Noise pollution</li> </ul>
27	Mary Chemweno	Female	0726771727	Chechan	<b>Positive Socio-economic Impact</b> <ul style="list-style-type: none"> <li>• Improve access to markets and services</li> </ul> <b>Negative Environmental Impacts</b> <ul style="list-style-type: none"> <li>▪ Soil erosion</li> <li>▪ Loss of Vegetation</li> <li>▪ Noise pollution</li> <li>▪ Increase accidents</li> </ul>
28	Sarah Chemweno	Female	0743886437	Enou	<b>Positive Socio-economic Impact</b> <ul style="list-style-type: none"> <li>• Improve access to markets and services</li> <li>• Job opportunities during construction</li> <li>• Increase road Safety</li> <li>• Save on travel time</li> </ul> <b>Negative Environmental Impacts</b> <ul style="list-style-type: none"> <li>▪ Soil erosion</li> <li>▪ Air pollution</li> <li>▪ Loss of Vegetation</li> <li>▪ Noise pollution</li> </ul>
29	John Matuk	Male	0710118605	Chechan	<b>Positive Socio-economic Impact</b> <ul style="list-style-type: none"> <li>• Improve access to markets and services</li> <li>• Job opportunities during construction</li> <li>• Increase road Safety</li> </ul> <b>Negative Environmental Impacts</b> <ul style="list-style-type: none"> <li>▪ Soil erosion</li> <li>▪ Water pollution</li> <li>▪ Air pollution</li> <li>▪ Loss of Vegetation</li> <li>▪ Noise pollution</li> </ul>
30	Samuel Kaatam	Male	0727371338	Chechan	<b>Positive Socio-economic Impact</b> <ul style="list-style-type: none"> <li>• Improve access to markets and services</li> <li>• Job opportunities during construction</li> <li>• Increase road Safety</li> </ul> <b>Negative Environmental Impacts</b> <ul style="list-style-type: none"> <li>▪ Soil erosion</li> <li>▪ Water pollution</li> </ul>

					<ul style="list-style-type: none"> <li>▪ Air pollution</li> <li>▪ Loss of Vegetation</li> <li>▪ Noise pollution</li> </ul>
<b>Marakwet West</b>					
31	Paul Mutwol	Male	0713780755	Arror	<b>Positive Socio-economic Impact</b> <ul style="list-style-type: none"> <li>• Improve access to markets and services</li> <li>• Job opportunities during construction</li> </ul> <b>Negative Environmental Impacts</b> <ul style="list-style-type: none"> <li>▪ Soil erosion</li> </ul>
32	John K. Kibet	Male	0701934505	Arror	<b>Positive Socio-economic Impact</b> <ul style="list-style-type: none"> <li>• Improve access to markets and services</li> <li>• Job opportunities during construction</li> <li>• Increase road Safety</li> <li>• Save time of travel</li> </ul> <b>Negative Environmental Impacts</b> <ul style="list-style-type: none"> <li>▪ Loss of Vegetation</li> </ul>
33	Aron Konya	Male	0742868715	Arror	<b>Positive Socio-economic Impact</b> <ul style="list-style-type: none"> <li>• Improve access to markets and services</li> </ul> <b>Negative Environmental Impacts</b> <ul style="list-style-type: none"> <li>▪ Soil erosion</li> </ul>
34	Isaack Rotich	Male	0725532283	Arror	<b>Positive Socio-economic Impact</b> <ul style="list-style-type: none"> <li>• Job opportunities during construction</li> </ul> <b>Negative Environmental Impacts</b> <ul style="list-style-type: none"> <li>▪ Loss of Vegetation</li> </ul>
35	Maureen Kitum	Female	0796465371	Chesuman	<b>Positive Socio-economic Impact</b> <ul style="list-style-type: none"> <li>• Improve access to markets and services</li> <li>• Job opportunities during construction</li> <li>• Increase road Safety</li> <li>• Improve emergency response</li> </ul> <b>Negative Environmental Impacts</b> <ul style="list-style-type: none"> <li>▪ Soil erosion</li> <li>▪ Water pollution</li> <li>▪ Air pollution</li> <li>▪ Loss of Vegetation</li> <li>▪ Noise pollution</li> </ul>
36	Margaret Maiyo	Female	0728588620	Arror	<b>Positive Socio-economic Impact</b> <ul style="list-style-type: none"> <li>• Improve access to markets and services</li> <li>• Job opportunities during construction</li> <li>• Increase road Safety</li> </ul>

					<b>Negative Environmental Impacts</b> <ul style="list-style-type: none"> <li>▪ Soil erosion</li> <li>▪ Water pollution</li> <li>▪ Air pollution</li> <li>▪ Loss of Vegetation</li> <li>▪ Noise pollution</li> </ul>
37	Jenifer Kosgey	Female	0705496728	Arror	<b>Positive Socio-economic Impact</b> <ul style="list-style-type: none"> <li>• Improve access to markets and services</li> <li>• Job opportunities during construction</li> <li>• Increase road Safety</li> </ul>
					<b>Negative Environmental Impacts</b> <ul style="list-style-type: none"> <li>▪ Soil erosion</li> <li>▪ Water pollution</li> <li>▪ Air pollution</li> <li>▪ Loss of Vegetation</li> <li>▪ Noise pollution</li> </ul>
38	Evans Rutto	Male	0725095262	Kilos	<b>Positive Socio-economic Impact</b> <ul style="list-style-type: none"> <li>• Job opportunities during construction</li> </ul>
					<b>Negative Environmental Impacts</b> <ul style="list-style-type: none"> <li>▪ Water pollution</li> <li>▪ Air pollution</li> </ul>
39	Faith Chebet	Female	0729904180	Arror	<b>Positive Socio-economic Impact</b> <ul style="list-style-type: none"> <li>• Improve access to markets and services</li> <li>• Job opportunities during construction</li> <li>• Increase road Safety</li> <li>• Improve emergency response</li> </ul>
					<b>Negative Environmental Impacts</b> <ul style="list-style-type: none"> <li>▪ Soil erosion</li> <li>▪ Water pollution</li> <li>▪ Air pollution</li> <li>▪ Loss of Vegetation</li> <li>▪ Noise pollution</li> </ul>
40	Timothy Kipchumba	Male	0726420024	Arror	<b>Positive Socio-economic Impact</b> <ul style="list-style-type: none"> <li>• Improve access to markets and services</li> <li>• Job opportunities during construction</li> <li>• Increase road Safety</li> <li>• Improve access to social services</li> </ul>
					<b>Negative Environmental Impacts</b> <ul style="list-style-type: none"> <li>▪ Soil erosion</li> <li>▪ Water pollution</li> </ul>



					<ul style="list-style-type: none"><li>▪ Air pollution</li><li>▪ Loss of Vegetation</li><li>▪ Noise pollution</li></ul>
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The respondents' concerns were further analyzed as follows: -

## 5.6 Ownership of the Project

A total of forty (40 No.) of the surveyed individuals comprising of 27 males and 13 females were positive about the On-going construction of the road Project. This indicates that a hundred (**100 per cent**) of the surveyed respondents supports the project. The activity was carried out at Marakwet East, Marakwet West, Keyo North and Keyo South in Elgeyo Marakwet County.

### 5.6.1 Adverse Environmental Impacts Anticipated by the Respondents

The **Table 6-3** below shows the responses of the respondents regarding the environmental impacts of the Project Road.

**Table 6-4: Environmental impacts anticipated by the respondents**

Nature of Environmental Impacts	No. of Respondents	Percentage (per cent)
Adverse Environmental impacts only	40	100

One respondent found the construction of the road to be beneficial for the environment as shown in **Table 6-5** below.

**Table 6-6: Positive Environmental impacts anticipated by the respondent**

Impacts	No. of Respondents	Percentage (per cent)
Positive environmental impacts	0	0

The respondents did not find the construction of the road to be beneficial for the environment.

**Table 6-8: Adverse Environmental impacts anticipated by respondents**

Impacts	No. of Respondents	Percentage (per cent)
Cutting down of trees	1	2.5
Soil erosion	22	55
Water pollution	18	45
Air pollution	35	87.5
Loss of Vegetation	28	70

### 5.6.2 Mitigation Measures for the Negative Environmental Impacts

According to the respondents, there are various mitigation measures that can be taken to avoid negative environmental impacts, namely;

- Dust suppression should be carried out on the earthwork's section whenever unfavorable weather occurs

### 5.6.3 Socio-Economic Impacts Anticipated by the Respondents

The respondents indicated that the project's socio-economic impacts would be significant as indicated in **Table 6-9** below.

**Table 6-10: Socio-economic impacts anticipated by respondents**

Socio-Economic Impacts	No. of Respondents	Percentage (per cent)
Positive Socio-economic impacts	40	100
Adverse Socio-economic impacts	26	65

The anticipated positive socio-economic impacts identified by the respondents are shown in

Table 6-11 below.

**Table 6-12: Positive socio-economic impacts identified by the respondent**

Impacts	No. of Respondents	Percentage (per cent)
Increased employment	35	87.5
Improve access to market and services	30	75
Increase road safety	17	42.5
Save on time of travel	1	2.5
Enhance safety and security	1	2.5

The anticipated Negative socio-economic impacts identified by the respondents are shown in the **Table 6-13** below.

**Table 6-14: Adverse socio-economic impacts identified by the respondent**

Impacts	No. of respondents	Percentage (per cent)
Noise pollution	26	65

#### 5.6.4 Mitigation Measures for the Adverse Social Impacts

The respondents were asked to identify the various mitigation measures that they would like to see implemented to address the negative social impacts. The responses were listed below.

- Create more jobs for local residents and youths;
- To help reduce road accidents, install speed calming devices and signs in key areas
- Provide alternative source of water for the locals; and
- Sprinkle water on the road during construction to reduce amount of dust generated.

#### 5.6.5 Safety and Health Impacts Anticipated by the Respondents

The respondents indicated that the project's health and safety impacts would be significant as listed in **Table 6-15** below.

**Table 6-16: Health and Safety Impacts anticipated by respondents**

Impacts	No. of Respondents	Percentage (per cent)
Positive health and safety impacts	0	0
Adverse health and safety impacts	0	0

The **Table 6-17** below shows the projected positive impacts of health and safety on the respondents' lives.

**Table 6-18: Positive health and safety impacts anticipated by the respondents**

Health & Safety impacts	No. of Respondents	Percentage (per cent)
Nil	0	0

The **Table 6-19** shows the expected adverse health and safety impacts that respondents anticipated to experience.

**Table 6-20: Adverse health and safety impacts anticipated by the respondents**

Impacts	No. of Respondents	Percentage (per cent)
Noise pollution	26	65

#### **5.6.6 Mitigation Measures for Health and Safety Impacts**

The respondents identified various measures that can be taken to minimize the hazards associated with health and safety.

The installation of speed bumps can help improve road safety on the road.

### **5.7 Summary of Feedback from the Public Consultation**

#### **5.7.1 Positive feedback from the local community**

- The construction of this project has created employment opportunities for women and youths in the local community;
- Small-scale businesses have been established to provide food and other amenities to the local workers;
- The construction of the road project will improved safety and security in the area; and
- There has been an increase in economic growth in the area as a result of the road project.

#### **5.5.10 Negative feedback from the local community**

- The excessive amount of dust emission could cause interference with the operations of nearby businesses; and
- Lack of adequate road signage, tapes and cones especially on active work sections.
- Look on compensation issues when they arise

### **5.8 Suggestions that the Contractor Should Take into Consideration**

- Put up adequate road signs that inform the public about the speed limits at various sections of the road; and
- Dust control should be carried out on a continuous basis.
- Develop spur roads leading to public institutions such as school hospitals, police stations etc.

## 6 POTENTIAL ENVIRONMENTAL AND SOCIAL IMPACTS AND MITIGATION MEASURES

This chapter highlights significant impacts which may arise due to proposed road improvement activities of the proposed Road project.

To this end, the focus of this Chapter will be:

- To identify and analyze the extent of the environmental and social impacts from the project;
- To assess the environmental impacts of the operation and maintenance activities,
- Propose mitigation measures; and
- To discuss the decommissioning of the project.

### Preliminary Identification of VECs

During the ESIA study, the safeguards identified the key Valued Ecosystem Components (VECs) that are potential receptors expected to be affected during the implementation of proposed project.

### Potential environmental and social receptors during the Implementation of proposed project

Table 6-1: Key Environmental and Social Receptors for the Project Road

Project activities	Impact	VECs	Phase Construction (C) Operation (O)
Typical Project activities including:  17. Access road construction or upgrade  Site preparation and development 18. Removal of select vegetation 19. Grading and excavation of soils 20. Land clearing for projects rights-of way 21. Dismantling of damaged equipment 22. Equipment staging areas 23. Trenching and excavation works 24. Storage of materials and Chemical / oil 25. Vehicle and equipment operation and maintenance. 26. Land Use & Land Acquisition 27. Demolition, lifting and transporting of debris and rubbles	Air Quality degradation and pollution	Public institutions, community members	Construction Operation
	Noise pollution	Public institutions, community members	Construction Operation
	Soil contamination and erosion	Soils, water resources, local communities, livestock	Construction Operation
	Loss of land	PAPs	Construction
	Generation of Solid and hazardous waste as well liquid waste	Local communities, water sources, soil	Construction Operation
	Water pollution	Water resources eg Rivers, local communities	Construction Operation
	Vegetation clearance Disturbance and/or displacement of wildlife	Flora, Fauna, and Sensitive (critical, natural etc.) habitats	Construction Operation
	Increase in Traffic	Local communities,	Construction

Project activities	Impact	VECs	Phase Construction (C) Operation (O)
28. Repair, reconstruction and rehabilitation of damaged infrastructure/buildings;	Congestion and Detours	institutions	Operation
29. Drilling activities, eg for Water	Impact on socio-economic activities of the area, such as impact on business, change in pricing of commodities etc	Local communities, institutions	Construction Operation
30. Running of AC and concrete batching plants			
31. Sourcing of materials	Health and safety	Workers, local communities, livestock	Construction Operation
32. Disposal of wastes/spoils			
33. Creation and maintenance of deviations			
34. Maintenance works such as repair / overlay of pavement			

## 6.1 Construction Phase Impacts

### 6.1.1 Positive Impacts

#### 6.1.1.1 Employment Opportunities

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

During the public meetings, the community members requested that all the community members who are qualified, willing and able be considered for the available job opportunities and that they should not be discriminated against on the basis of their age or gender. These include jobs as night guards, casual laborer's, cleaners, sweepers, etc. The women requested to be considered for cleaning, sweeping, cooking, collecting firewood, etc. from the FGDs.

35.

The contractor shall be highly encouraged to hire locally staff during construction period. Site clearance, traffic management and diversions, earthworks, concrete works as well as road furniture installation and marking will require both skilled and semi-skilled labour.

### Impact Analysis Matrix

Impact without Mitigation	
Severity of impact	+3
Spatial scope of impact	+4
Duration of impact	+4
Frequency of activity / duration of activity	+3

Frequency of impact	+4
Result	+77 Medium – High

### Enhancement Measures

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

#### 6.1.1.2 Business Opportunities for Local Suppliers and Service Providers

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

### Impact Analysis Matrix

Impact without Mitigation	
Severity of impact	+4
Spatial scope of impact	+3
Duration of impact	+4
Frequency of activity / duration of activity	+3
Frequency of impact	+3
Result	+66 Low – Medium

### Enhancement Measures

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

#### 6.1.1.3 Knowledge and skills transfer

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

### Impact Analysis Matrix

Impact without Mitigation	
Severity of impact	+3
Spatial scope of impact	+2
Duration of impact	+3
Frequency of activity / duration of activity	+3
Frequency of impact	+2
Result	+40 Low

### Enhancement Measures

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

### 6.1.2 Negative Impacts

#### ENVIRONMENTAL IMPACTS

##### 6.1.2.1 Vegetation Loss

The project road has been designed to highway standards, which will require expanding of the carriageway and maintaining road reserve. Such provisions in the road design will lead to clearing of natural vegetation in some sections. The project area harbours natural vegetation that has different tree species such as pine (*Pinus*), *Grevilia* sp, *Eucalyptus* sp, among others. A number of trees, especially within towns and centres will also be cut to allow for construction of the road project, especially a number of pine trees in Kitale town.

### Impact Analysis Matrix

Impact without Mitigation	
Severity of impact	-3
Spatial scope of impact	-2
Duration of impact	-4
Frequency of activity / duration of activity	-1
Frequency of impact	-3
Result	-36 Low

### Mitigation Measures

- Restrict vegetation clearing to project sites by clear demarcation of areas to be used;
- Thickets and bush shrubs should be preserved wherever possible through selective clearing, especially along the seasonal riverine areas;
- Siting of camp sites should be done away from densely vegetated areas;
- Compensate for the valuable trees to be felled within the settlements as per the project RAP recommendations;
- Consultations with the local people should be done to ensure that trees with historical, cultural or ornamental values are preserved.
- Beautification using trees that will not damage the infrastructure to maintain the beauty of the trees to be done as part of the project



### 6.1.2.2 Workmen's Camp

Camps for this type of road would generally require approximately 5 to 10 acres of land, and an area will have to be allocated for the heavy equipment and for crushing hardstone.

Construction camps may put pressure on fuel sources such as kerosene or gas to be used for heating and cooking purposes. Strain on major utilities like water can also cause social unrest along the road project. Sewage, solid and oil/petroleum wastes also produced at the camps could also pollute sources of water, land and soil.

Sanitation and hygiene in the workmen's camp are also issues of concern, and if not properly addressed may lead to outbreaks of illnesses such as cholera, hepatitis, typhoid etc.

36.

In setting up the workmen's camps, consideration will be given to water availability and other resources such as energy and security. Water supplies are a problem for the area, and permission will be needed before the water can be accessed. Water in the camps is important in terms of maintaining hygiene and sanitary conditions. With the area having security challenges, the campsites shall be located in an area where security will be of importance to the workers.

### Impact significance Matrix

Impact without Mitigation	
Severity of impact	+4
Spatial scope of impact	+4
Duration of impact	+4
Frequency of activity / duration of activity	+4
Frequency of impact	+4
Result	+96 Medium - High

### Mitigation measures

- Locate camp sites away from residential areas and settlements;
- Consult local authorities on a plan for usage of utilities to avoid strain on local residents;
- Ensure that the campsites are guarded 24 hours by armed personnel;
- Contractor shall also provide clean drinking water at the campsite for his workers
- Contractor to prepare a Solid Waste Management Plan for all worksites, especially the campsites
- Provision of adequate sanitation (fixed toilets with running water and changing rooms) at the campsites, separate for men and women;
- Pay special attention on waste generation and disposal, sanitary conditions at the sites, which includes exploring an option of having a third party to manage the various waste generated at the campsites;
- No waste at the campsite shall be buried or burnt; all waste to be segregated and reused, composted, or collected by licensed waste handler for disposal;
- Proper and adequate waste management facilities shall be provided at all contractors' camp
- Treatment of the campsite for rodents and other pests shall be done regularly;
- Completely remove the camp including permanent foundations and floors to discourage future informal settlement at the campsite

### 6.1.2.3 Noise pollution - Excessive Noise and Vibration

The current road use by buses, lorries and private cars is the main source of existing noise along the project road. The main receptors identified along the road will be settlements, mosques, schools, hospitals, other institutions and administrative offices that will most likely be affected by the noise generated from the construction works. Construction activities generate noise from vehicles used for transportation of material and workers to site, earthworks using heavy equipment and machinery for site preparation and facility erection and diesel generators used for on-site power generation.

Workers at construction site are likely to be exposed to increased noise levels as they operate the noisy equipment or work close to the noise sources. Workplace noise situation have already been envisaged and regulated as follows:

- Motor vehicles should not exceed 84 dB(A) noise levels as required in the EMCA (Noise and Excessive Vibration Pollution) (Control) Regulations, 2009.
- The Factories and Other Places of Work (Noise Prevention and Control) Rules L.N 25 Of 2005, requires:
  - The continuous equivalent of 90dB(A) in 8 hours within any 24 hours duration;
  - 140dB (A) peak sound level at any given time;
  - Noise transmitted from workplace shall not exceed 55dB(A) during the day and 45dB(A) during the night;
  - Anybody working in an area involving exposure to noise, needs Audiometric examination and internal examination (pre-employment and annual) to determine deafness, cases with deterioration of hearing loss of 20dB(A) or more in two successive examinations within two weeks.

The noise and vibration may cause temporary reduction of use of nearby habitats by resident wildlife. The project has giraffes and gazelles fond of browsing and dispersing may consider the unfamiliar noise as a threat and therefore keep off as a defensive mechanism until the noise is withdrawn.

### Impact Analysis Matrix

Impact without Mitigation	
Severity of impact	-3
Spatial scope of impact	-3
Duration of impact	-3
Frequency of activity / duration of activity	-3
Frequency of impact	-2
Result	-54 Medium

### Mitigation Measures

- Monitor environmental and occupational noise levels as per the NEMA Environmental Management and Coordination Act (Noise and Excessive Vibration Pollution) (Control) Regulations, 2009 & OSHA, 2007 requirements respectively;
- The noise emission characteristics should be considered during selection and mobilization of construction equipment;
- Where feasible, fit equipment with mufflers, sound insulations, silencers to lower the levels of noise emission;
- Sensitize construction workers to switch off machinery and vehicles when not in use;
- Staff on active project sites with continuous exposure should be provided and encouraged to fit in their Personal Protective Equipment (PPEs);
- Locate noisy operations like batching plant away from the densely settled areas;

- Where noisy activities must be undertaken near sensitive receptors, the neighboring occupants must be informed in advance and works limited to day time only.
- Noise quality samples to be used as baseline data will be collected before commencement of the civil works for regular monitoring during the construction period at various sensitive areas to be agreed upon with the RE.

#### 6.1.2.4 Construction dust and Air quality

Air quality will be affected during construction during;

- Earthworks, grading, ground levelling and soil compaction;
- Frequent truck movements on the earth roads;
- Wind blows on uncovered or partially covered trucks delivering borrow material and ferrying out cut-to-spoil material;
- Wind blows on stockpiled mounts of soil for reuse or disposal from the site.

The construction dust may cause reduced visibility, respiratory problems to exposed workers and community members and discoloration of adjacent vegetation and buildings. In addition, construction machinery will emit exhaust fumes contributing to air pollution. Because of the settlement patterns, the most likely receptors of dust pollution are located in the urban and town centres along the road, with the other receptors being roadside vegetation and wildlife.

#### Impact Analysis Matrix

Impact without Mitigation	
Severity of impact	-4
Spatial scope of impact	-4
Duration of impact	-4
Frequency of activity / duration of activity	-4
Frequency of impact	-4
Result	-96 High

#### Mitigation Measures

- Unnecessary vegetation clearance to be avoided through clear demarcation of construction areas;
- Where practicable, re-vegetate disturbed areas to minimize ground exposure;
- Sprinkling water (at least twice a day) on the accesses and excavated surfaces during the construction period to suppress dust generation within settled areas;
- Limit the speed of construction vehicles (maximum speed limit 40 kph/25 mph) on earth road;
- Provision of appropriate protective personal equipment (PPEs) including respirators and dustcoats to exposed workers;
- Ensuring the location of material stockpiles are away from human settlements and business premises;
- Covering loaded trucks during the transportation of material;
- Maintenance of vehicles and machinery in accordance with the equipment specifications and manufacturer's standards;
- Sensitize workers on best practice on management of air pollution from vehicles and machinery;
- All records on dust-related complaints should be submitted to Resident Engineer for appropriate action;
- Demolition of existing structures shall be done in a manner that the dust from demolitions can be controlled;

- Undertake regular air quality (dust level) monitoring and conduct corrective adjustments where necessary based on the baseline data collected before project commencement
- Air quality samples to be used as baseline data will be collected before commencement of the civil works for regular monitoring during the construction period at various sensitive areas to be agreed upon with the RE.

#### 6.1.2.5 Generation of Solid Wastes

A range of solid waste, both hazardous and non-hazardous, are likely to be generated during road project implementation. Wastes emanating from construction phase will mainly come from:

- Site clearance (vegetation) and excavation works (cut-to-spoil);
- Construction support activities and machinery maintenance and repair works such as used lubricant cans, packaging wrapper, worn-out tyres, and replaced equipment parts;
- Consumables (such as wood formwork, metal cuttings);
- Material testing and trial laboratories such as lab material rejects, test specimens for disposal, excess lab sample materials and grounded equipment or spares;
- Discarded material from handling losses;
- Residential camp sites wastes such as leftovers/food scraps, bottles, cans, clothing, food packaging, newspapers and magazines.

Improper waste disposal is likely to affect the aesthetic value of the surrounding as well as the local community. The waste may attract scavengers and breeding pests, informal recycling or pollution of sensitive resources (such as water sources) triggering community health and safety issues.

Improperly managed waste (unattended landfills or pile of waste on site) may pose risk to resident wildlife. Scavenging wildlife (in dire search of food) may be attracted to or stray on heaps or landfill with used plastics and tin cans, wrappers and/or containers causing spillages of contained fluid substances or chemicals. Animals poisoning may occur as they sniff or leak substances in the containers or bags. Contamination of surfaces/habitats may incidentally occur as fluids flow away from the source.

#### Impact Analysis Matrix

Impact without Mitigation	
Severity of impact	-3
Spatial scope of impact	-3
Duration of impact	-4
Frequency of activity / duration of activity	-3
Frequency of impact	-3
Result	-60 Low – Medium

#### Mitigation Measures

- Waste shall be managed as per Environmental Management and Coordination (Waste Management) Regulations 2006, e.g. No waste shall be buried underground or burned on open air
- Contractor to develop a waste management plan;
- Manage and control waste generation at the various project sites and stations through standard operating procedures (SOPs) and Solid Waste Management Plan;
- Reduce generation of solid waste at the source through proper planning and procurement of construction materials;
- Segregation of solid wastes and provision of suitable and well labelled waste receptacles within the camp and at other active construction sites;
- Reuse excavated top soil for landscaping of the site as far as practical;

- Disposal of solid waste at designated sites through licensed waste handlers;
- Prioritize options of waste reduction, reuse and recycling, particularly papers, polyethene plastic wrappers and containers as well as other materials that can possibly be recycled; and
- Sensitize resident workers and visitors (especially those operating food catering services) at project sites on proper waste management practices especially hazardous materials and risks of contaminations.

#### 6.1.2.6 Increased Soil Erosion Incidences

Sections along the project road have already been affected by erosion an indication of high erosion potential of soils. Soils comprise mainly of high proportions of sandy, silty and gravel that are loosely detached and carried away during run off, especially in bare and sloppy terrains. Animal movements in large herds loosens soil particle has also increased the chances of erosion along the road. Sporadic intense rainfall is also a major agent of soil erosion in the arid areas.

Project implementation activities such as material borrowing and earthworks (surface scarring) will loosen soil material, which will expose to agents of soil erosion, especially in sloppy and bare areas. Active construction sites may have piled batches from borrow areas as fill material.

#### Impact Analysis Matrix

Impact without Mitigation	
Severity of impact	-3
Spatial scope of impact	-3
Duration of impact	-2
Frequency of activity / duration of activity	-3
Frequency of impact	-2
Result	-40 Low

#### Mitigation Measures

- Excavated material should be properly piled, sprinkled with water and covered (where possible) to prevent possible wash-out into seasonal watercourses. Stock piling areas should have levelled ground and away from sensitive areas like slopes, water courses;
- Material excavation should be minimized and restricted to designated locations;
- The contractor should ensure that construction related impacts like erosion and cut slope destabilization should be addressed through rock pitching;
- Re-vegetation should be done in tandem with construction activities to avoid exposure of bare ground to agents of erosion;
- Enforce landscaping and restoration of the construction site prior to decommissioning of the construction site.
- As part of enhancing environmental protection in the region, the contractor should start a tree planting campaign for reforestation by incubating a tree nursery programs along the road. The types of trees to plant shall be through the guidance of the local KFS or through involvement of the Ministry of Agriculture

37.

#### 6.1.2.7 Contamination by Liquid Waste and Hydrocarbon Spills

Previous experience has shown poor management of liquid waste at camp sites, oil spills at garages, and poor maintenance of construction equipment by road contractors in Kenya (See figure below). Construction activities will require assembling several machinery and equipment (including excavators, graders, excavators and tippers). This will require a maintenance and repair area as well as some on site storage of fuel. Routine cleaning and maintenance will generate washdown water containing sediment (soil, clay, gravel, sand, concrete, etc), detergents and automotive fluids, all of which are pollutants. This may contaminate the receiving soils and

surface water environment if not managed properly. Other sources of liquid contamination include release of untreated camps' sewer or grey water, leaks and spills from hydrocarbon containments including stored bitumen.



**Figure 6-1 Example of Oil spills and poor management of used oil**

Observance of the existing energy act and associated regulations for handling petroleum products will ensure adequate measures are integrated by the contractor.

### Impact Analysis Matrix

Impact without Mitigation	
Severity of impact	-4
Spatial scope of impact	-4
Duration of impact	-3
Frequency of activity / duration of activity	-3
Frequency of impact	-2
Result	-84 Medium High

### Mitigation Measures

- Machinery maintenance should be done only on purpose-built garages that meet hydrocarbon containment measures and controlled drainage, including banding all areas prone to spills;
- Contractor will be required to have an emergency spill containment and response plan;
- Minor service and washing areas placed/ constructed with containment basins to ensure that the surrounding areas (including groundwater) are not polluted;
- All grey water runoff or uncontrolled discharges from the site/working areas (including wash down areas) to any water courses shall be contained, treated and properly channelled;
- Flash toilets at camp sites should be connected to septic tanks or other treatment facilities approved by the county government and NEMA;
- Water containing such pollutants as cements, concrete, lime, chemicals and fuels shall be discharged into a conservancy tank for removal from site.

#### 6.1.2.8 Habitat Loss and Disturbance

Construction activities such as vegetation clearing, access to/operation of material sites and excavations along the road corridor will lead to wildlife displacement from their natural habitat. Some of the wildlife such as birds with territory and home ranges will have to abandon the disturbed habitats and re-establish elsewhere leading to increased inter and intra-species competition for preferred sites.

### Impact Analysis Matrix

Impact without Mitigation	
Severity of impact	-3
Spatial scope of impact	-3
Duration of impact	-3
Frequency of activity / duration of activity	-3
Frequency of impact	-2
Result	-45 Low

### Mitigation Measures

- Where practical, locate project temporary features like camps and batching plants in areas already disturbed or outside of wildlife habitat. Construction activities should be confined on the demarcated corridor and discourage movement or intrusion into wildlife habitats;
- Throughout the construction cycle, project staff should be sensitized regularly on nature conservation. Local conservation agencies can occasionally be engaged to conduct the sensitization;
- The Contractor policy should discourage unauthorised intrusion or destroying of the wildlife habitats through signed code of conduct;
- To avoid random off-road driving that leads to trampling of vegetation in sensitive habitats, especially for vehicles collecting borrow materials, vehicles should be provided with designated routes. Existing diversions and diversions should be considered before opening up new ones during construction.

#### 6.1.2.9 Impacts on Materials Borrow Sites

During the construction phase, the contractor will have to source construction materials from various material sources. While potential material sites have been identified in the project design report, the actual sites to be exploited will be decided by the appointed contractor. Cases of over extracting these materials from few sites beyond their regenerative capacity may arise if not done in a sustainable manner. The contractor will thus be expected to undertake detailed environmental and social impact assessment before commissioning the selected individual material sites.

### Impact Analysis Matrix

Impact without Mitigation	
Severity of impact	+4
Spatial scope of impact	+4
Duration of impact	+4
Frequency of activity / duration of activity	+4
Frequency of impact	+4
Result	+96 Medium - High

### Mitigation measures

- Selection of material sites will ensure that the handover will not cause any social conflict within the communities;
- All material sites shall be selected in consultation with the county governments and the local communities, and rehabilitation plan agreed. If borrow sites will be converted to water pans, proper communities and stakeholder engagement shall be conducted and agreed upon (through signing of agreements to exclude any future liability by the contractor) if such usage will be proposed by the community members.
- The contractor shall prepare and seek approval from NEMA all proposed material sites to be used for construction works; all borrow sites must have approved environmental and social impact assessment (ESIA) reports, incorporating rehabilitation procedures upon decommissioning;
- Construction materials including sand, stones and borrow materials must be sourced from duly approved sources only;
- Materials haulage routes must be pre-determined to avoid unnecessary off road driving;
- Contractor to develop a system of tracking materials received viz a vis utilization to ensure proper materials management to avoid wastage;
- The contractor shall endeavor to locate material sites away from settlements if possible;
- Where material sites are located near settlements, the contractor shall carry out baseline studies of structural integrity assessments of nearby structures;
- The contractor shall develop safety management plans for any blasting which shall require the blasting to be done by qualified experts, sensitization and notification to locals on blasting times;
- All material sites shall be fenced with controlled entry.

## SOCIAL IMPACTS

### 6.1.2.10 Land take and disruption of livelihoods

The road project development will disrupt livelihoods and cause loss of properties following displacement of people along some sections of the alignment. From RAP studies, the valuation roll yielded at **least 616 PAPs**, mainly vendors roadside vendors trading at urban centres along the road reserve. Moi's bridge registered the highest number of PAPs, due to the number of roadside traders located in this centre.

**Table 6-2: Project affected Persons (PAPs)**

Affected Centres	Towns/	Business Structures	Structure owners operating business	Tenants	Mobile Road Vendors	TOTAL
Soy		0		0	115	115
Furfarol		0		0	19	19
Nangili		0		0	17	17
Matunda		0		0	72	72
Moi's Bridge		0		0	393	393
TOTAL					616	616

To minimize the resettlement impacts, the road construction will be limited to the existing road corridor. However, a realignment at Soy centre is proposed to maintain engineering design standards and for safety reasons. A RAP study report has been compiled as a separate Report describing the type of impacts and entitlement of each affected PAP.

### Impact Analysis Matrix



Impact without Mitigation	
Severity of impact	-3
Spatial scope of impact	-3
Duration of impact	-3
Frequency of activity / duration of activity	-3
Frequency of impact	-3
Result	-54 Medium -

### Mitigation Measures

- Project RAP Study Report should be implemented to guide the compensation and resettlement process;
- Compensation for all affected properties should be compensated before construction commences;
- Continuous complaints and grievance management system should be maintained throughout the project implementation phase. All pertinent stakeholders should be involved in the compensation and grievance redress mechanism during implementation of RAP.

Reference should be made to the RAP report for more mitigation measures proposed.

#### 6.1.2.11 Increased Water Demand

Due to high water demand for construction works, sometimes it is difficult to meet the water demand for construction works, local community domestic uses and for livestock from the existing resources. Without participatory exploitation of alternative sources of construction water, conflicts may emerge between the contractor and the local communities.

### Impact Analysis Matrix

Impact without Mitigation	
Severity of impact	-2
Spatial scope of impact	-2
Duration of impact	-2
Frequency of activity / duration of activity	-3
Frequency of impact	-3
Result	-36 Low

### Mitigation Measures

- The contractor will need to develop independent construction water sources, with potential to abstract water from groundwater resources. The area is endowed with various rivers and streams, but drilling of boreholes is ideal as it will also support the locals after the road construction works are complete;
- The Contractor must adhere to the Water Act, 2016 and associated rules and regulations as administered by WRA and NEMA. Relevant water abstraction permits must be obtained from these authorities to minimize competition or conflict with existing water rights/ resource uses;
- Contractor shall employ water efficient and conserving technologies to minimize on water usage;

### 6.1.2.12 Construction works induced traffic and inconveniences

During the road construction works, it will be necessary to have some deviations in order to allow uninterrupted traffic flow. The road corridor is wide enough, and deviations shall remain within the road reserve. However, deviations if not well maintained have negative environmental and social impacts such as generating dust, blockage of accesses, increase in soil erosion, and potential to damage vehicles, thereby increasing maintenance costs to the users of the road.

Much of the road design has been aligned along the existing road reserve. Accesses to facilities abutting the road will be temporarily interrupted within the settlement areas, especially in centres along the road leading to traffic inconveniences and interference with normal operations. In many of these centres, access to the market place and other businesses may be interrupted during construction affecting business operators and their patrons.

Impacts on traffic in areas outside the centres is not expected to be significant. However, during the rainy seasons, diversions away from existing routes may still pose serious challenges when such diversions are not properly done and maintained. Similarly, most of the identified material sources are far away from the project site and impacts on haulage routes may extend well beyond the immediate project area.

#### Impact Analysis Matrix

Impact without Mitigation	
Severity of impact	-4
Spatial scope of impact	-4
Duration of impact	-3
Frequency of activity / duration of activity	-4
Frequency of impact	-4
Result	-88 – High

#### Mitigation Measures

The contractor shall be required to formulate and implement a traffic management plan incorporating:

- Provision of alternative routes in areas where accesses have been disrupted;
- Provision and maintenance of clear traffic signages of ongoing construction works, regulate speed limits and diversion signage to notify approaching traffic;
- In urban areas, schedule delivery of materials to the sites during periods of light traffic between 9.00am - 12.00 pm and 2.00 pm - 4.00 pm during week days;
- Create awareness and sensitize workers and area residents on the importance of exercising safe driving behaviours, taking caution and care in the project sensitive areas in as far as traffic movement and other safety issues are concerned;
- Obtain permission from inhabitants and county governments if diversion routes go beyond the Right of Way;
- Reinstatement of diversion routes (and old tracks) to original condition;
- Institute a traffic management plan incorporating adequate temporary signages and flagmen as necessary.
- Local language shall be used in signage to ensure the people in the area understand their meanings due to low literacy rates in the region

### 6.1.2.13 Disruption of Public Utilities

There will requirements for relocation of public utilities in some sections of the road away from the road reserve, thereby affecting supply for the local residents. There were water pipes noted along the road, that might be affected during construction. In addition, fibre optic cables running along the road could affect communication

networks if construction activities interfere with the underground cables. Trucks with heavy loads of construction materials may also damage roads and footpaths, and other public utilities during the construction process.

### Impact Analysis Matrix

Impact without Mitigation	
Severity of impact	-4
Spatial scope of impact	-4
Duration of impact	-3
Frequency of activity / duration of activity	-2
Frequency of impact	-3
Result	-55 Low - Medium

### Mitigation Measures

- Liaise with KPLC, fibre optic providers, and regional water companies to identify affected sections of alignment that affect utilities and provide cost to cover the relocation of the existing infrastructure;
- Relocation plans shall include adequate notification of affected customers and residents whose access foot paths might get disrupted.

38.

#### 6.1.2.14 Spread of Communicable Diseases

The arrival of new population from other parts of the country as a result of good economic conditions in the area due to the development of the road may lead to spread of new communicable diseases to local population and immigrant workers, eg Tuberculosis, Cholera, Malaria, Meningitis. In addition, sanitation and hygiene along the project area during the construction (and even operation) of the road is also an issue of concern. If these are not properly addressed, they may lead to outbreaks of new illnesses in the area, which might spread to the local community and road workers.

The road construction activities are likely to cause particulate emissions (PM2.5, PM10) such as dust leading to Upper Respiratory Tract Infections (URTI) complications among local community and workers if not well managed. Particles less than 10microns (PM10) and finer ones PM2.5 in diameter bypass body's usual defences against dust, penetrating and lodging deep in the respiratory system (WHO, 2011). These infections occur within the upper respiratory tract (nose, throat, ears and sinuses) leading to common colds, influenza and respiratory distress syndromes. The infections are mainly caused by airborne agents or contaminated surfaces. Sources of dust include:

- Material sites (borrow pits and quarries);
- Excavations and enabling works along the Right of Way (RoW);
- Road diversions;
- Batching plant (dust and hydrocarbon aerosols).

### Impact Analysis Matrix

Impact without Mitigation	
Severity of impact	-3
Spatial scope of impact	-4
Duration of impact	-4
Frequency of activity / duration of activity	-3
Frequency of impact	-2
Result	-55 Low - Medium

## Mitigation Measures

- Apply dust suppression measures - sprinkling water on the accesses and excavated surfaces – this shall be determined by the RE depending on the prevailing weather conditions;
- Regular maintenance contractors' equipment
- Maintain a grievance register to log any complaints from local community;
- Active construction sites should have controlled access and repulse by standers likely to be exposed to emissions;
- Hold inductions for staff and people visiting the construction sites on the health and safety aspects;
- Provide proper PPEs (dust masks, clothes, etc) for all staff and visitors to active construction areas;
- The Contractor should plan work program's activities and timing to avoid emission impact on sensitive receptors, especially urbanized areas
- Install screens and scrubbers on crusher sites to minimize dust emissions;
- Locate ancillary facilities away from residential/institutional to minimize dust or other emissions to the residents;
- Conduct regular checkups for workers, and offer local community free monthly medical camps for testing and treatment through cooperation of local medical health facilities and county government;

### 6.1.2.15 Spread of HIV/AIDS and Other STDs

During project road construction, it is likely that a significant increase in population along the project area as they are attracted to the project activities. The influx is likely to include people from outside the areas of counties served by the road. Construction workers could increase or create the demand for casual sex with local residents leading to the emergence or increase in sex work near the construction sites. Sex workers are a key bridging population for HIV transmission because their customers in many cases have spouses. The HIV prevalence rates among sex workers is usually about 2-3 times that of the general population, and have been researched and found to increase in areas which migrant and mobile populations live, work, pass through, or originate. This group of individuals are mostly truck drivers and other employees who work for the contractor and are brought in as skilled labourers. The project implementation thus poses such risk to the local communities.

The average HIV prevalence among adults in the Uasin Gishu, Trans Nzoia, and Kakamega counties is 4.7%, 5.2%, and 4% respectively, which is lower than the national average of 5.9 percent. Women (5.2%) are more affected by prevalence than men (4.5%) (National Aids Control Centre, 2018).

## Impact Analysis Matrix

Impact without Mitigation	
Severity of impact	-3
Spatial scope of impact	-4
Duration of impact	-4
Frequency of activity / duration of activity	-3
Frequency of impact	-2
Result	-55 Low - Medium

## Mitigation Measures

- KeNHA/Contractor should, in liaison with approved local non-governmental organizations (NGOs) or approved HIV/AIDS service providers, conduct awareness

training to staff and the locals and monitor the efficacy of the awareness created during the project implementation period;

- Sensitize workers on the need to refrain from risky behaviors;
- Provision of condoms both male and female in the sanitary facilities;
- Encourage workers and local communities to go for regular HIV voluntary screening/testing, counseling and referral services; Contractor should arrange for quarterly medical camps to benefit workers and local communities through cooperation with county government health departments and local medical facilities;
- Monitoring of outcomes, in collaboration with National HIV/AIDS Authorities.
- The unskilled workers should, as far as feasible, be recruited from among the local residents of the project area and its immediate neighborhood;
- Workers should be given regular leave, preferably monthly to cool off and join their families.

39.

#### 6.1.2.16 Spread of Covid 19 among workers and community members

Project Construction will attract various categories of workers drawn from local, national and international markets. If occurring within the COVID-19 pandemic period, this may pose risk of spread of COVID-19 which is a highly infectious disease.

Some construction activities including implementation of some environmental and social safeguards actions may be done during the COVID-19 pandemic era. Since consultations are required during RAP implementation and sensitization on E&S issues, these may pose a potentially high risk of infection to and among communities.

#### Impact Analysis matrix

Impact without Mitigation	
Severity of impact	-3
Spatial scope of impact	-3
Duration of impact	-3
Frequency of activity / duration of activity	-3
Frequency of impact	-3
Result	-54 Low-Medium

#### Mitigation measures

- Install hand washing troughs and soap at strategic points in the camps and common areas.
- Make sanitisers available to workers
- Limit movement in and out of the camps; contact between workers and community members should be discouraged.
- Measure temperatures of workers and visitors to sites at entry points.
- Insist that workers and locals working on the project have face masks at all time.

#### 6.1.2.17 Workers Welfare

Project workers such as construction workers face the risk of exploitation, discrimination and other forms of unfair treatment by employers/contractors, eg. exposure to poor health and living conditions, poor sanitation, being overworked with no compensation, low wages, improper provision of proper PPEs and equipment for the works assigned, among others.

### Impact Analysis Matrix

Impact without Mitigation	
Severity of impact	-3
Spatial scope of impact	-3
Duration of impact	-2
Frequency of activity / duration of activity	-3
Frequency of impact	-3
Result	-48 Low

### Mitigation Measures

- The contractor shall comply with the required Law of Kenya under DOSH and Labour requirements
- Have stocked clinic with a fulltime nurse on the campsite;
- In collaboration with local health facilities, ensure that the workers have access to health facilities in the area;
- Contractor to ensure that first aid facilities are available at all times at the work sites, and arrangement to access to ambulance service;
- The contractor shall provide mobile toilets for the workers at all worksites along the road (for women and men separately);
- The contractor has to also ensure that for any accommodation for personnel, suitable arrangements are made for welfare and hygiene requirements and prevention of epidemics, taking into consideration issues like harsh weather conditions in the region, sanitation, etc.

#### 6.1.2.18 Community Health and Safety

During road construction, the general public may be exposed to injuries from various construction activities like accidents involving construction trucks or other mobile equipment, falls or slips into unprotected trenches/ditches etc.

Accidents involving community members may strain relations between project implementers and host community members and even disrupt programs. Similarly, the contractor may be subject to litigation enjoining even the implementing agency. The contractor thus needs robust safety and health management plan that covers not only workers but the general public as well. Some areas where serious precaution is needed include towns and centres, market areas, areas with institutions such as schools and hospitals, and mosques where community members tend to cross the roads regularly.

Children have low conscience of the inherent risks present at construction projects such as abuse, accidents and exploitation. Children are easily attracted around active construction sites to watch ongoing activities obliviously.

### Impact Analysis Matrix

Impact without Mitigation	
Severity of impact	+3
Spatial scope of impact	+3
Duration of impact	+4
Frequency of activity / duration of activity	+5
Frequency of impact	+4
Result	+90 Medium - High

### Mitigation measures

In addition to measures for workers safety, the contractor shall:

- Establish and maintain continuous liaison with the host communities including sensitisation on safety and health issues on construction sites;
- Prepare and implement construction traffic management plan, incorporating safety of other traffic;
- Install and maintain appropriate safety and warning signages along road sections and other construction sites like quarries, batching plants and camps where works are undergoing.
- Use of local language and images for signage shall be encouraged;
- Ensure that all potentially dangerous work areas have controlled access limited to authorised persons only;
- Ensure proper and adequate provision of proper sanitation and waste management facilities at all construction sites;
- Maintain a system of receiving and responding to any safety concerns by the communities;
- Undertake general and third-party insurance liability covers as appropriate.

#### 6.1.2.19 Conflicts between construction workers and local communities

While employment opportunities from construction is a positive impact, consultation feedback pointed out that there is a very high expectation on employment opportunities and supply of materials for local people during project implementation. Coupled with existing inter-clan conflicts, labour imbalance can create conflicts between the contractor and local communities if not well managed.

### Impact Analysis Matrix

Impact without Mitigation	
Severity of impact	-3
Spatial scope of impact	-3
Duration of impact	-3
Frequency of activity / duration of activity	-3
Frequency of impact	-3
Result	-54 Low-Medium

### Mitigation measures

- Contractor to formulate a labour management plan for his workforce;
- Contractor will be required to have a transparent external communication plan covering among others, how available opportunities will be advertised;
- The Contractor should prioritize employing locals as casuals to reduce the need for labour influx;
- Consultations with the local council of elders to ensure that available opportunities are fairly distributed across different clan members;
- Maintain a grievance register to log any complaints from local community.

40.

#### 6.1.2.20 Labour Influx and Social Change

During construction phase it is expected that there will be an influx of workers from varied cultures and social practices. The project area on the other hand can be categorized into rural, peri-urban and urban settlements hence resulting in a range of cultures from homogenous conservative communities to metropolitan/cosmopolitan communities in the major towns. Influx of workers triggers the mushrooming of slums as workers opt for low-cost

accommodation. Construction camps are set up by the contractor to provide living and eating areas for workers and also have separate areas for storing equipment and stockpiling material.

Interaction with the project staff can lead to positive influences in the form of promotion of diversity in ways of thinking, experience of new cultures and exposure to new expectations in goals and achievements. On a higher level, these influences can result in adoption of new trends in social interaction, modes of dressing, leisure time activities and spending habits.

Similarly, interaction between workers and young girls from the local communities is a point of potential conflict as the communities abhors such relations. It will therefore be important to sensitize non-local workers on local cultural expectations. These interactions can lead to negative perception for the project if it is perceived that the new trends have resulted in vices and deviant behavior such as improper sexual relationships between immigrant workers and local girls/women (including married women), which can also lead to gender-based violence.

### Impact Analysis Matrix

Impact without Mitigation	
Severity of impact	-4
Spatial scope of impact	-4
Duration of impact	-4
Frequency of activity / duration of activity	-4
Frequency of impact	-4
Result	-96 High

### Mitigation measures

- The contractor shall develop a labor management plan for all his project activities;
- The Contractor should prioritize employing locals as casuals to reduce the need for labor influx;
- Ensure there is adequate security and reasonable controlled access to project offices and residential quarters of immigrant staff to discourage deviant behaviors at workers campsites;
- Employment policy of the contractor should prohibit deviant behaviors at the workplace among staff such as cultural profiling, sexual exploitation, child labor and gender-based violence;
- Workers will be sensitized on the different cultural practices in the region and for immigrant workers, respecting different cultural, religions and beliefs, including behaviors and norms of the local people;
- Contractor to establish a grievance management system to handle internal and external complaints. This system will include establishment of a community liaison desk that is easily accessible by the community representatives and their leaders;
- Workers will be sensitized and sign code of conduct in regard to interactions, behaviors and relations with the local communities.

#### 6.1.2.21 Crime Management

The influx of labor a specific project area or site especially during construction, and the settlement changes due to economic development of the area after project completion has the potential to lead to a number of negative socio-economic impacts, including increased insecurity and community conflicts, increased incidences of diseases (as mentioned above); increased risk of accidents and occupational hazards. Crimes might occur in the project area during the construction and operation such as stealing of construction materials or individual property, fighting, petty crimes such as pick pocketing, drug abuse and alcoholism among others. Migration and settlement by new people could lead to increase of negative vices in the project area during operational stages of the road.



**Impact Analysis matrix**

Impact without Mitigation	
Severity of impact	-2
Spatial scope of impact	-2
Duration of impact	-2
Frequency of activity / duration of activity	-3
Frequency of impact	-3
Result	-36 Low

**Mitigation measures**

- The Contractor and Supervision team should report all activities of a criminal nature on the worksite or by the Contractor's employees (whether on or off the worksite) to the police and undertake the necessary follow-up.
- Crime reports should include nature of the offense, location, date, time, and all other pertinent details
- Sensitize the construction workers, locals, and security to be on the lookout on suspicious activities near the site
- Enforce the crime related clauses in the Code of conduct signed by all workers

**6.1.2.22 Child Protection, Sexual exploitation and abuse (SEA) of under-age girls**

There is potential of the contractor employing children who have not reached the employment age, therefore violating the child labor laws of the borrower. The laws of Kenya prohibit contractors from "employing children in a manner that is economically exploitative, hazardous, detrimental to the child's education, harmful to the child's health or physical, mental, spiritual, moral, or social development. In addition, there is a potential risk of project workers engaging in illegal sexual relations with minor girls, leading to HIV infection, teenage pregnancy, early child marriage, illegal and risky abortions, school dropout, etc.

**Impact Analysis matrix**

Impact without Mitigation	
Severity of impact	-4
Spatial scope of impact	-4
Duration of impact	-4
Frequency of activity / duration of activity	-4
Frequency of impact	-4
Result	-96 High

**Mitigation measures**

- Workers will be educated by relevant agencies such as police and probation officers on the relevant laws and policies protecting children
- Reach out to children in and out of school in the vicinity of the construction sites with a life skills program focusing on HIV/AIDS and sexual abuse prevention among others areas
- Mobilize and strengthen child protection institutions and structures near construction sites
- Reach out to school authorities and parents near construction sites on paying special attention to child protection in light of labor influx
- Partnerships will be established with relevant government agencies and NGOs to ensure children access survivor centered services such as medical care, psychosocial support, legal redress, safety, etc as and when necessary
- Ensure no children are employed on site in accordance with national labor laws

- Ensure that any sexual exploitation and abuse (SEA) of children by the contractors' workers are promptly reported to the police
- Popularize /put in place confidential mechanisms for reporting child abuse cases
- Enforce the child protection related clauses in the Code of conduct signed by all workers
- Ensure visibility of signage and information, education and communication materials on such issues in the construction sites
- Liaise with the administration units (National and County Government leadership including the office of the County Commissioner, County Administration, the Police service etc.) to provide regular surveillance and patrols to protect workers and unacceptable behavioral interaction of children and workers

41.

#### 6.1.2.23 Absenteeism in Schools

School children who live near construction sites are likely to be absent from school many times or will perpetually report late to school because of engaging in petty business activities of vending eats and other items to construction workers, or being lured by workers into sexual relationships that would encourage dropping out or being absent from school.

#### Impact Analysis matrix

Impact without Mitigation	
Severity of impact	-2
Spatial scope of impact	-2
Duration of impact	-2
Frequency of activity / duration of activity	-3
Frequency of impact	-3
Result	-36 Low

#### Mitigation Measures

- Contractor and local NGOs to conduct a program to strengthen school based and school led life skills programs targeting any schools near construction sites to discourage dropping out of schools for school children;
- Ensure no children are employed on site in accordance with national labor laws;
- The contractor shall sensitize the workers not to engage with children conducting business activities near the worksites of campsites;
- Impose zero tolerance for employees on sexual relationship with students that would encourage dropping or being absent from school

42.

#### 6.1.2.24 Gender Equity and Mainstreaming in employment

There is potential that gender inequality might occur during project construction through unequal distribution of work, discrimination against women, and unequal pay for women, lack of provision of separate facilities for women, among others. Sexual harassment against women or men might also happen for those seeking employment through for example sexual favors for exchange of employment.

#### Impact Analysis matrix

Impact without Mitigation	
Severity of impact	-3
Spatial scope of impact	-3
Duration of impact	-3
Frequency of activity / duration of activity	-3
Frequency of impact	-3

Result	-54 Low-Medium
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### Mitigation Measures

- Contractor and implementing agency to prepare and implement a Gender Action plan to include at minimum, in conformance with local laws and customs, equal opportunity for employment (min 30% of labour should be women);
- Ensure that women are given adequate employment opportunities during recruitment and job postings, including equal payment;
- Regular sensitization and awareness campaigns to the workers should be done to promote gender equity in employment during the construction works and during operation;
- Provision of gender disaggregated accommodation, bathing, changing, sanitation facilities;
- Zero tolerance on sexual harassment during employment.

43.

#### 6.1.2.25 Gender Based Violence (GBV), Rape and Sexual harassment

Due to labor influx for some project activities such as construction works, the project could exacerbate GBV, sexual harassment and other sexual offenses such as rape. Construction workers may engage in sexual fraternization with locals. In addition to this being a driver of HIV infection, it will lead to domestic conflicts, GBV and domestic violence at household level. Women who seek employment may also face demands for sexual favors before being employed which amounts to sexual harassment. Even when employed, women may face continuous and unwanted demands for sex and risk losing their jobs if they do not give in.

Women in the community and places of work may also face the risk being subjected to verbal harassment in the form of insults and demeaning comments in addition to unwanted gestures and touches by construction workers. Sexual harassment of women and girls might also happen as a result of mixing of women and men at worksites and campsites. Outright rape is also a risk some female employees may face when employed at construction sites. As a result, domestic violence and gender-based violence in homes, where it might have an impact to children who are likely suffer physically and emotionally.

44.

Local women from the communities seeking employment at the construction sites may lead to abandonment of their cultural practices and responsibilities of fetching water, gathering firewood, herding, etc. Neglect of their normal social responsibilities commonly-accepted by the local communities may lead to social unrest among families, and also lead to increase in gender-based violence by their spouses.

### Impact Analysis matrix

Impact without Mitigation	
Severity of impact	-3
Spatial scope of impact	-3
Duration of impact	-3
Frequency of activity / duration of activity	-3
Frequency of impact	-3
Result	-54 Low-Medium

### Mitigation Measures

The proposed measures shall include but not limited to:

- KeNHA will engage services of a local community service provider to carry out sensitization on GBV during the construction period;
- All workers and nearby communities and stakeholders will be educated on preventing and responding to sexual harassment and GBV ahead of any project related works;
- Contractor to prepare and enforce a No Sexual Harassment Policy in accordance with national laws;
- The community within the vicinity of the road where construction will take place will also be educated on gender-based violence and sexual offenses such as sexual harassment, rape and defilement in the context of labor influx and the prevention and response measures;
- Involvement of women in the periodic dialogues/consultations with contractors and host communities during construction;
- Strategies such as male involvement will be employed in preventing and responding to GBV and sexual harassment. The strategy involves promotion of the role of men and boys in confronting and transforming their own male privilege, power and status that perpetuates GBV. This includes mobilizing men in their different positions as rights holders and duty bearers to prevent and respond to cases of GBV;
- Establish partnerships with relevant government agencies and NGOs to ensure survivors of GBV and sexual offenses access survivor centered services such as medical care, psychosocial support, legal redress, safety, etc as and when necessary;
- Provision of gender disaggregated facilities, separate bathing, changing, sanitation facilities for men and women;
- Impose zero tolerance on sexual harassment, all forms of gender-based violence and discrimination at all phases of the project;
- Grievance redress mechanisms including non-retaliation should be set up for the workers;
- Liaise with the administration units (National and County Government leadership including the office of the County Commissioner, County Administration, the Police service etc.) to provide regular surveillance and patrols to protect workers and unacceptable behavioral interaction of local communities and workers

#### 6.1.2.26 Alcohol and drug abuse

The presence of migrant construction and other project workers in the community may lead to the emergence of small business hubs with kiosks for selling foodstuffs, cigarettes, alcohol, e.t.c to serve the workers and other members of the community. These business hubs may also engage in selling illegal drugs to project workers and other members of the community. The overall effect may be an increase in consumption of alcohol and illegal drugs in the community.

### Impact Analysis matrix

Impact without Mitigation	
Severity of impact	-2
Spatial scope of impact	-2
Duration of impact	-2
Frequency of activity / duration of activity	-3
Frequency of impact	-3
Result	-36 Low

### Mitigation Measures

- The Contractor shall require his employees, sub-Contractors and any personnel thereof engaged in construction works to individually sign and comply with this Code of Conduct.

- Removing any employee who persists in any misconduct or lack of care, carries out duties incompetently or negligently, fails to conform to any provisions of the contract, or persists in any conduct which is prejudicial to safety, health, or the protection of the environment.
- Taking all reasonable precautions to prevent unlawful, riotous or disorderly conduct by or amongst the Contractor's personnel, and to preserve peace and protection of persons and property on and near the site.
- Prohibiting alcohol, drugs, arms, and ammunition on the worksite among personnel.
- Liaise with the administration units (National and County Government leadership including the office of the County Commissioner, County Administration, the Police service etc.) to provide regular surveillance and patrols to protect workers and unacceptable behavioral interaction of local communities and workers

45.

#### 6.1.2.27 Increase in the prices of goods and services in the community

Increased demand by migrant labor may affect the local economy positively for producers and providers of some goods and services. This may lead to prices of rent, food and other commodities to rise. This may negatively affect other households who have a fixed income or those who are already barely managing to survive.

#### Impact Analysis Matrix

Impact without Mitigation	
Severity of impact	+3
Spatial scope of impact	+2
Duration of impact	+3
Frequency of activity / duration of activity	+3
Frequency of impact	+2
Result	+40 Low

#### Mitigation Measures

- The contractor should ensure his workers appropriately mix the use of locally and non-locally procured goods to allow local project benefits to balance the local economy while reducing risk of crowding out of and price hikes for local consumers

46.

#### 6.1.2.28 Complaints and Grievances/Social Conflicts

During construction, the local communities and workers may have complaints and grievances regarding the ongoing activities. There is also potential for social unrest among the local population if they are not considered for employment. This can bring negative publicity during construction including stoppage of work and can delay the projects progress. Against the background of this knowledge and expectation, there is a risk of dissatisfaction if procedures of allocation of workforce are not adequately applied, or if they are seen to be applied in an inequitable manner, especially due to local clan political dynamics. See GRM section on this document.

#### Impact Analysis matrix

Impact without Mitigation	
Severity of impact	-3
Spatial scope of impact	-3
Duration of impact	-3
Frequency of activity / duration of activity	-3
Frequency of impact	-3
Result	-54 Low-Medium

**Mitigation Measures**

- Provide grievance redress mechanism for the local communities and workers;
- Advise the public and workers on where to report grievances;
- Consider prioritizing the local manpower for both skilled and unskilled labour.
- Implement proposed grievance resolution mechanism
- Grievance redress mechanisms especially for workers should incorporate non-retaliation policies

**6.1.2.29 Impacts on Cultural Resources and Archaeological Sites**

While the realignment has been proposed to avoid any cultural resources and Archaeological sites, there is potential that new sites may be discovered during the construction works.

**Impact Analysis matrix**

Impact without Mitigation	
Severity of impact	-2
Spatial scope of impact	-2
Duration of impact	-2
Frequency of activity / duration of activity	-2
Frequency of impact	-2
Result	-24 Low

**Mitigation measures**

- Future care demands chance find procedures (as prescribed by NMK) to kick in for use during the construction phase. A sample “Chance Finds” is attached in the Annex 2.

**OCCUPATIONAL HEALTH AND SAFETY****6.1.2.30 Occupational Safety and Health Hazards**

Construction activities will expose staff to risks of accidents and incidents while undertaking excavations and trenching, installation of contractor facilities, operating mobile machinery, electrically powered equipment and materials delivery vehicles. Occupational health and safety measures should be undertaken to avoid falling from heights, heavy lifting activities and electrical shock, exposure to excessive body vibrations and noise, fire hazards, hot bitumen, wildlife attack and snake bite etc. which can result in injuries or even fatalities. Adherence to WBG EHS Guidelines, and OSHA and its regulations will significantly reduce occupational safety and health risks associated with the project implementation.

**Impact Analysis Matrix**

Impact without Mitigation	
Severity of impact	-4
Spatial scope of impact	-3
Duration of impact	-4
Frequency of activity / duration of activity	-3
Frequency of impact	-3
Result	-99 High

**Mitigation Measures**

- Contractors' selection criteria should include ability to demonstrate having some defined minimum requirements for Safety and Health Management System.

- Comply with the OSHA 2007 requirements can be used as minimum requirements and WBG EHS Guidelines;
- Contractor will prepare a site-specific Health and Safety Plan and implement it throughout the construction period;
- Contractor must obtain a registration of workplace certificate from DOSHS and comply with the subsequent requirements of the Health and Safety Committee Rules 2004 of the OSHA Act;
- Enforce use of defined standard operating procedures for handling various activities, depending on risks levels;
- Ensure adherence to Health and Safety Policy during construction activities;
- Establish an Emergency Response Procedure and display on all work areas;
- Provision of a standard first aid kit at active construction sites at all times;
- Designate qualified first-aider as per the OSHA requirements;
- Regular trainings to workers on OHS and first aid administration;
- Contractor to provide for ambulance vehicle for emergency evacuations
- Contractor (s) to maintain an accident register; carry out accident and incidents investigations and implement corrective actions;
- Undertake staff and visitor safety induction;
- Establish a Health and Safety Committee for the project construction team as per the Health and Safety Committee Rules 2004 of the OSHA Act
- Contractor to have a full time Health and Safety advisor on site;
- Have a stocked clinic with fulltime nurse on the main campsite;
- Engage a qualified Health and Safety auditor to conduct routine and annual Health and Safety (H&S) audits; Fire Safety Audit, and a Risk Assessment
- Provide appropriate and adequate Personal Protective Equipment (PPE) to workers;
- Abide by standard best practice health and safety provisions in the construction contract;
- Establish and enforce a strict code of conduct for all project drivers including outside suppliers delivering materials. The code shall focus on safety, especially speed, and loading, especially banning all carriage of staff, workers and passengers except in seats;
- Provide medical care for all staff as necessary as allowed in the Kenyan Law including securing a worker insurance cover as required under WIBA;
- Implement road safety campaigns addressing construction zone dangers and encourage motorists to exercise caution when driving through work zones.
- Conduct daily toolbox and monthly safety meetings;
- Conduct risk assessment before commencing new assignments/tasks;
- Undertake routine worksites safety inspections.

#### 6.1.2.31 Impacts Related to High Temperature and Humidity Levels

Working in high temperatures and humidity may have health impacts on construction workers such as dehydration, heat stroke, and other heat related illnesses.

#### Impact Analysis Matrix

Impact without Mitigation	
Severity of impact	-2
Spatial scope of impact	-2
Duration of impact	-2
Frequency of activity / duration of activity	-3
Frequency of impact	-3
Result	-36 Low

#### Mitigation Measures

- Contractor must ensure Project staff have access to adequate potable water;

- Provisions should be made for adequate ventilation and air conditioning for in-house work spaces and campsites;
- Sensitize staff on health concerns and avoiding heatstroke, dehydration and fatigue;
- Work schedules should be such that workers are allowed adequate break durations in between working sessions; and
- Ensure adherence to OSHA, 2007.

#### 6.1.2.32 Road safety

Activities related to construction works will undoubtedly induce uncharacteristic high levels of additional vehicular traffic along the proposed road. Related issues of vehicle congestion and reckless driving by truck drivers delivering construction materials to the site will be some sources of potential accidents to humans and livestock, disturbance of normal living conditions to the local population, dust pollution, etc during the construction phase.

#### Impact Analysis Matrix

Impact without Mitigation	
Severity of impact	-4
Spatial scope of impact	-3
Duration of impact	-3
Frequency of activity / duration of activity	-5
Frequency of impact	-5
Result	-100 Medium-High

#### Mitigation Measures

The following mitigation measures shall be adopted:

- Copies of insurance policies for the contractor's drivers and vehicles should be provided to the Supervision Consultant.
- The contractor's vehicles and equipment must be in proper working condition and have registration plates, and numbering.
- The contractor to sensitize all drivers and equipment operators to adopt safe driving and operation behaviors, to ensure proper discipline by these personnel, and sanctions those in breach.
- Ensure that safety is included in the driver's contracts as part of "Code of Conduct" and any non-compliances are sanctioned;
- Excavated sites, embankments, and dangerous locations are protected with proper safety barriers, tape and warning signs.
- Install temporary speed calming measures such as bumps and speed signs at high risk areas such as shopping centres, hospitals, and schools;
- As part of normal Occupational Health and Safety monitoring, the contractor should maintain a log detailing every violation and accident on site or associated with the project work activities, including the nature and circumstances, location, date, time, precise vehicles and persons involved, and follow-up actions with the police, insurance, families, community leaders, etc.
- The implementing agency, in cooperation with the relevant government agency, should undertake road safety campaigns targeting settlements, schools, and other facilities along the project road or other affected areas. The cost of such campaigns should be covered in the project budget.

47.

#### 6.1.2.33 Loss of life, injury, or damage to people and private property

There is potential loss of life, injury and damage to people's property during construction period due to accidents, misuse of contractors' equipment etc. This can occur to the members of the public or workers during construction activities.



### Impact Analysis Matrix

Impact without Mitigation	
Severity of impact	-4
Spatial scope of impact	-3
Duration of impact	-3
Frequency of activity / duration of activity	-5
Frequency of impact	-5
Result	-100 Medium-High

### Mitigation Measures

- The construction site shall be fenced off to prevent access to members of the public;
- Contractor shall maintain records and make reports concerning health, safety and welfare of persons, and damage to property, at all times or as the RE may reasonably require;
- The contractor shall have insurance for his workers as required by law;
- Insure against liability for any claims for loss, damage, death or bodily injury which may occur to any physical property or to any person which may arise out of the Contractor's performance of the contract;
- All fatalities or severe accidents/incidences shall be reported to the DOSHS as required, to KeNHA immediately, and KeNHA shall report to the AfDB within 24 hrs of the occurrence. The same should be done to DOSHS within 24 hrs and a written notice to the same within 7 days.

48.

### 6.2 Impacts on Vulnerable Groups

49.

The project will have some impacts on project affected persons, especially men and women who heads households individually. This will mainly be roadside traders and other businesses which might be affected as a result of the project implementation. This will require KeNHA to fulfill the requirements of ensuring these groups are catered for, from a short term (eg employment benefits during construction period) and long term (eg strategies and projects that target poverty reduction) perspective of the project. A gender assessment report has been as a standalone report for the project to determine the impacts to the Vulnerable groups, and how the they can benefit from the project activities.

50.

### Impact Analysis Matrix

Impact without Mitigation	
Severity of impact	-3
Spatial scope of impact	-1
Duration of impact	-5
Frequency of activity / duration of activity	-2
Frequency of impact	-3
Result	-55 Low -Medium

### Mitigation measures for impacts on vulnerable groups

- The recommendations from the Gender Assessment will be incorporated to the project design to determine how the communities will benefit from the project activities;
- The project will make the development process more inclusive of vulnerable groups by meaningful consultations and incorporating their perspectives in the design of development programs and poverty reduction strategies;

- Conduct of Free, Prior and Informed Consultation in order to achieve broad community support, during implementation;
- Provide the VGs with opportunities to benefit more fully from development programs associated with the project, such as employment, community driven projects along the road project.

51.

### **6.3 Operation Phase Impacts**

#### **6.3.1 Positive Impacts**

##### **6.3.1.1 Spurred Economic Development**

The project road will also improve connectivity between other parts of Kenya, and as far as South Sudan. Improved road connectivity will spur economic development as creation of opportunities to invest and spend increase with the volume of goods and services accessible to local population and on transit. The project road development is within the national Vision 2030 and is also serves as a connection for the Turkana and West Pokot counties, and connecting to the LAPSET Corridor project hence will be important trade route with the neighbouring South Sudan.

In addition, the upgraded road will provide faster movement of people, goods and services in the area, which will likely stimulate more public and private investments such as facilities which include but not limited to schools, health centres, water, energy, and sanitation mainly in the urban centres. This growth means the social and economic conditions of these people will grow, improving and uplifting the standards of living along the proposed road project.

##### **6.3.1.2 Reduced Vehicle Operational costs**

The reduced vehicle operating and maintenance costs due to improvement of the riding quality and surface of the road compared to the current road situation greatly enhances accessibility to basic facilities, for the local communities and others served the road corridor. Therefore, the development of the road will also be an opportunity for the area to be opened up for other opportunities and development in other commercial sectors by outside investors, since more investors will deploy their vehicles along the road due to reduced costs of maintenance and operations.

##### **6.3.1.3 Improved Travel Comfort and Response**

The road project will generally increase travel safety and comfort. With the improvement of the road, public transport business will be more competitive and it is likely that transporters may opt for better and bigger public transport buses. In addition, an improved road will allow quicker response by medical and security personnel to the areas served by the road, thereby improving service delivery of the area.

##### **6.3.1.4 Reduced Travel Time and Cost**

The development of the project road will reduce travel time and cost associated with the current poor road conditions. Paving the project road will improve travel experience by reducing the travel time for users. The cost of travel is deemed to decline with reduced wear and tear due to the paved conditions. This will trickle down to reduced cost of living (access to social and economic services) within the project area.

#### **Enhancement measures**

- Routine inspection and proper maintenance of the project road

##### **6.3.1.5 Cultural Integration due to Influx of People**

The improvement of the project road will improve connectivity of counties to the rest of the country. The number of people from other parts of the country willing to exploit opportunities due to the connectivity will increase. As people of different cultural background, lifestyles and ethnicities stream-in along the project road it will enhance the cultural integration and coexistence within the local communities. However, this may be a gradual process.



### Enhancement measures

- Awareness campaign to encourage cultural coexistence and appreciate diversity.
- 52.

#### 6.3.1.6 Reduced Dust Pollution

Vehicle traffic plying along the existing road cause fugitive dust because of the failed sections of the road and prolonged dry weather conditions, which may cause respiratory complications and discolouration of surrounding vegetation. In an improved paved state, the problem of fugitive dust associated with the road will be mitigated.

#### 6.3.1.7 Improved Drainage

Overall, the hydrology and drainage of the road will be improved due to the upgrading of the road structures, such as bridges, culverts and other cross-drainage facilities like roadside drainage. Sedimentation of culverts and road side drainages will be eliminated due to provision of control devices and cover vegetation and water stagnation within and the on the road side will be eliminated.

Currently, the infrastructural facilities (roads, sewer, water, etc) of the area is not well developed, and the development of the road means such facilities will need to be improved as increased settlement and need for such facilities along the road becomes necessary, thereby bringing development of the area under the project's influence.

### 6.3.2 Negative Impacts

#### 6.3.2.1 Increase in Communicable Diseases

Once operational, the project road will experience increase in vehicle traffic, including long-distance drivers who will be making stop-overs in different towns along the road. Areas where truck drivers usually stop has been known to have high number of sex workers, who are likely to include those from outside the areas of counties served by the road. Truck drivers could increase or create the demand for casual sex leading to the emergence or increase in sex work at the centres along the road. Sex workers are a key bridging population for HIV transmission because their customers in many cases have spouses.

With increased vehicle traffic, there will be a proportionate rise in emission levels. Human exposure to these emissions has health impacts. Some of the pollutants contained in vehicular emissions include particulate matter (PM<sub>2.5</sub>), ozone, volatile organic compounds (VOCs), carbon monoxide, oxides of nitrogen and benzene (WHO, 2011). Health problems associated with the vehicle related pollutants include cardiovascular and respiratory diseases and cancer.

### Impact Analysis Matrix

Impact without Mitigation	
Severity of impact	-3
Spatial scope of impact	-1
Duration of impact	-5
Frequency of activity / duration of activity	-2
Frequency of impact	-2
Result	-36 Low

### Mitigation measures:

- KeNHA/Contractor should, in liaison with approved local non-governmental organizations (NGOs) or approved HIV/AIDS service providers, conduct awareness training to truck drivers and the locals and monitor the efficacy of the awareness created during project operation period, through the performance-based contractors selected to do maintenance of the road;
- Sensitize truck drivers on the need to refrain from risky behaviours;

- Provision of condoms both male and female in the sanitary facilities located at truck stops;
- Encourage truck drivers, conductors, workers and local communities to go for HIV voluntary counseling, testing and referral services;
- Monitoring of outcomes, in collaboration with National HIV/AIDS Authorities;
- Vehicles to adhere to emission criteria set under the Environmental Management and Co-ordination (Fossil Fuel Emission Control) regulations, 2006.
- Vehicle maintenance and servicing of vehicle engine.

#### 6.3.2.2 Increased Vehicle Accidents

Improved road conditions will attract more traffic volume and increase incidences of vehicle over speeding considering the road has a maximum design speed of 100km/hr. Under these circumstances, a combination of reckless driving and ignorance of local communities of road safety requirements and basic rules may result in accidents. Vehicle accidents may also contribute to oil spills that may contaminate soil and local water resources. In Kenya, road accidents are a safety concern causing disability and death of victims. The design has incorporated the following for safety purposes:

- Speed reduction measures and structure like bumps and zebra crossings near settlements and institutions;
- Road furniture like crash barriers in dangerous curves and elevation and signages to alert the drivers and other road users of what to expect ahead

#### Impact Analysis Matrix

Impact without Mitigation	
Severity of impact	-4
Spatial scope of impact	-3
Duration of impact	-3
Frequency of activity / duration of activity	-5
Frequency of impact	-5
Result	-100 Medium-High

#### Mitigation measures

- The public should be sensitised on safety measures to observe while using the road;
- KeNHA to liaise with NTSA for close monitoring of the road usage and impose penalties on those going against the set roads usage rules;
- KeNHA should ensure maintenance of installed road furniture and safety signages along the road;
- Undertake periodic roadside bush clearance that may reduce visibility clearance or obstruct critical signages.
- Accident scenes should be cleared and any oil spills cleaned to minimize contaminating soil and local water resources.

#### 6.3.2.3 Human Encroachment along the Project Roads

After construction of the project road is complete and operational, there is the possibility of encroachment of various informal businesses along the project roads due to the increase in traffic and improved business opportunities. The encroachment increases the possibility of road side accidents and makes road maintenance difficult and expensive activity due to the compensation demands from destruction of properties and disruption of livelihoods for the encroachers.

**Impact Analysis Matrix**

Impact without Mitigation	
Severity of impact	+4
Spatial scope of impact	+3
Duration of impact	+4
Frequency of activity / duration of activity	+3
Frequency of impact	+3
Result	+66 Low - Medium

**Mitigation measures**

- **KeNHA in consultation with the county governments should enforce development control by not allowing for any development approvals on the road reserve to ward off potential encroachers and to allow for easy implementation of future road maintenance or expansion plans;**
- **Install and maintain road reserve boundary posts at appropriate intervals;**
- **Conduct awareness talks and presentations about the road reserve.**

**6.3.2.4 Road Maintenance Impacts**

During road maintenance, solid waste generation may include road resurfacing waste (removal of the old road surface material), road litter, illegally dumped waste, or general solid waste from rest areas, vegetation waste from right-of-way maintenance; and sediment and sludge from storm water drainage system maintenance. Paint waste may also be generated from road and bridge maintenance (due to removal of old paint from road stripping and bridges prior to re-painting).

**Impact Analysis Matrix**

Impact without Mitigation	
Severity of impact	+4
Spatial scope of impact	+3
Duration of impact	+4
Frequency of activity / duration of activity	+3
Frequency of impact	+3
Result	+66 Low - Medium

**Mitigation measures**

- **Incorporate recycling of road resurfacing waste where possible;**
- **All vegetation cuttings for road clearance maintenance suspected to be from invasive alien species should be burnt on site translocated to minimize dispersal;**
- **Manage sediment and sludge removed from storm water;**
- **All removed paint materials suspected or confirmed as containing lead should be treated as a hazardous waste.**

**6.3.2.5 Drainage and Storm water Management**

During the operation of the road, storm water will be generated as a result of an increase in paved sections of the roads, meaning that there will be more runoff than normal, which will affect the drainage systems, hydrological regimes and storm drains of the project area.

There will be also be an increase in drainage speed which in turn will create heavy outfalls and worsen soil erosion cases along the drainage systems and area of project influence.

### Impact Analysis Matrix

Impact without Mitigation	
Severity of impact	-3
Spatial scope of impact	-3
Duration of impact	-3
Frequency of activity / duration of activity	-3
Frequency of impact	-3
Result	-54 Low -Medium

### Mitigation measures

- Design should ensure efficient drainage structures (culverts, mitre drains, scour checks etc) to take care of the increased drainage;
- Proper construction of erosion protection measures such as cascading gabions and distribution channels to protect soil erosion along the road;
- Regular maintenance of structures is required to ensure the drainage structures are functioning properly

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#### 6.3.2.6 Solid Waste

During operation period, road users spilling materials (oils, foodstuffs, plastic materials, and other wastes), tends to leave pollutants on the road reserve, bus stops and the adjacent lands compromising the natural resources and people's health.

### Impact Analysis Matrix

Impact without Mitigation	
Severity of impact	-3
Spatial scope of impact	-3
Duration of impact	-3
Frequency of activity / duration of activity	-3
Frequency of impact	-3
Result	-54 Low -Medium

### Mitigation measures

Enforcement of laws and by-laws for buses and other motorists on improper disposal of solid waste from vehicles; No vehicles should be serviced along the roads or at bus stops – all should be in a licensed garages or service stations;

Road signage prohibiting disposal of waste;

Regular cleaning, collection and disposal of solid waste by the local authorities (at bus stops), and performance-based contractor that will be assigned on the road for maintenance (along the roads)

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## 6.4 Cumulative Impacts of the Project Road

Cumulative impacts are impacts which result from the incremental impact of a proposed activity on a common resource when added to the impacts of other past, present or reasonably foreseeable future activities. Cumulative impacts such as impacts on resources such as strain in water, energy and road construction materials within the region might arise due to the needs for the simultaneous construction of the roads, degradation of environment due vegetation clearance, an increase in soil erosion, impacts of wildlife such as potential poaching in the region due to better access, solid waste generation, among others. Furthermore, the project can also contribute negatively from a social perspective such as changes in cultural practices for the local communities due to influx

of people looking for business opportunities, increase in tourism in the area, security challenges, changes in traffic patterns, housing availability, and employment, considering that there are a number of proposed projects along or near the road corridor.

#### 6.4.1 Identification of Potential Cumulative Impacts

The table below provides a summary of the likely potential cumulative impacts that may result from the construction and operation of the proposed road project, in combination with other proposed development such as the ones mentioned above. To mitigate cumulative impacts, the project implementers have or will carry out ESIA studies that propose mitigation measures to be implemented during construction and operation phases of the projects. It is also proposed that the project implementers in the region should have a collaborative engagement with each other to develop a common cumulative impact management strategy to minimize cumulative impacts of their projects. If well implemented, the proposed measures are expected to minimize the overall cumulative impacts from these projects in the region.

**Table 6-3: Summary of the Likely Potential Cumulative Impacts**

Environmental and Social Item	Potential Cumulative Impacts	
	Construction Phase	Operation Phase
Soil Degradation, site related oil spills	Although not so significant, risks of oil spills increase as more projects are being undertaken in the region.	Increase in vehicles and potential accidents, and improper servicing of vehicles increase chances of soil and water sources degradation from poor management of oil wastes
Loss of flora, proliferation of invasive species	This may happen during the construction phase if the construction of other nearby projects coincides with that of the proposed project.	Vehicles and passengers plying along the roads may carry invasive species that may spread in the region Proposed measures include monitoring composition of species regenerating along road reserves and taking prompt actions in case of emergence of invasive species.
Solid waste	There will be a large amount of solid waste generated by all projects from various sources during construction such as at camp sites, soil spoil, cement bags, among others	Regional growth and increase in population as a result of easy access to the North Western region will increase solid waste generated in towns and centres. Passengers and travelers using the roads also tend to throw waste on the roads which increase the amount of waste generated in the region.
Air Quality	Air quality may occur during construction if not mitigated only if the construction of other nearby projects coincides with that of the proposed project	The impacts of the proposed road on regional air quality and greenhouse gases are predicted increase as a result of more vehicles along the road, and with other improvement of proposed road networks. Monitoring of air quality in the region during operational stages should be conducted to devise methods of controlling greenhouse gases
Noise and Vibration	There is the potential for cumulative noise impacts of the proposed development in conjunction with other concurrent projects in the vicinity arising from simultaneous demolition and construction works.	Increase in traffic in the region will translate to increase in noise levels as more traffic use the roads.



Environmental and Social Item	Potential Cumulative Impacts	
	Construction Phase	Operation Phase
Increased Traffic	<p>There will be increased traffic in the region from construction activities of all the projects. The potential risks include cumulative increase in traffic accidents.</p> <p>Mitigation measures have been proposed to be implemented during construction</p>	<p>Traffic volumes will increase in the project area due to improved road conditions. More vigilance needed with installation of speed measure in high risk areas along the projects. However, the proposed mitigations need to be strictly adhered to.</p>
Strain in water resources	<p>There is potential strain of water resources in the area during the construction phase if the construction of other nearby projects coincides with that of the proposed project.</p>	<p>Social unrest due to usage of water resources may occur as a result of easier access by other communities.</p>
Social Impacts including: Labour influx, Crime, disruption of services, increased conflicts, impacts on children, GBV sexual exploitation and abuse	<p>Influx of immigrant workers will impact the region through increase of local population. The Cumulative impacts will only occur during the construction phase if the construction of other nearby projects coincides with that of the proposed project.</p> <p>The proposed mitigations need to be strictly adhered to.</p>	<p>Given that traffic volumes will increase in the project area due to improved road conditions, changes in social setting of the communities in the region is bound to change in one way or another which could bring negative impacts such as social conflicts, intermarriages, prostitution, child abuse and sexual exploitation of underage girls.</p> <p>Continuous community awareness and sensitization of such negative issues will need to be done continuously using Community-Based Organizations (CBOs) and NGOs operating in the region with the support of the local county governments</p>
Increased demand for firewood.	<p>The major source of energy in the region for domestic use is firewood. The contractors of the road may also use firewood to heat up bitumen for the construction. This increased demand strains the forest resources and increases the level of carbon dioxide in the atmosphere</p>	<p>With an improved transport system in the region, access of firewood to larger markets is increased which will lead to unsustainable use of forest resources</p>
Strain on Natural resources due to construction materials requirements - sand, stone and gravel.	<p>With the concurrent implementation of development projects in the region, sand and gravel demand is on the rise. The sources of such resources face habitat disturbances, deformation and unsustainability</p>	<p>The road project will induce economic growth in the region leading to physical developments that will demand the use of sand, stone and gravel for construction</p>

## 6.5 Potential Impacts during Decommissioning

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

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

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The following presents anticipated decommission impacts of the contractor's facilities.

### **6.5.1 Positive Impacts**

#### **6.5.1.1 Reuse of Contractor's Facilities**

Some of the contractor's camps and other facilities erected during project construction can be handed over to the local government for convenient utilization as local administration offices or social halls instead of demolition.

Enhancement measures

- KeNHA to liaise with the local county administration to facilitate official handover of reusable facilities;
- Contractor shall complete a decommissioning plan incorporating appropriate disposal of non-recyclable materials and rehabilitation of the biophysical environment at the temporary camp and materials sites prior to handover

56.

### **6.5.2 Negative Impacts**

#### **6.5.2.1 Community Safety**

Abandoned and improperly rehabilitated material borrow sites and quarries can present a great safety and health hazard to adjoining communities due to water ponding, deep cliffs and being inhabited by or providing hideout for problem wildlife.

Mitigation Measures

- Contractor must prepare detailed decommission plan for approval by local government, NEMA and department of mines as applicable;
- KeNHA should consider satisfactory rehabilitation of decommissioned sites as part of contractual requirement with enforceable penalties including financial disincentives.

#### **6.5.2.2 Loss of Income**

Staff working at the contractor's camp will lose income sources as their services will be terminated. Without prior awareness of contract conditions, abrupt loss of income source may psychologically impact the affected workers and even their families.

Mitigation Measures

- Notify the employees in advance on the project closure date and adequately compensate them;
- Dismissal procedures to be compliant with Employment Act, 2007;
- Provide counselling & alternative skills for alternative activities;
- Formerly employed staff at the project, should get recommendation letters to assist in getting job search and reuse acquired skills and earn income.

#### **6.5.2.3 Noise pollution**

Decommissioning of construction structures involve noisy activities originating from movement of heavy ground vehicles, disassembling all the prefabricated structures, disconnection of services, breaking down concrete foundations and handling of debris from sites. Though short lived, the generated noise will affect exposed workers and, in some cases, the nearby communities.

#### Mitigation Measures

- Prepare a decommissioning plan to guide activities;
- Monitor noise levels as per the NEMA Environmental Management and Coordination (Noise and Excessive Vibration Pollution) (Control) Regulations, 2009 & OSHA, 2007;
- The noise emission characteristics should be considered during selection and mobilization of decommissioning equipment; and
- Sensitize staff to switch off machinery and vehicles when not in use.

#### 6.5.2.4 Dust and Fumes

Decommissioning activities likely to cause dust and fumes include:

- Excavation and loading of spoil debris for disposal;
- Decommissioning of septic facilities; and
- Removal of fuel holding tanks and dispensers.

These will be a nuisance mainly to demolition workers but may also affect nearby communities.

#### Mitigation measures

- Prepare a decommissioning plan to guide staff on proper handling of sensitive facilities;
- Enforce stand operating procedures while undertaking demolition works;
- Provide and enforce the appropriate use of PPE against dust; and
- Employ dust suppression measures such as sprinkling water on loose soil surfaces and providing cover for spoil batches.

#### 6.5.2.5 Waste Accumulation

Decommissioning of construction camps will generate waste some of which may not be reused or recycled. Spillages during handling substances may also occur contaminating soil and surface water bodies. Removal and reinstatement of sites may accumulate debris that require proper handling and disposal.

#### Mitigation Measures

- Contractor will be required to prepare a decommissioning plan that covers waste management;
- Waste be managed as per Environmental Management and Coordination (Waste Management) Regulations 2006;
- Establish a segregation and grading waste management system to manage garbage and other forms of waste generated;
- Prioritize options of waste reduction, reuse and recycling, particularly papers, polythene bags and plastic wrappers and containers and other materials that can possibly be recycled; and
- Disposed waste at designated sites through licensed waste handlers.

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### 6.6 Resettlement Action Plan

A Resettlement Action Plan (RAP) has been developed in conjunction with this ESIA to mitigate the economic displacement impacts arising from the Project. The RAP conducted a baseline socio-economic survey, a census

survey, and an asset inventory of project affected persons. The RAP presents entitlements and compensation options that form the basis for further engagement between the project-affected persons and KeNHA.

58.

The census was carried out to document the current occupants of the Project Affected People (PAPs) within the road RoW in all the settlements along the road. The data is important as it will form the basis for future RAP decision making regarding eligibility for compensation and resettlement assistance.

59.

**Table 6-4 : Number of PAPs Enumerated According to Settlement**

Affected Towns/Centres	Business Structures	Structure owners operating business	Tenants	Mobile Road Vendors	TOTAL
TOTAL					

**Table 6-5 : RAP Implementation Costs**

Item	Estimated Total Value (Kshs)	15% Statutory allowance	Total Value (Kshs)
Structures Values			
Land Values ( <i>Provisional</i> )**			
Tree Values			
Sub-Total 1			
Sub-Total 2			
GRAND TOTAL (Estimated)			

Source, RAP Report, January 2022

\*\* The Land value provided is a provisional sum for land that maybe acquired for associated facilities – markets, truck parking, and minor acquisition of road realignment near Soy Market

## 6.7 Environmental, Social and Climate Change Risks to the Project

In any project, there are risks associated with it during the project cycle. For the proposed road project, the following environmental, social, and climate change risks were identified and some recommendations have been proposed to reduce their occurrence are discussed below.

### 6.7.1 Climate change impacts

Higher temperatures can cause pavement to soften and expand. This can create rutting and potholes, particularly in high-traffic areas and can place stress on bridge joints. Heat waves can also limit construction activities, particularly in areas with high humidity. With these changes, it could become more costly to build and maintain roads and highways.

Climate change is projected to concentrate rainfall into more intense storms. Heavy rains may result in flooding, which could disrupt traffic, delay construction activities, and weaken or wash out the soil that support roads,

bridges and culverts. The floods could be a risk to the project especially during construction and operation phases as they could lead to loss of properties, roads and even lives.

60.

### **Risk management**

The safeguards team has considered and factored in the design of the various river crossings the highest recorded flood levels of these rivers. During construction, it will also be prudent for the contractor to ensure measures have been put in place to provide adequate warning before flooding. This will ensure adequate evacuation is done prior to the floods. A Storm Water Management Plan will also be requisite to state the measures to be taken during the flooding periods.

### **6.7.2 Transport of Dangerous Goods**

Dangerous goods are frequently transported in bulk presenting a potential risk of release to the environment in the event of accidents. Additionally, there is a potential for the release of diesel during fuelling operations. The recommended measures to prevent minimize, and control releases of hazardous materials during road transportation and use include the following:

- Use of tank cars and other rolling stock that meet national and international standards (e.g. thermal protection and puncture resistance) appropriate for the cargo being carried, and implementing a preventive maintenance program;
- Preparation of spill prevention and control, and emergency preparedness and response plans, based on an analysis of hazards, including the nature, consequence, and probability of accidents.

61.

Based on result of the hazard analysis, implementation of prevention and control measures may include: -

- Requirements for authorization and obtaining of permits before transporting dangerous goods along the road;
- Routing and timing of hazardous materials transport to minimize risk to the community (e.g. restricting transport of hazardous materials in certain hours)
- Limiting the general speed of vehicles in developed areas
- Construction of protective barriers and other technical measures (e.g. guardrails) at sensitive locations (e.g. water resources and settlements)
- Dissemination of emergency preparedness and response information to the potentially affected communities (e.g. emergency notification systems and evacuation procedures);
- Implementation of a hazardous material security plan and security awareness training, including provisions for personnel security, prevention of unauthorized access, and measures to reduce risks during storage and transport of hazardous materials;
- Use of standardized fuel spill prevention systems.

### **6.7.3 Fire**

If vegetation growth is left unchecked or slash/waste from routine maintenance is left to accumulate within the right-of-way, sufficient fuel can accumulate that may promote forest fires. In addition, vehicle accident might trigger fire where this kind of vegetation may catch fire and it spreads uncontrollably near the scene. The recommended measures to prevent and control risk of forest fire include:

- Monitoring of right-of-way vegetation according to fire risk;
- Trimming, slashing, and other maintenance activities to avoid seasons when the risk of forest fires is high;
- Removal of maintenance slash or management by controlled burning. Controlled burning should adhere to applicable burning regulations, fire suppression equipment requirements, and typically should be monitored;
- Planting and management of fire-resistant species (e.g. hardwoods) within, and adjacent to rights-of-way.

## 6.8 Environmental and Social risk management

The failure of environmental and social mitigation can result in serious impacts such as erosion, increased road accidents and disruption of the community lifestyles. Construction of a road also involves occupational health and safety risks to road workers and members of the communities, primarily in the areas of excavations, storage and handling of dangerous materials, and operation of heavy machinery close to traffic, slopes and watercourses. The anticipated risks in this project include:

- Exposure to excessive dust particles or toxic fumes from bitumen and other chemicals used in road works;
- Potential for collapse of trenches;
- Risk of accidents involving passing traffic;
- Risk of rock falls during blasting;
- Risk of fuel spills and therefore contaminating soil and groundwater;
- Contractor and communities conflicts due to labour distribution;
- Requirement by the local communities to benefit from the project through construction of amenities at various centres along the road.

The above risks can be mitigated to some extent through:

- Strengthening staff skills and training in environmental management;
- Monitoring environmental and social actions and responsibilities and making provision for remedial actions;
- Planning for remedial measures in case initial planned actions are not successful;
- Limiting time of exposure to dust particles, chemicals and noise;
- Provision of Personal Protective Equipment (PPE);
- Establishing safety and inspection procedures in materials handling, operating heavy equipment and constructing trenches;
- Safe handling of toxic materials, explosives and other hazardous substances;
- Establish well-coordinated community relationship and regular consultations and engagements between KeNHA, local communities and the contractor;
- Establishment of proper, active, and accessible GRM mechanisms;
- Continuous Stakeholder engagement throughout the project cycle

## **7 CLIMATE CHANGE SCREENING AND ADAPTATION**

### **7.1 Introduction**

Addressing vulnerabilities and risks associated with climate variability and change is crucial, and Kenya, like many nations, is actively advocating for a comprehensive approach. Adaptation and resilience are top priorities in Kenya's response to climate change. The National Climate Change Response Strategy (NCCRS) and National Climate Change Action Plan (NCCAP) were launched in 2010 and 2013, respectively, emphasizing the integration of climate change adaptation into development planning. The National Adaptation Plan (NAP) 2015-2030 outlines sector-specific adaptation measures.

Kenya, ranked 152 out of 181 countries in the 2019 ND-GAIN Index, faces significant climate change impacts due to political, geographic, and social factors. This context necessitates a robust strategy for climate resilience.

### **7.2 Climate Change and Disaster Risk Screening of the Project**

#### **7.2.1 Methodology**

The World Bank Group's Climate and Disaster Risk Screening Project Level Tool was employed for early-stage screening, considering exposure, impact, and adaptive capacity.

#### **7.2.2 Screening Results**

The Biretwo-Arror-Chesongoch Road Project in Kenya exhibits low exposure to climate change and disaster risks. The screening identified slight impacts related to extreme temperatures and precipitation. The project's location, being inland, mitigates risks associated with sea-level rise and storm surges.

#### **7.2.3 Potential Impacts on Project's Physical Components**

Current and future scenarios were evaluated. While the current impact rating is low, future projections indicate a slight increase in risk due to rising temperatures and potential changes in precipitation patterns. Engineering and planning measures are proposed to address these challenges.

### **7.3 Potential Contribution of The Proposed Road to Climate Change**

#### **7.3.1 Social and Economic Factors**

The road's construction will enhance access to services, leading to urbanization and increased population. This economic growth, while positive, may contribute to environmental degradation and climate hazards.

#### **7.3.2 Firewood Use and Charcoal Burning**

High reliance on firewood in project areas could contribute to greenhouse gas emissions. Increased demand during and after construction necessitates sustainable practices.

#### **7.3.3 Greenhouse Gases (GHG) Contribution**

Construction and operation phases contribute to GHG emissions. Mitigation measures include efficient equipment use, alternative materials, and solar lighting.

#### **7.3.4 Spurred Economic Development**

Improved road connectivity fosters economic growth but comes with increased GHG emissions. Mitigation involves policy implementation, sensitization, and alternative energy use.

#### **7.4 Climate Change Adaptation Component**

The project incorporates climate change adaptation by hardening infrastructure, promoting tree planting, and raising public awareness. Engineering and ecosystem approaches are key components.

#### **7.5 Adaptation/Mitigation Measures**

A range of measures involving afforestation, waste management, and vulnerability assessments are proposed. Collaboration between government entities and local communities is crucial.

#### **7.6 Linkages to Climate Change Adaptation Measures**

Kenya's commitment to climate action, as outlined in the Climate Change Act and National Climate Change Action Plans, underscores the need for collaborative efforts between national and county governments. Implementation and revision of plans align with international climate agreements.

In conclusion, the Biretwo-Arror-Chesongoch Road Project in Kenya exemplifies a balanced approach, considering current and future climate risks while incorporating measures to mitigate its contribution to climate change. Ongoing collaboration and adherence to climate policies are vital for successful implementation.



## **8 ALTERNATIVES TO THE PROJECT**

The Biretwo-Arror-Chesongoch road project is planned to follow the existing alignment, but certain sections may be realigned for geometry and safety considerations without compromising environmental and social requirements. The main alternatives are "with the project" and "without the project."

### **8.1 Alternative Alignments**

The proposed road alignment is on an existing reserve, with reconstruction involving minimal horizontal or vertical realignment, except at locations like Soy where some resettlement may be necessary.

### **8.2 Alternative Modes of Transport**

Given the project area's reliance on the road as the primary mode of fast, affordable land transport, alternatives like rail, water, and air transport are not feasible for common citizens.

### **8.3 Alternative 1: "No Action" Scenario**

Maintaining the road without upgrading, with intermittent repairs, is not a viable option, leading to foregone economic and social benefits, regional integration, employment opportunities, and improved travel conditions.

### **8.4 Alternative 2: With Project Option**

Reconstructing the existing pavement alignment, providing drainage and safety components, and promoting regional economic integration is recommended. The project's economic analysis shows viability, with an impressive Internal Rate of Return (IRR) and substantial benefits for both the local and Kenyan economy.

#### **8.4.1 Analysis of Alternative Construction Materials and Technology**

The use of locally sourced materials and international standards, along with modern technologies, will be adopted for the project. Recycling existing pavement materials may be considered to reduce costs, and the evaluation of green technologies will prioritize environmental and safety concerns without compromising cost-effectiveness.

### **8.5 Environmental and Social Management Plan**

The Environmental and Social Management Plan (ESMP) is developed to demonstrate how site-specific concerns and mitigation measures are addressed during construction and operation of the proposed project development activities. The ESMP has been developed with project knowledge and information available to date. The impacts originating from the project road development (construction and operation phases) have been identified. To ensure that the negative environmental and social impacts can be controlled and mitigated effectively, a thorough scientific management and monitoring plan has been prepared. This will ensure that all the targets are achieved and that the environmental responsibilities and obligations of EIA are met during project implementation. As a progressive approach, components of the ESMP may require updating throughout the initiation and scheduling of plans for the project. Thus, this is a working document subject to amendments whenever new information is received or project road conditions change.

### **8.6 Purpose and Objectives of ESMP**

The ESMP describes the range of environmental and social issues associated with the project and outlines corresponding management strategies that will be employed to mitigate potential adverse environmental impacts. The ESMP conveys the Project's environmental and social constraints. The project will comply with all local laws and regulations, which seek to ensure that the road construction and operation does not adversely affect the environment and social community resources.

The project supervision may periodically revise the ESMP in consultation with the Contractor, and subject to the approval from National Environment Management Authority (NEMA). The revisions may be made to

accommodate changes in work, weather, and road conditions. The ESMP should be made available to all the project staffs.

The objectives of the ESMP are:

- To serve as a commitment and reference for the project planners and implementers including conditions of approval from NEMA;
- To serve as a guiding document for the environmental and social monitoring activities for future studies, on requisite progress reports;
- To provide detailed specifications for the management and mitigation of activities that have the potential to impact negatively on the environment;
- To provide instructions to relevant project personnel regarding procedures for protecting the environment and minimizing environmental and social effects, thereby supporting the project goal of minimal or zero incidents;
- To document environmental and social concerns and appropriate protection measures; while ensuring that corrective actions are completed in a timely manner;
- To address capacity building requirements within the project team, if necessary.

## **8.7 Auditing of the ESMP**

KeNHA and the contractor shall conduct regular audits – quarterly and annual, to the ESMP to ensure that the system for implementation of the ESMP is operating effectively. The audit shall check that a procedure is in place to ensure that:

- Environmental, Social, Health and Safety Systems are in place and operational during the project implementation, and identify any gaps for improvement;
- The ESMP being used is the up to date version;
- Variations to the ESMP and non-compliance and corrective action are documented;
- Appropriate Environmental, Social, Occupational Health and Safety trainings of personnel is undertaken;
- Emergency and safety procedures are in place and effectively communicated to personnel;
- A register of major incidents (spills, injuries, complaints) is in place and other documentation related to the ESMP; and
- Ensure that appropriate corrective and preventive action is taken by the Contractor once instructions have been issued.

## **8.8 Responsibilities for the Implementation of the ESMP**

In order to ensure the sound development and effective implementation of the ESMP, it will be necessary to identify and define the responsibilities and authority of the various persons and organizations that will be involved in the project. The following entities will be involved in the implementation of the ESMoP:

- Kenya National Highways Authority (KeNHA);
- Ministry of Transport, Infrastructure, Housing and Urban Development;
- National Environment Management Authority;
- Construction Contractor;
- Directorate of Safety and Health Services (DOSHS)
- Elgeyo Marakwet and Baringo County Governments.

### **8.8.1 Kenya National Highways Authority (KeNHA)**

KeNHA will be responsible for:

- Overseeing or appointing qualified and competent team to oversee environmental, social, health and safety (EHS) during the Project cycle;
- Review and approve Contractor's Environmental and Social Management Plan (CESMP);

- Carry out targeted Environmental, Social, Health and Safety (ESHS) training to the contractor's teams;
- Regular monitoring and supervision of Implementation of the ESMP;
- Carry out regular compliance ESHS audits including developing corrective action plans;
- Ensuring that during construction and operations, the NEMA license conditions are adhered to since it's the principle holder of NEMA license;
- Ensure the project is complying with ALL the Bank Safeguards Policies that are applicable to the project.

#### **8.8.2 Ministry of Transport, Infrastructure, Housing and Urban Development**

This ministry is formulated to facilitate development and sustenance of transport infrastructure, maritime economy, public works and housing for sustainable socio-economic development. The Ministry has five state departments. The State Department for Infrastructure is one of the Departments whose functions include policy management for road development. KeNHA falls under the State Department for Infrastructure.

#### **8.8.3 Ministry of Environment and Forestry**

The Ministry of Environment and Forestry's mandate is to undertake National Environment Policy and Management, Forestry development policy and management, Development of re-afforestation and agro-forestry, Restoration of strategic water towers, Protection and conservation of Natural environment, Pollution control, Conservation and protection of wetlands and Climate change affairs.

The facilitates the enabling policies, legal and regulatory reforms for promoting sustainability of the environment and forest resources, while at the same time, mitigating the effects of climate change.

#### **8.8.4 National Environment Management Authority**

The responsibility of the National Environment Management Authority (NEMA) is to exercise general supervision and co-ordination over all matters relating to the environment and to be the principal instrument of Government in the implementation of all policies relating to the environment and to ensure that all mitigation measures proposed are implemented.

#### **8.8.5 Kenya Forest Service (KFS)**

The KFS mandate is to provide for the development and sustainable management, including conservation and rational utilization of all forest resources for the socioeconomic development of the country and for connected purposes. In this regard, the road project construction will involve clearing of vegetation along the Right Of Way and in the siting of the workers camp. KFS should therefore liaise with KeNHA to ensure that an afforestation programme is carried out concurrently with the construction activities to mitigate the effects of vegetation loss in the area.

#### **8.8.6 Kenya Wildlife Service (KWS)**

The mandate of KWS is to conserve and manage wildlife in Kenya, and to enforce related laws and regulations thereof. The project area is characterized by wildlife populations that should be protected during project implementation and operation. The project proponent should therefore involve KWS in the road design to identify wildlife sensitive areas and implement measures that adhere to wildlife protection.

#### **8.8.7 Water Resources Authority (WRA)**

The authority is mandated to safeguard the right to clean water by ensuring that there is proper regulation of the management and use of water resources, in order to ensure sufficient water for everyone- now and in the future.

Although water is not scarce in the area, there will be an increased demand for water during the construction of the proposed road for the civil works and domestic purposes. This will require the contractor to provide for his own water need without straining the local sources. It is the responsibility of the WRA to authorize the abstraction and use of water for the project purposes sustainably.

#### **8.8.8 National Lands Commission (NLC).**

It is the responsibility of the NLC to monitor and have oversight responsibilities over Land Use Planning throughout the country. It will therefore oversee the land take and compensation procedures involved in the proposed road project.

#### **8.8.9 Construction Contractor**

The Contractor will be responsible for;

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

#### **8.8.10 Supervising Consultant**

The Supervising Consultant were applicable will be responsible for;

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

#### **8.8.11 Directorate of Safety and Health Services (DOSHS)**

DOSHS will be responsible for;

- Registering and Permitting of work place for all the work sites and camp sites for the project;
- Inspection and auditing of workplaces to ensure they are adhering to OSHA 2007.
- Receiving and investigating any severe incidents reported on worksites

#### **8.8.12 Community Based Organizations and Civil Society Groups**

CBOs and local civil society groups can play a major role in ensuring that the local people are participating actively in the implementation of the project through representation in areas such as grievance committees, ensuring the local communities benefit from the project activities, and that the local communities are consulted widely on the project, among others.

The CBOs role in the project will include but not limited to;

- Participate in training and enhancing the capacity of the local communities in poverty reduction strategies proposed by the Social Assessment;
- Ensure communities are meaningfully consulted on the project;
- To encourage ownership of roads by the local communities by involving them directly in the process of monitoring of road construction;
- Represent the underrepresented groups such as women and youth, PWDs, etc
- Oversight role in ensuring that the proposed environmental and social mitigation measures are implemented as proposed (especially if there are any local organizations that deals with local environmental and social issues, wildlife etc).

#### **8.8.13 County Governments**

The relevant departmental officers in the County Governments should be called upon where necessary during project implementation to provide the necessary permits and advisory services to the project implementers.

### **8.9 Environmental and Social Management Plan (ESMP) during Construction and Operation Phases**

An Environmental and Social Management Plan (ESMP) is prepared as a logical framework within which the identified negative environmental and social impacts will be mitigated and monitored during the construction process of the development project.

The construction phase ESMP is presented in **Table 9-1**, below.

Table 8-1 ESMP Matrix

Environmental / Social impact	Level of Impact	Proposed mitigation and management measures	Goals/Targets	Responsibility	ESMP Costs
<b>ENVIRONMENTAL IMPACTS</b>					
Vegetation Loss	Low	<ul style="list-style-type: none"> <li>Minimize unnecessary vegetation clearance</li> <li>Revegetation and landscaping of vegetation and trees along the road</li> <li>Siting of camp sites should be done away from densely vegetated areas.</li> <li>Compensate for the valuable trees to be felled within the settlements as per the project RAP recommendations.</li> </ul>	<ul style="list-style-type: none"> <li>Vegetation cover along the road reserve that is also safe to the road users.</li> <li>Landscaping and grassing on road reserves and especially on steep slopes</li> <li>Recovery of tree cover lost in Kitale</li> </ul>	Contractor , RE, KeNHA	As appropriate
Camps site management	High	<ul style="list-style-type: none"> <li>Locate camp sites away from residential areas and settlements</li> <li>Contractor to prepare a Waste Management Plan for all worksites, especially the campsites</li> <li>Provision of adequate water and sanitation (fixed toilets with running water and changing rooms) at the campsites, separate for men and women;</li> <li>Provide for septic tanks and soak pits</li> <li>Pay special attention on waste generation and disposal, sanitary conditions at the sites, which includes exploring an option of having a third party to manage the various waste generated at the campsites, including regular treatment of pests and rodents;</li> <li>No waste at the campsite shall be buried or burnt; contractor to segregate waste, reuse, compost or use</li> </ul>	Campsite meeting environmental and social conditions of the project	Contractor, RE	As appropriate

Environmental / Social impact	Level of Impact	Proposed mitigation and management measures	Goals/Targets	Responsibility	ESMP Costs
		licensed third party service providers for disposal of waste; <ul style="list-style-type: none"> <li>Treatment of the campsite for rodents and other pests shall be done regularly;</li> <li>Completely decommissioning of the camp including permanent foundations and floors to discourage future informal settlement at the campsite</li> </ul>			
Excessive Noise and Vibration	Medium	<ul style="list-style-type: none"> <li>Contractor to prepare Health and safety plan;</li> <li>Monitor environmental and occupational noise levels as per the EMCA provisions of regulations</li> <li>The noise emission characteristics should be considered during selection and mobilization of construction equipment;</li> <li>Where feasible, fit equipment with rock mufflers, sound insulations, silencers to lower the levels of noise emission;</li> <li>Sensitize construction workers to switch off machinery and vehicles when not in use;</li> <li>Provision of appropriate and adequate Personal Protective Equipment (PPEs) to workers;</li> <li>Proper selection of project auxiliary sites, e.g. locate noisy operations like batching plant away from the densely settled areas;</li> <li>Where noisy activities must be undertaken near sensitive receptors, the neighbouring occupants must be informed in advance and works limited to day time only.</li> </ul>	Noise levels meeting conditions of the applicable standards	Contractor, RE, County governments	As appropriate
Construction Dust and Air Quality	High	<ul style="list-style-type: none"> <li>Sprinkling water (at least twice a day) on the accesses and excavated surfaces during the construction period to suppress dust generation;</li> <li>Limit the speed of construction vehicles (maximum</li> </ul>	Low particulate matter in the air meeting the applicable standards	Contractor , RE	As appropriate

Environmental / Social impact	Level of Impact	Proposed mitigation and management measures	Goals/Targets	Responsibility	ESMP Costs
		<p>speed limit 40 kph/25 mph) on earth road;</p> <ul style="list-style-type: none"> <li>• Where feasible, fit equipment with rock mufflers, sound insulations, silencers to lower the levels of noise emission;</li> <li>• Provision of appropriate protective personal equipment including respirators and dustcoats to exposed workers;</li> <li>• Ensuring the location of material stockpiles are away from human settlements and business premises;</li> <li>• Covering loaded trucks during the transportation of material;</li> <li>• Sensitize workers on best practice on management of air pollution from vehicles and machinery;</li> <li>• Demolition of existing structures shall be done in a manner that the dust from demolitions can be controlled;</li> <li>• Undertake regular air quality (dust level) monitoring and conduct corrective adjustments where necessary.</li> </ul>			
Generation of Solid Wastes	Medium	<ul style="list-style-type: none"> <li>• Contractor will prepare Solid Waste Management Plan</li> <li>• Waste be managed as per Environmental Management and Coordination (Waste Management) Regulations 2006;</li> <li>• Utilize the 3C strategy – Reduce, Reuse and Recycling;</li> <li>• Reuse excavated top soil for landscaping of the site as far as practical;</li> <li>• Segregation of solid wastes and provision of suitable and well labelled waste receptacles within the camp and at active construction sites;</li> <li>• Disposed solid waste at designated sites through licensed waste handlers;</li> </ul>	<p>Proper waste management and disposal</p> <p>Minimal accumulation of waste</p>	Contractor, RE, Contracted Licensed waste handlers	As appropriate



Environmental / Social impact	Level of Impact	Proposed mitigation and management measures	Goals/Targets	Responsibility	ESMP Costs
		<ul style="list-style-type: none"> <li>Sensitize resident workers and service providers (e.g. food vendors) at project sites on proper waste management practices especially hazardous materials and risks of contaminations.</li> </ul>			
Increased Soil Erosion	Low	<ul style="list-style-type: none"> <li>Material excavation should be minimized and restricted to designated locations;</li> <li>Excavated material should be properly piled and managed - sprinkled with water and covered (where possible) to prevent possible wash-out into seasonal watercourses.</li> <li>The contractor should ensure that construction related impacts like erosion and cut slope destabilization should be addressed through rock pitching;</li> <li>Re-vegetation should be done in tandem with construction activities to avoid exposure of bare ground to agents of erosion;</li> <li>Enforce landscaping and restoration of the construction site prior to decommissioning of the construction site;</li> <li>As part of enhancing environmental protection in the region, the contractor should start a tree planting campaign for reforestation by incubating a tree nursery programs along the road. The types of trees to plant shall be through the guidance of the local KFS or through involvement of the Ministry of Environment and Forestry</li> </ul>	Controlled soil erosion Proper compaction of surfaces Proper Landscaping and grassing of embankments	Contractor, RE	As appropriate
Contamination by Liquid Waste and	High	<ul style="list-style-type: none"> <li>Contractor will prepare waste management plan</li> <li>Machinery maintenance should be done only on purpose-built garages that meet hydrocarbon</li> </ul>	Zero tolerance on liquid waste and hydrocarbon spills	Contractor, RE	As appropriate

Environmental / Social impact	Level of Impact	Proposed mitigation and management measures	Goals/Targets	Responsibility	ESMP Costs
Hydrocarbon Spills		containment measures and controlled drainage; <ul style="list-style-type: none"> <li>Fueling and servicing of vehicles will be undertaken from only designated and lined area</li> <li>Contractor will be required to have an emergency spill containment and response plan;</li> <li>Minor service and washing areas placed/ constructed with containment basins to ensure that the surrounding areas (including groundwater) are not polluted;</li> <li>All sanitation waste, grey water runoff or uncontrolled discharges from the site/working areas (including wash down areas) to any water courses shall be contained, treated and properly channeled;</li> <li>Flash toilets at camp sites should be connected to septic tanks or other treatment facilities approved by the county government and NEMA;</li> <li>Water containing such pollutants as cements, concrete, lime, chemicals and fuels shall be discharged into a conservancy tank for removal from site.</li> </ul>			
Habitat Loss and Disturbance	Low	<ul style="list-style-type: none"> <li>Locate project auxiliary features like camps and batching plants in areas already disturbed or outside of wildlife habitats.</li> <li>Construction activities should be confined on the demarcated corridor and discourage movement or intrusion into wildlife habitats;</li> <li>Throughout the construction cycle, project staff should be sensitized regularly on wildlife conservation.</li> <li>The Contractor should sensitize workers on nature conservation, and enforce unauthorized intrusion or</li> </ul>	Minimal vegetation clearance Minimal disruptions of habitat life	Contractor, RE	As appropriate

Environmental / Social impact	Level of Impact	Proposed mitigation and management measures	Goals/Targets	Responsibility	ESMP Costs
		<p>use of the wildlife habitats through signed code of conduct;</p> <ul style="list-style-type: none"> <li>• After decommissioning contractor facilities, native vegetation should be replanted as restoration measures. Accredited sources of seedlings should be used (such as local KFS tree nurseries).</li> <li>• To avoid random off-road driving that leads to trampling of vegetation in sensitive habitats, vehicles should be provided with designated routes</li> <li>• Existing diversions and diversions should be considered before opening up new ones during construction.</li> </ul>			
Impacts on Materials Borrow Sites	High	<ul style="list-style-type: none"> <li>• All material sites shall be selected in consultation with the county governments and the local communities, and rehabilitation/decommissioning plans agreed to ensure the sites will not cause any social conflict within the communities. If borrow sites will be converted to water pans, proper communities and stakeholder engagement shall be conducted and agreed upon (through signing of agreements to exclude any future liability by the contractor) if such usage will be proposed by the community members.</li> <li>• The contractor shall carry out environmental and social assessment for all auxiliary sites and seek relevant statutory licenses including NEMA for proposed material sites to be used for construction works;</li> <li>• Construction materials including sand, stones and borrow materials must be sourced from duly approved sources only;</li> </ul>	<p>Properly rehabilitated material borrow sites</p> <p>No incidents/accidents at materials borrow sites</p>	Contractor, RE	As appropriate

Environmental / Social impact	Level of Impact	Proposed mitigation and management measures	Goals/Targets	Responsibility	ESMP Costs
		<ul style="list-style-type: none"> <li>Materials haulage routes must be pre-determined to avoid unnecessary off road driving;</li> <li>Contractor to develop a system of tracking materials received viz a vis utilization to ensure proper materials management to avoid wastage;</li> <li>The contractor shall locate material sites away from settlements if possible;</li> <li>Where material sites are located near settlements, the contractor shall carry out baseline studies of structural integrity assessments of nearby structures;</li> <li>The contractor shall develop safety management plans for any blasting which shall require the blasting to be done by a qualified experts, sensitization and notification to locals on blasting times;</li> <li>All material sites shall always be fenced with controlled entry at all times.</li> <li></li> </ul>			
<b>SOCIAL</b>					
Land take and disruption of livelihoods	Medium	<ul style="list-style-type: none"> <li>RAP Study Report for the project should be implemented to guide the compensation and resettlement process;</li> <li>Compensation for all affected properties should be compensated before construction commences;</li> <li>Grievance management system should be operationalized and maintained throughout the project implementation phase. All pertinent stakeholders should be involved in the compensation and grievance redress mechanism during implementation of RAP.</li> </ul>	<p>Do no harm for the PAPs</p> <p>Minimize livelihoods of the PAPs</p>	KeNHA, Contractor, RE	As appropriate
Increased	High	<ul style="list-style-type: none"> <li>The contractor to develop independent construction</li> </ul>	Minimal interference of	Contractor, RE	As appropriate

Environmental / Social impact	Level of Impact	Proposed mitigation and management measures	Goals/Targets	Responsibility	ESMP Costs
Water Demand		<p>water sources to avoid straining existing local resources;</p> <ul style="list-style-type: none"> <li>Consider supplementing ground water supplies with harvesting seasonal surface flows through pans and small dams that may also be handed over to the local communities;</li> <li>The Contractor must adhere to the Water Act, 2016 and associated rules and regulations as administered by WRA and NEMA; and</li> <li>Relevant water abstraction permits must be obtained from these authorities.</li> </ul>	water resources in the project area		
Construction works induced traffic and inconveniences	Medium	<ul style="list-style-type: none"> <li>The contractor shall be required to formulate and implement a traffic management plan</li> <li>Provision of alternative routes in areas where accesses have been disrupted;</li> <li>Provision and maintenance of clear traffic signages of ongoing construction works, regulate speed limits and diversion signage to notify approaching traffic;</li> <li>In urban areas, schedule delivery of materials to the sites during periods of light traffic between 9.00am - 12.00 pm and 2.00 pm - 4.00 pm during week days;</li> <li>Contractor to carry out road safety awareness for community members and institutions along the project corridor</li> <li>Obtain permission from inhabitants and county governments if diversion routes go beyond the Right of Way;</li> <li>Reinstatement of diversion routes (and old tracks) to original condition;</li> <li>Institute a traffic management plan incorporating</li> </ul>	<p>Minimal disruptions of traffic due to construction activities</p> <p>Minimal accidents reported for contractors vehicles</p> <p>Observance of Code of Conduct</p>	Contractor, RE	As appropriate

Environmental / Social impact	Level of Impact	Proposed mitigation and management measures	Goals/Targets	Responsibility	ESMP Costs
		adequate temporary signages and flagmen as necessary; and			
Disruption of Public Utilities	Medium	<ul style="list-style-type: none"> <li>Liaise with utilities providers (power, water, telecommunication) to identify affected sections of alignment of the utilities and provide cost to cover the relocation of the existing infrastructure;</li> <li>Relocation plans shall include adequate notification of affected customers.</li> </ul>	Minimal disruption of public utilities	Contractor, RE	As appropriate
Communicable Diseases	Medium	<p>Upper Respiratory Tract Infections (URTI)</p> <ul style="list-style-type: none"> <li>Apply dust suppression measures - sprinkling water on the accesses and excavated surfaces – this shall be determined by the RE depending on the prevailing weather conditions;</li> <li>Maintain a grievance register to log any complaints from local community;</li> <li>Hold inductions for staff and people visiting the construction sites on the health and safety aspects;</li> <li>Provide dust masks for all staff and visitors to active construction areas;</li> <li>The Contractor should plan work program's activities and timing to avoid emission impact on sensitive receptors, especially urbanized areas;</li> <li>Install screens and scrubbers on crusher sites to minimize dust emissions;</li> <li>Locate ancillary facilities away from residential/institutional to minimize dust or other emissions to the residents;</li> <li>Regular maintenance contractors' equipment</li> </ul>	No reported cases of communicable diseases	Contractor, RE	As appropriate

Environmental / Social impact	Level of Impact	Proposed mitigation and management measures	Goals/Targets	Responsibility	ESMP Costs
	Medium	Spread of HIV/AIDS, COVID, and Other STDs <ul style="list-style-type: none"> <li>KeNHA/Contractor should, in liaison with approved local service providers, provide HIV/AIDS awareness training to staff and the locals and monitor the efficacy of the awareness created during the project implementation period;</li> <li>Sensitize workers on the need to refrain from risky behaviours;</li> <li>Provision of condoms both male and female in the sanitary facilities and various locations for the members of public;</li> <li>The unskilled workers should, as far as feasible, be recruited from among the residents of the project area and its immediate neighborhood to minimize labour influx;</li> <li>Workers should be given regular leave, preferably monthly to cool off period and join their families</li> <li>Regular sensitization and awareness, and provision of measures to reduce spread of COVID-19, and other communicable diseases.</li> </ul>	Adherence to Code of Conduct by employees	Contractor, RE Appointed NGO	As appropriate
Conflicts with local communities on labour issues	Low	<ul style="list-style-type: none"> <li>Contractor to formulate and implement a labour management plan for his workforce;</li> <li>Contractor will be required to have a transparent external communication plan covering among others, how available opportunities will be advertised;</li> <li>The Contractor should prioritize employing locals as casuals to reduce the need for labour influx;</li> <li>Consultations with the local council of elders to ensure that available opportunities are fairly distributed across different clan members;</li> </ul>	Local benefits from project construction employment in	Contractor, RE	As appropriate

Environmental / Social impact	Level of Impact	Proposed mitigation and management measures	Goals/Targets	Responsibility	ESMP Costs
		<ul style="list-style-type: none"> <li>Maintain a grievance register to log any complaints from workers and local community.</li> </ul>			
Workers Welfare	<ul style="list-style-type: none"> <li>Medium</li> </ul>	<ul style="list-style-type: none"> <li>The contractor shall comply with the required Law of Kenya under DOSHS, and Labour requirements;</li> <li>Have fulltime nurse on the campsite, with all first aid facilities are available at all times;</li> <li>In collaboration with local health facilities, ensure that the workers have access to health facilities in the area;</li> <li>Contractor to ensure that first aid facilities are available at all times at the work sites, and arrangement to access to ambulance service;</li> <li>The contractor shall provide portable water and mobile toilets (separate for women and men) for the workers at all worksites along the road;</li> <li>The contractor has to ensure that for any personnel accommodation, suitable arrangements are made to meet the welfare and hygiene requirements and prevention of epidemics, taking into consideration issues like harsh weather conditions in the region, sanitation, etc.</li> <li>Contractor should hire qualified Human Resources staff to manage labour related risks in the project</li> </ul>	<p>Adherence to labour laws</p> <p>Proper living and working conditions for the workers</p>	Contractor, RE	As appropriate
Community Safety and Health	<ul style="list-style-type: none"> <li>High</li> </ul>	<ul style="list-style-type: none"> <li>Ensure that all active work areas have controlled access limited to authorized persons only;</li> <li>Establish and maintain continuous liaison with the host communities including sensitization on safety and health issues on construction sites;</li> <li>Prepare and implement construction traffic</li> </ul>	Minimize health and safety risks to the local communities	Contractor, RE	As appropriate



Environmental / Social impact	Level of Impact	Proposed mitigation and management measures	Goals/Targets	Responsibility	ESMP Costs
		management plan, incorporating safety of other traffic; <ul style="list-style-type: none"> <li>• Install and maintain appropriate safety and warning signages along road sections and all other construction sites and facilities;</li> <li>• Ensure proper and adequate provision of sanitation and waste management facilities at all construction sites;</li> <li>• Maintain a system of receiving and responding to any safety concerns by the communities;</li> <li>• Undertake general and third-party insurance liability covers as appropriate.</li> </ul>			
Labour influx and Social Change	<ul style="list-style-type: none"> <li>• High</li> </ul>	<ul style="list-style-type: none"> <li>• The contractor shall develop a labour management plan for project;</li> <li>• The Contractor should prioritize employing locals as casuals to reduce the need for labour influx;</li> <li>• Ensure there is adequate security and reasonable controlled access to project offices and residential quarters of immigrant staff to discourage deviant behaviours at workers campsites;</li> <li>• Employment policy of the contractor should prohibit deviant behaviours at the workplace among staff such as cultural profiling, sexual exploitation, child labour and gender-based violence;</li> <li>• Workers will be sensitized on the different cultural practices in the region and for immigrant workers, respecting different cultural, religions and beliefs, including behaviours and norms of the local people;</li> <li>• Contractor to establish a grievance management system to handle internal and external complaints.</li> <li>• Workers will be sensitized and sign code of conduct</li> </ul>	Adherence to Code of Conduct by employees  Good relationship of workers and local communities	Contractor, RE	As appropriate

Environmental / Social impact	Level of Impact	Proposed mitigation and management measures	Goals/Targets	Responsibility	ESMP Costs
		62. regarding interactions, behaviours and relations with the local communities.			
Crime Management	63. Medium	<ul style="list-style-type: none"> <li>All activities of a criminal nature on the worksite or by the Contractor's employees (whether on or off the worksite) shall be reported to the police and necessary follow-up undertaken to ensure action is taken;</li> <li>Sensitize the construction workers, locals, and security to be on the lookout on suspicious activities near the site</li> <li>Enforce the crime related clauses in the Code of conduct signed by all workers</li> </ul>	<p>Adherence to Code of Conduct by all employees</p> <p>Proper security to protect employees</p>	Contractor, RE, Local administration	As appropriate
Child Protection, Sexual exploitation and abuse (SEA) of underage girls	Medium	<ul style="list-style-type: none"> <li>Workers will be educated by relevant agencies such as police and probation officers on the relevant laws and policies protecting children</li> <li>Reach out to children in and out of school in the vicinity of the construction sites with a life skills program focusing on HIV/AIDS and sexual abuse prevention among others areas</li> <li>Mobilize and strengthen child protection institutions and structures near construction sites</li> <li>Reach out to school authorities and parents near construction sites on paying special attention to child protection in light of labour influx</li> <li>Partnerships will be established with relevant government agencies and NGOs to ensure children access survivor centred services such as medical care, psychosocial support, legal redress, safety, etc as and when necessary</li> <li>Ensure no children are employed on site in</li> </ul>	Adherence to Code of Conduct by all employees	Contractor, RE	As appropriate

Environmental / Social impact	Level of Impact	Proposed mitigation and management measures	Goals/Targets	Responsibility	ESMP Costs
		<p>accordance with national labor laws</p> <ul style="list-style-type: none"> <li>• Ensure that any sexual exploitation and abuse (SEA) of children by the contractors' workers are promptly reported to the police</li> <li>• Popularize /put in place confidential mechanisms and hotlines for reporting child abuse cases</li> <li>• Enforce the child protection related clauses in the Code of conduct signed by all workers</li> <li>• Ensure visibility of signage and information, education and communication materials on such issues in the construction sites</li> <li>• Liaise with the administration units (County and sub County governments, Police, DO, chiefs, etc.) to provide regular surveillance and patrols to protect workers and unacceptable behavioral interaction of children and workers</li> </ul>			
Absenteeism in Schools	Low	<ul style="list-style-type: none"> <li>• Contractor and local NGOs to conduct a program to strengthen school based and school led life skills programs targeting any schools near construction sites to discourage dropping out of schools for school children;</li> <li>• Ensure no children are employed on site in accordance with national labor laws;</li> <li>• The contractor shall sensitize the workers not to engage with children conducting business activities near the worksites of campsites</li> <li>• Impose zero tolerance for employees on sexual relationship with students that would encourage dropping or being absent from school</li> </ul> <p>64.</p>	<p>Adherence to Code of Conduct by all employees</p> <p>Zero tolerance on child labour</p>	Contractor, RE	As appropriate

Environmental / Social impact	Level of Impact	Proposed mitigation and management measures	Goals/Targets	Responsibility	ESMP Costs
Gender Equity and Mainstreaming	High	<ul style="list-style-type: none"> <li>Contractor and implementing agency to prepare and implement a Gender Action plan to include at minimum, in conformance with local laws and customs, equal opportunity for employment (min 30% of labour should be women);</li> <li>Ensure that women are given adequate employment opportunities during recruitment and job postings, including equal payment</li> <li>Regular sensitization and awareness campaigns to the workers should be done to promote gender equity in employment during the construction works and during operation</li> <li>Provision of gender disaggregated accommodation, bathing, changing, sanitation facilities</li> </ul> 65.	<p>Women are given opportunities to participate in the projects</p> <p>30% of labour to be women</p>	Contractor, RE	As appropriate
Gender based violence (GBV), Rape and Sexual Harassment	Medium	<ul style="list-style-type: none"> <li>Contractor will prepare a GBV Prevention and Response Plan and implementation arrangements</li> <li>Contractor to prepare and enforce a No Sexual Harassment and discrimination Policy in accordance with national laws;</li> <li>KeNHA to engage services of local CSO to educate all workers and nearby communities and stakeholders on preventing and responding to sexual harassment and GBV ahead of any project related works;</li> <li>Popularize /put in place confidential mechanisms and hotlines for reporting GBV and sexual offences cases;</li> <li>Strategies such as male involvement will be employed in preventing and responding to GBV and sexual harassment;</li> <li>Establish partnerships with relevant government agencies and NGOs to ensure survivors of GBV and</li> </ul>	<p>Adherence to Code of Conduct by all employees</p> <p>Zero cases of GBV related to the project reported</p>	Contractor, RE	As appropriate

Environmental / Social impact	Level of Impact	Proposed mitigation and management measures	Goals/Targets	Responsibility	ESMP Costs
		<p>sexual offences access survivor centered services such as medical care, psychosocial support, legal redress, safety, etc as and when necessary;</p> <ul style="list-style-type: none"> <li>• Provision of gender disaggregated facilities - separate bathing, changing, sanitation facilities for men and women;</li> <li>• Grievance redress mechanisms including non-retaliation should be set up for the workers;</li> <li>• Liaise with the administration units (County and sub County governments, Police, DO, chiefs, etc.) to provide regular surveillance and patrols to protect workers and unacceptable behavioral interaction of local communities and workers</li> </ul> <p>66.</p>			
Alcohol and drug abuse by workers	Low	<ul style="list-style-type: none"> <li>• All workers (including subcontractors) to sign and comply with Code of Conduct on zero-tolerance on alcohol and drug abuse.</li> <li>• Removing any employee who persists in any misconduct or lack of care, carries out duties incompetently or negligently, fails to conform to any provisions of the contract, or persists in any conduct which is prejudicial to safety, health, or the protection of the environment.</li> <li>• Taking all reasonable precautions to prevent unlawful, riotous or disorderly conduct by or amongst the Contractor's personnel, and to preserve peace and protection of persons and property on and near the site.</li> <li>• Prohibiting alcohol, drugs, arms, and ammunition on the worksite among personnel.</li> <li>• Liaise with the administration units (County and sub</li> </ul>	Adherence to Code of Conduct by all employees	Contractor, RE	As appropriate

Environmental / Social impact	Level of Impact	Proposed mitigation and management measures	Goals/Targets	Responsibility	ESMP Costs
		County governments, Police, DO, chiefs, etc.) to provide regular surveillance and patrols to protect workers and unacceptable behavioral interaction of local communities and workers			
Increase in the prices of goods and services in the community	Medium	<ul style="list-style-type: none"> <li>The contractor should ensure his workers appropriately mix the use of locally and non-locally procured goods to allow local project benefits to balance the local economy while reducing risk of crowding out of and price hikes for local consumers</li> </ul> 67.	Use of locally procured goods	Contractor	As appropriate
Loss of life, injury or damage to people and private property	High	<ul style="list-style-type: none"> <li>The construction site shall be fenced off to prevent access to members of the public</li> <li>Contractor shall maintain records and make reports concerning health, safety and welfare of persons, and damage to property, at all times</li> <li>The contractor shall have insurance for his workers as required by law;</li> <li>Insuring against liability for any loss, damage, death or bodily injury which may occur to any physical property or to any person which may arise out of the Contractor's performance of the contract</li> <li>All fatalities or severe accidents/incidences shall be reported to the client (KeNHA) immediately (KeNHA) shall report to the AfDB within 24 hours after occurrence. The same should be done to DOSHS within 24 hours and a written notice to the same within 7 days as per the statutory requirements.</li> </ul>	Zero cases of severe incidents/accidents	Contractor, RE	As appropriate
Complaints and	68. Medium	<ul style="list-style-type: none"> <li>Provide grievance redress mechanism for the local communities and workers;</li> </ul>	Proper and operational GRM setup for employees	Contractor, RE	As appropriate

Environmental / Social impact	Level of Impact	Proposed mitigation and management measures	Goals/Targets	Responsibility	ESMP Costs
grievances/social conflicts	m	<ul style="list-style-type: none"> <li>Advise the public and workers on where to report grievances;</li> <li>Consider prioritizing the local manpower for both skilled and unskilled labour.</li> <li>Implement proposed grievance resolution mechanism</li> <li>Grievance redress mechanisms especially for workers should incorporate non-retaliation policies</li> </ul> 69.	and members of the public		
Impacts on Cultural Resources and Archaeological Sites	70. Medium	<ul style="list-style-type: none"> <li>Use "Chance Finds" procedures in case of any discovery of archeological or important physical or cultural resources</li> </ul>	No impact on Physical Cultural Resources (PCR)	Contractor, RE	As appropriate
Impacts on Vulnerable groups	Medium	<ul style="list-style-type: none"> <li>The project had conducted a standalone Social Assessment (SA) report in 2015 to determine how the communities will benefit from the project activities, and the recommendations will be incorporated into the project design;</li> <li>Develop an action plan that sets out the measures through which the project will ensure that potentially adverse effects on the peoples' communities are avoided, minimized, and mitigated, and/or compensate for such effects;</li> <li>The project to conducted continuous Consultations in order to achieve broad community support;</li> <li>The project will make the development process more inclusive of vulnerable groups and local communities by meaningful consultations and incorporating their perspectives in the design of development programs and poverty reduction strategies;</li> </ul>	Incorporation of project benefits for the vulnerable groups	KeNHA, Contractor, RE	As appropriate

Environmental / Social impact	Level of Impact	Proposed mitigation and management measures	Goals/Targets	Responsibility	ESMP Costs
		<ul style="list-style-type: none"> <li>Provide the local communities and vulnerable groups with opportunities to benefit more fully from development programs associated with the project, such as social infrastructure projects along the road project.</li> </ul>			
<b>71. OCCUPATIONAL HEALTH AND SAFETY</b>					
Occupational Safety and Health Hazards	High	<ul style="list-style-type: none"> <li>Contractor will prepare Health and Safety Plan and Emergency Response Plans and operationalize them</li> <li>Contractors' selection criteria should include ability to demonstrate having some defined minimum requirements for Safety and Health Management System.</li> <li>Contractor's should comply OSHA 2007 requirements as bare minimum;</li> <li>Contractor must obtain a registration of workplace certificate from DOSH and comply with the subsequent requirements of the Health and Safety Committee Rules 2004 of the OSHA Act;</li> <li>Enforce use of defined standard operating procedures for handling various activities, depending on risks levels;</li> <li>Establish an emergency response procedure and display on all work areas;</li> <li>Provision of a standard first aid kit at active construction sites at all times;</li> <li>Designate qualified first-aider as per the OSHA requirements;</li> <li>Contractor to have a full time Health and Safety advisor on site</li> <li>Engage a qualified Health and Safety auditor to</li> </ul>	<p>Eliminate incidents and accidents (Zero cases)</p> <p>Proper provision and use of PPEs</p>	Contractor, RE	As appropriate



Environmental / Social impact	Level of Impact	Proposed mitigation and management measures	Goals/Targets	Responsibility	ESMP Costs
		conduct routine and annual Health and Safety (H&S) audits; <ul style="list-style-type: none"> <li>Establish a Health and Safety Committee for the project construction team as per the Health and Safety Committee Rules 2004 of the OSHA Act</li> <li>Provide medical care for all staff as necessary as allowed in the Kenyan Law including securing a worker insurance cover as required under WIBA;</li> <li>Conduct risk assessment before commencing new assignments/tasks;</li> <li>Provide appropriate and adequate Personal Protective Equipment (PPE) to all workers that is commensurate with construction site activities;</li> <li>Abide by standard best practice health and safety provisions in the construction contract;</li> <li>Conduct daily toolbox and monthly safety meetings for the construction workforce;</li> <li>Undertake routine worksites safety inspections;</li> <li>Carry out induction and training on Health and Safety for workers and visitors to site</li> <li>Display of appropriate safety signs around the construction site</li> <li>All operators shall be trained and skilled in their area of operations;</li> <li>Regular trainings to workers on OHS and first aid administration;</li> <li>Contractor (s) to maintain an accident register; carry out accident and incidents investigations and implement corrective actions.</li> </ul>			
Road Safety	High	<ul style="list-style-type: none"> <li>Copies of insurance policies for the contractor's drivers and vehicles should be provided to the</li> </ul>	Minimal road accidents	Contractor, RE , Local	As appropriate

Environmental / Social impact	Level of Impact	Proposed mitigation and management measures	Goals/Targets	Responsibility	ESMP Costs
		<p>KeNHA.</p> <ul style="list-style-type: none"> <li>The contractor's vehicles and equipment must be in proper working condition and have registration plates, and numbering.</li> <li>The contractor to sensitize all drivers and equipment operators to adopt safe driving and operation behaviors, to ensure proper discipline by these personnel, and sanctions those in breach.</li> <li>Ensure that safety is included in the driver's contracts as part of "Code of Conduct" and any non-compliances are sanctioned;</li> <li>Excavated sites, embankments, and dangerous locations are protected with proper safety barriers, tape and warning signs.</li> <li>Install temporary speed calming measures such as bumps and speed signs at high risk areas such as shopping centres, hospitals, and schools;</li> <li>As part of normal Occupational Health and Safety monitoring, the contractor will maintain a log detailing every violation and accident on site or associated with the project work activities, including the nature and circumstances, location, date, time, precise vehicles and persons involved, and follow-up actions with the police, insurance, families, community leaders, etc.</li> <li>The implementing agency, in cooperation with the relevant government agency, should undertake road safety campaigns targeting settlements, schools, and other facilities along the project road or other affected areas. The cost of such campaigns should be covered in the project budget.</li> </ul>		administration	

Environmental / Social impact	Level of Impact	Proposed mitigation and management measures	Goals/Targets	Responsibility	ESMP Costs
Impacts Related to High Temperature and Humidity Levels	Low	<ul style="list-style-type: none"> <li>Contractor must ensure Project staff have access to adequate potable water;</li> <li>Provisions should be made for adequate ventilation and air conditioning for in-house work spaces;</li> <li>Sensitize staff on health concerns and avoiding heatstroke, dehydration and fatigue;</li> <li>Work schedules should be such that workers are allowed adequate break durations in between working sessions;</li> <li>Ensure adherence to OSHA, 2007.</li> </ul>	Workers welfare complied with	Contractor, RE	As appropriate
Stakeholder Engagement	High	<ul style="list-style-type: none"> <li>The implementing agency (KeNHA) should prepare and implement a communication and community/stakeholder engagement plan that addresses all project issues</li> </ul>	Continuous Stakeholder engagement	KeNHA, Contractor, RE	As appropriate
Grievance Redress Mechanisms	Medium	<ul style="list-style-type: none"> <li>Proper, effective and strong Grievance Redress Mechanisms (GRM)</li> </ul>	Established GRM	Contractor, RE, KeNHA	As appropriate

Table 8-2 ESMP during operation phase

Environmental / Social impact	Level of Impact	Recommendation, mitigation, monitoring and/or Management Measures	Goals of mitigation	Responsibility for Implementation	Timeframe	Cost (KSHS)
ENVIRONMENTAL IMPACTS						
Road Maintenance Impacts	Low	<ul style="list-style-type: none"> <li>Incorporate recycling of road resurfacing waste where possible;</li> <li>All vegetation cuttings for road clearance maintenance suspected to be from invasive alien species should be burnt on site translocated to minimize dispersal;</li> </ul>	Conserve environment during road maintenance	KeNHA	Operation	As appropriate

Environmental / Social impact	Level of Impact	Recommendation, mitigation, monitoring and/or Management Measures	Goals of mitigation	Responsibility for Implementation	Timeframe	Cost (KSHS)
		<ul style="list-style-type: none"> <li>Manage sediment and sludge removed from storm water;</li> <li>All removed paint materials suspected or confirmed as containing lead should be treated as a hazardous waste.</li> </ul>				
<b>SOCIAL IMPACTS</b>						
Increased Vehicle Accidents	High	<ul style="list-style-type: none"> <li>The public should be sensitised on safety measures to observe while using the road;</li> <li>KeNHA to liaise with NTSA for close monitoring of the road usage and impose penalties on those going against the set roads usage rules;</li> <li>KeNHA should ensure maintenance of installed road furniture and safety signages along the road;</li> <li>Undertake periodic roadside bush clearance that may reduce visibility clearance or obstruct critical signages.</li> </ul>	Road use safety	KeNHA	Construction / Operation	As appropriate
Communicable Diseases	Low	<ul style="list-style-type: none"> <li>Regular sensitization and awareness of the truck drivers, sex workers, and local communities on communicable diseases such as HIV, COVID-19, and other communicable diseases.</li> <li>Enforcement of Vehicles to adhere to emission criteria set under the Environmental Management and Co-ordination (Fossil Fuel Emission Control) regulations, 2006.</li> <li>Proper Vehicle maintenance and servicing of vehicle engine, especially for maintenance</li> </ul>	Prevent communicable diseases	KeNHA	Operation	As appropriate

Environmental / Social impact	Level of Impact	Recommendation, mitigation, monitoring and/or Management Measures	Goals of mitigation	Responsibility for Implementation	Timeframe	Cost (KSHS)
		equipment.				
Human Encroachment along the Project Roads	Medium	<ul style="list-style-type: none"> <li>KeNHA in consultation with the county governments should enforce development control by not allowing for any development approvals on the road reserve to ward off potential encroachers and to allow for easy implementation of future road maintenance or expansion plans;</li> <li>Install and maintain road reserve boundary posts at appropriate intervals;</li> <li>Conduct awareness talks and presentations about the road reserve.</li> </ul>	Curb human encroachment onto road reserve	KeNHA	Operation	As appropriate

**Table 8-3** ESMP during Decommissioning Phase

Environmental / Social impact	Level of Impact	Recommendation, mitigation, monitoring and/or Management Measures	Goals	Responsibility for Implementation	Timeframe	Cost (KSHS)
Community Health and Safety	Minor	<ul style="list-style-type: none"> <li>Contractor must prepare detailed decommission plan for approval by local government, NEMA and department of mines as applicable;</li> <li>KeNHA should consider satisfactory rehabilitation of decommissioned sites as part of contractual requirement with enforceable penalties including financial disincentives.</li> </ul>	Enhance public safety	KeNHA	Decommissioning	As appropriate
Loss of Income	Minor	<ul style="list-style-type: none"> <li>Notify the employees in advance on the project closure date and adequately compensate them;</li> <li>Dismissal procedures to be compliant with</li> </ul>	Improve local financial safety nets	KeNHA	Decommissioning	As appropriate

Environmental / Social impact	Level of Impact	Recommendation, mitigation, monitoring and/or Management Measures	Goals	Responsibility for Implementation	Timeframe	Cost (KSHS)
		Employment Act, 2007; <ul style="list-style-type: none"> <li>• Provide counselling &amp; alternative skills for alternative activities;</li> <li>• Employer should possibly identify alternative means of livelihood for the staff who were employed at the construction camp.</li> </ul>				
Noise pollution	Minor	<ul style="list-style-type: none"> <li>• Prepare a decommissioning plan to guide activities;</li> <li>• Monitor noise levels as per the NEMA Environmental Management and Coordination (Noise and Excessive Vibration Pollution) (Control) Regulations, 2009 &amp; OSHA, 2007;</li> <li>• The noise emission characteristics should be considered during selection and mobilization of decommissioning equipment; and</li> <li>• Sensitize staff to switch off machinery and vehicles when not in use.</li> </ul>	Mitigate noise pollution	KeNHA	Decommissioning	As appropriate
Dust and Fumes	Minor	<ul style="list-style-type: none"> <li>• Prepare a decommissioning plan to guide staff on proper handling of sensitive facilities;</li> <li>• Enforce stand operating procedures while undertaking demolition works;</li> <li>• Provide and enforce the appropriate use of PPE against dust; and</li> <li>• Employ dust suppression measures such as sprinkling water on loose soil surfaces and providing cover for spoil batches.</li> </ul>	Suppress pollution from dust and fumes	KeNHA	Decommissioning	As appropriate
Waste Accumulation	Moderate	<ul style="list-style-type: none"> <li>• Decommissioning plan should cover waste management;</li> <li>• Waste be managed as per Environmental Management and Coordination (Waste</li> </ul>	Proper Waste management	KeNHA	Decommissioning	As appropriate

Environmental / Social impact	Level of Impact	Recommendation, mitigation, monitoring and/or Management Measures	Goals	Responsibility for Implementation	Timeframe	Cost (KSHS)
		Management) Regulations 2006; <ul style="list-style-type: none"> <li>• Establish a segregation and grading waste management system to manage garbage and other forms of waste generated;</li> <li>• Prioritize options of waste reduction, reuse and recycling, particularly papers, polythene bags and plastic wrappers and containers and other materials that can possibly be recycled; and</li> <li>• Disposed waste at designated sites through licensed waste handlers.</li> </ul>				

## 9 GRIEVANCE REDRESS MECHANISM

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### 9.1 Grievance Redress Mechanism (GRM)

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Grievance redress mechanisms (GRM) provide a formal avenue for affected groups or stakeholders to engage with the project implementers or owners on issues of concern or unaddressed impacts. Grievances are any complaints or suggestions about the way a project is being implemented. They may take the form of specific complaints for damages/injury, concerns about routine project activities, or perceived incidents or impacts. Identifying and responding to grievances supports the development of positive relationships between projects and affected groups/communities, and other stakeholders.

Grievance mechanisms should receive and facilitate resolution of the affected institutional or communities' concerns and grievances. World Bank Safeguard Policies states the concerns should be addressed promptly using an understandable and transparent process that is culturally appropriate and readily acceptable to all segments of affected communities, at no cost and without retribution. Mechanisms should be appropriate to the scale of impacts and risks presented by a project.

Grievances can be an indication of growing stakeholder concerns (real and perceived) and can escalate if not identified and resolved. The management of grievances is therefore a vital component of stakeholder management and an important aspect of risk management for a project. Projects may have a range of potential adverse impacts to people and the environment in general, and identifying grievances and ensuring timely resolution is therefore very necessary.

The following sections describe the proposed procedures that will be followed to address complaints or concerns submitted by people who may benefit from or impacted by the proposed project. It intends to provide clarity and predictability on how complaints will be received, assessed, sorted, resolved and monitored.

### 9.2 Objectives of Grievance Redress Mechanism (GRM)

The GRM has the following objectives:

1. Establish a prompt, easy to understand and access, consistent and respectful mechanism to support the receiving, investigating and responding to complaints or grievances from communities and other stakeholders;
2. Ensure proper documentation of complaints or grievances and any corrective actions taken; and
3. Contribute to continuous improvement in performance of the project by reducing risks and negative social impacts through analysis of trends and lessons learned

### 9.3 GRM Guiding Principles

Effective GRMs usually embody six core principles<sup>2</sup>:

- *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 to 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 project beneficiaries can easily understand them. Project beneficiaries have a range of contact options
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including, at a minimum, a telephone number (preferably toll-free), an e-mail address, and a postal address. The GRM is accessible to all stakeholders, irrespective of the remoteness of the area they live in, the language they speak, and their level of education or income. The GRM does not use complex processes that create confusion or anxiety (such as only accepting grievances on official-looking standard forms or through grievance boxes in government offices).

- *Responsiveness and efficiency.* The GRM is designed to be responsive to the needs of all complainants. Accordingly, officials handling grievances shall be trained to take effective action upon, and respond quickly to, grievances and suggestions.
- *Speed and proportionality.* All grievances, simple or complex, shall be addressed and resolved as quickly as possible. The action taken on the grievance or suggestion is swift, decisive, and constructive.
- *Participatory and social inclusion.* A wide range of project-affected people— community members, members of vulnerable groups, project implementers, civil society, and the media - shall be encouraged to bring grievances and comments to the attention of project authorities. Special attention is given to ensure that poor people and marginalized groups, including those with special needs, are able to access the GRM, in a culturally appropriate manner.

## 9.4 Grievance Handling Mechanism Structure

### 9.4.1 Members of the Grievance Redress Committee (GRC) at project Level

The local Assistant County Commissioner of the subcounty will be the chairman of the GRC, with the RE being the secretary of the committee or a person the RE might appoint as his representative.

The proposed members of the grievance committee are as follows;

Name / organization	Representing
Local Administration (eg Sub County Commissioner)	Government - Chairman
Area Administration (eg Chief)	Government - member
Community representative	Community - member
Resident Engineer (RE)	Consultant – Secretary
Safeguard specialist (Consultant)	Consultant - Member
NEMA representative	NEMA – Member
Contractor representative	Contractor - Member
NGOs	NGOs – representative of various NGOs
Representative of PLWD	People living with Disabilities (PLWDs)
County Government	Appointed member from the county - Member
Institution stakeholders (eg traders, transporters etc)	Users – Member
Other Stakeholders	As may be determined during the implementation of the project

NB: Other members can be added or removed as required depending on the needs of the communities as advised by the local leadership.

The main role of the committee will be arbitration through mediation and negotiation when complaints arise to ensure that cases are resolved quickly and fairly. The above committee shall normally meet once per month and may form special sub-committees or ad-hoc committee that shall meet on a weekly basis or more frequently as

the nature of some grievances may demand. Such sub-committees or special ad-hoc committee will report their findings and recommendations to the main committee for ratification or approval.

The GRC shall be issued with ToRs by the implementing agency (KeNHA) on their roles and responsibilities, with a clear period of tenure. In addition, facilitation of the GRC shall be done accordingly based on applicable government rates. The budget for this facilitation has been provided for in the ESMP.

## 9.5 Key staff coordinating Grievance Redress

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The Resident Engineer will be designated as the person in charge of Grievance Redress. In regard to GRM, the following will be their responsibilities;

- Coordinate formation of Grievance Redress Committees (GRCs) before the commencement of construction to resolve issues.
- Act as the Focal Point for the client (KeNHA) on Grievance Redress issues and facilitate the grievance mechanisms.
- Create awareness of the Grievance Redress Mechanism (GRM) amongst all the stakeholders through public awareness campaigns.
- Assist in Redress of all Grievances by coordinating with the concerned parties.
- Maintain information of grievances and Redress.
- Monitor the activities on Redress of Grievances.
- Prepare the progress for monthly/quarterly reports.
- Provision of resources to cover the operational costs of the GRM (facilitation costs etc).

## 9.6 Receiving Complaints

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Points of receipt of complaints

The various points of receiving complaints would be as follows:

72. County Governments administration;
73. Local chief's office;
74. KeNHA office (at headquarters)
75. Contractor or RE office
76. Ministry of Transport, Infrastructure, Housing and Urban Development (MoTIHUD)
77. Representative at the community level

Mode of receipt and recording of Complaints

The complaints can be made in writing, verbally, over the phone, by fax, emails or any other media. As soon as the officer receives a complaint he /she would issue an acknowledgement of the complaint, including the details of the person bringing the grievance. The officer receiving the complaints should try to obtain relevant basic information regarding the grievance and the complainant and will immediately inform the safeguard specialist the receipt of the complaint.

The RE will maintain a Complaint / Grievance and Redress register or log book and the responsibility of keeping records collected from relevant bodies will be the responsibility of the KeNHA safeguard specialist.

After registering the complaint in the Grievance Redress Registration and Monitoring Sheet, the safeguard specialist would study the complaint made in detail and forward the complaint to the concerned officer with specific dates for replying and redressing the same. He/she would hold meetings with the affected persons / complainant and then attempt to find a solution to the complaint received. If necessary, meetings have to be held with the concerned affected persons / complainant and the concerned parties to find a solution to the problem

and fix up plans to redress the grievance. The deliberations of the meetings and decisions taken are recorded and minutes of the meetings filed.

## 9.7 Registry and Monitoring

All complaints received will be entered into a publicly accessible system that will allow complaints to be tracked and monitored. The system will also present a database showing:

- No of complaints received.
- No and % of complaints that have reached agreement.
- No and % of complaints that have been resolved.
- No and % of complaints that have gone to mediation
- No and % of complaints that have not reached agreement.

The database should also show the issues and geographic areas most complaints circle around. The information provided by the database is expected to help KeNHA to improve the Grievance Redress Mechanism and better understand and address the environmental and social impacts of the project.

## 9.8 Grievance Redress Mechanism Process

The stakeholders are informed of various points of making complaints (if any) and the RE collect the complaints from these points on a regular basis and record them. This is followed by coordinating with the concerned people to address the grievances. The RE will manage the grievance activities at the respective stakeholder's level to address the Grievances and would act as the focal point in this regard.

The complaints are received at various points as described above.

A 3- tier Redress structure is proposed to address all complaints for the proposed project effectively.

### a) First tier of Redress

The first tier is divided into two parts where a complainant can register his grievances and resolved quickly:

- i. Village redress led by local leadership such as the Local Chief or Assistant chief, Nyumba Kumi leaders, or any other locally recognized respected member of the society
- ii. Project level redress led by Resident Engineer and/or Contractor's representative

#### i. Village Level GRM

Some parties show preference for an alternative mechanism which utilizes the use of Village Level GRC. The village level GRC is categorized with the following recommended membership;

- Assistant/sub locational chief,
- Nyumba Kumi Leader
- Nyumba Kumi representatives
- One project affected youth,
- One project affected woman,
- One project affected male
- Persons with Disability
- Ward Administrator
- Contractor representative

Table 9-1: Grievance Redress Process

Process	Description	Time frame	Other information
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Identification of grievance	Face to face; phone; letter, e-mail; recorded during public/community interaction; others	1 Day	Email address; hotline number
Grievance assessed and logged	Significance assessed and grievance recorded or logged (i.e. in a log book)	4-7 Days	Significance criteria: Level 1 –one off event; Level 2 – complaint is widespread or repeated; Level 3- any complaint (one off or repeated) that indicates breach of law or policy or provisions in other project documents
Grievance is acknowledged	Acknowledgement of grievance through appropriate medium	7-14 Days	
Development of response	Grievance solved at Tier 1 (Resolved at project level) Response development with input from management/ complainant/relevant stakeholders	4-14 Days	RE and complainant to sign off
Response signed off	Grievance closed Redress action approved at appropriate levels	Within above timelines	RE to sign off
Grievance not solved, passed to GRC	Grievance passed to appropriate party for resolution (GRC) – Tier 2 Redress action approved at appropriate levels	7-14 Days	GRC and complainant to sign off
Implementation and communication of response	Redress action implemented and update of progress on resolution communicated to complainant	Within 7 days	
Complaints Response	Redress action recorded in grievance log book  Confirm with complainant that grievance can be closed or determine what follow up is necessary	4-7 Days	
Grievance not solved, passed to MRC	Grievance passed to appropriate party for resolution (MRC) – Tier 3 Final decision communicated to complainant	7 -14 days	MRC to sign off Complainant to sign off
Close grievance	Record final sign off of grievance  If grievance cannot be closed, return to step 2 or refer to sector minister or recommend third-party arbitration or resort to court of law.	4-7 Days	Final sign off on by KeNHA, MoTIHUD

## ii. Resident Engineer

The other resolution at this first tier will be normally be by the RE at the project level. If the affected party / complainant does want to use the Village level GRC, he is free to forward his grievances to the Resident Engineer's office directly.

Resolutions at Village GRC or the RE shall be done within 14 working days and notified to the concerned through a disclosure form Should the Grievance is not solved within this period, this would be referred to the next level of

Grievance Redress. However, if any of the above two mechanisms feels that adequate solutions are worked out but it would require a few more days for actions to be taken, the leaders of these mechanisms can decide on retaining the issue at this level by informing the complainant accordingly. However, if the complainant requests for an immediate transfer of the issue to the next level, it would be accepted and the issue would be taken to the next tier, especially if the issue is not addressed within 21 days.

**b) Second tier of Redress**

The Grievance Redress Committee (GRC) would be the one which would address the grievance in the next level in case the problem is not solved at the first tier. The RE will coordinate with the respective chairman of the GRC in getting this Committee to meet and get the necessary circulars issued in this regard so that they can be convened whenever required.

The RE will coordinate the convening of the meetings of the GRC. He / She is also responsible for briefing the GRC on the grievances and deliberations of the first level of Redress, outcomes and on the views of both the parties (project and complainant).

The GRC will hold the necessary meetings with the affected party / complainant and attempt to find a solution acceptable at all levels. The GRC would record the minutes of the meeting and filed by the RE. The decisions of the GRC will be communicated to the complainant formally and if he/she accepts the resolutions, the complainant's acceptance is obtained in writing and signing off is done between the complainant and the GRC.

If the complainant does not accept the solution offered by the GRC, then the complaint is passed on to the next level / or the complainant can reach the next level for redress. The Chairman of the GRC would be required to forward the issue to the Third Tier to facilitate in exploring a solution to the grievance. In any case, the grievance should be forwarded to the next level if no solution is reached within 14 days of the case reaching the second level. However, in cases nearing offering an amicable solution, it can be retained to an extent of 21 days.

**c) Third tier of Redress**

If the affected party / complainant does not agree with the resolution at the 2nd level, or there is a time delay of more than a month in solving the issue, the complainant can opt to consider taking it to the third level.

Where an agreement has not been reached, the complainant will be offered the option of an independent mediation process at an alternative arbitration body such as local arbitration arrangements, local administration, or other avenues as might be prescribed in the country constitution before legal redress. The RE will collect all the details of the Grievance including the deliberations of first tier efforts and of the GRC and present it to the 3rd level tier. The 3rd tier structure will deliberate upon the issue and give suitable recommendations. The minutes of the meetings will be recorded and kept at KeNHA office.

The decisions of the 3rd tier structure would be final from the project side and will be communicated to the complainant formally and if he/she accepts the resolutions, the complainant's acceptance is obtained and signed off by the complainant and the 3rd tier structure, including the project GRC.

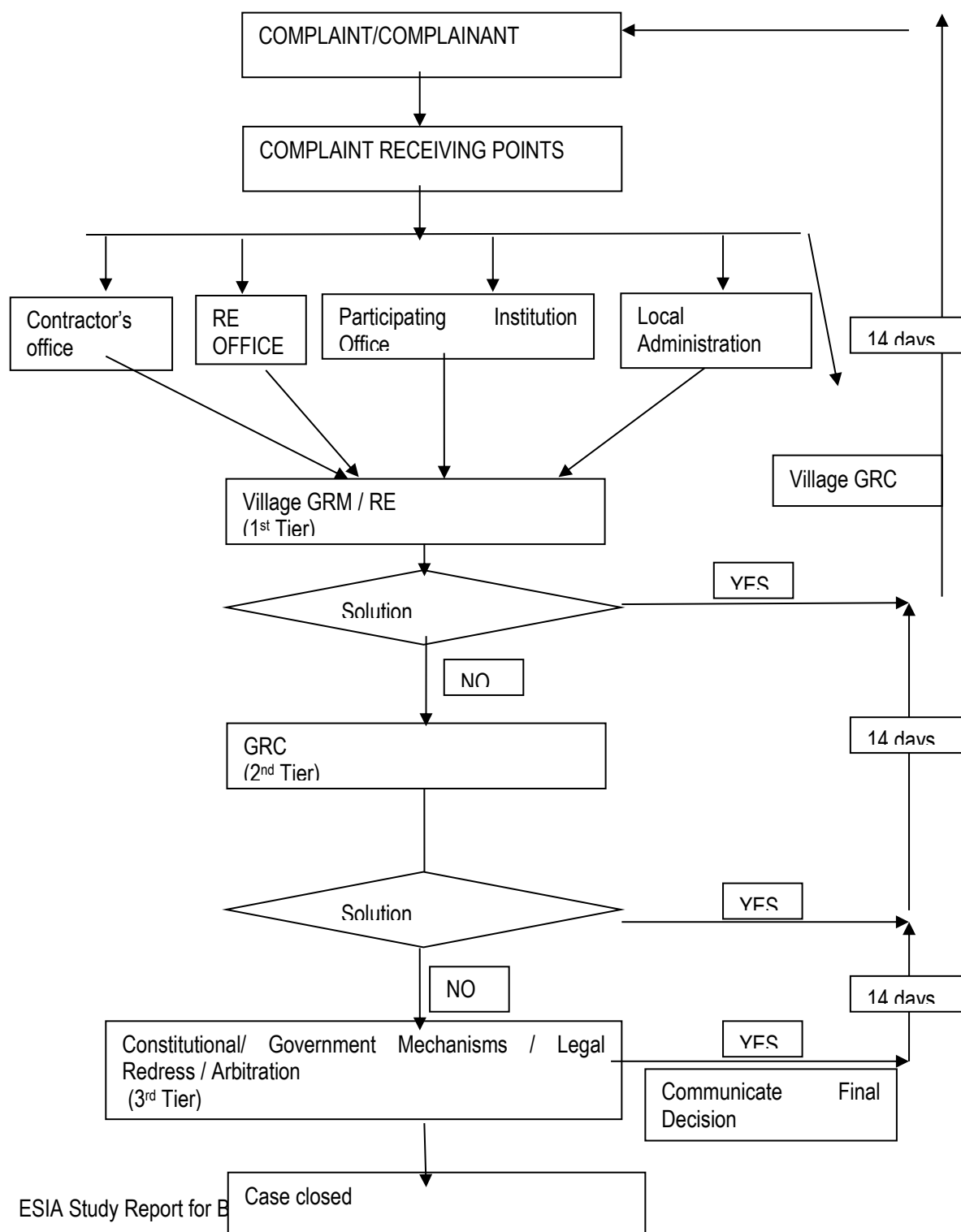
The Complainant may decide to take a legal or any other recourse if he /she is not satisfied with the resolutions of the deliberations of the three tiers of GRM.

It should be encouraged that the 3 levels of handling the grievances should be exhausted extensively before one goes to courts as last resort.

## 9.9 GRM Jurisdiction

The proposed GRM is project specific and scaled to the risks and impacts of the Project. It is meant to solve the project's concerns by the stakeholders or any complainant. The proposed GRM is however not intended to bypass any Governments' own existing redress process; rather is intended to address affected people's concerns and complaints promptly, making it readily accessible to all segments of the affected people. Any established Government Redress mechanisms takes priority over the proposed GRM. The GRC's term shall have a Terms of Reference (ToR), tenure and timelessness when the GRC will be closed. The figure on the next page shows a proposed Grievance Redress Mechanism flow process for the proposed project. This will be reviewed and customized to address any missing gaps before establishment as required.

**Figure 9-1 Grievance Redress Flow Process**



## **10 ENVIRONMENTAL AND SOCIAL MONITORING PLAN (ESMoP)**

### **10.1 Environmental and Social Monitoring**

The overarching goal of environmental and social monitoring is to ensure the effective implementation of mitigation measures and prompt response to emerging concerns. The Environmental and Social Monitoring Plan (ESMoP) outlines recommended activities and indicators for monitoring throughout the road construction and operation phases.

Environmental monitoring aims to uphold compliance with environmental provisions, ensuring that construction activities align with standard specifications and mitigation measures. The program encompasses various activities, each designed with specific purposes, key indicators, and criteria for significant assessment.

Monitoring activities include:

- Visual observations
- Selection of environmental and social parameters
- Sampling and regular testing of these parameters
- Periodic ongoing monitoring throughout the project's operational life

The monitoring approach encompasses three fronts:

1. Physical Monitoring
2. Biological Monitoring
3. Social Monitoring

Baseline data on air, noise, and water quality will be collected before initiating construction activities. This data will cover key sensitive receptor areas near the road, such as schools, hospitals, places of worship, administration buildings, and water bodies. The exact locations and distances from the established road centerline will be recorded using GPS equipment.

During construction, the Contractor and Resident Engineer's staff will be equipped with portable, hand-held meters to monitor noise, air quality, and water quality regularly and on an ad hoc basis. This enables immediate responses to stakeholder complaints or any deviation from contractual or regulatory obligations. Regular monitoring will ensure the ongoing effectiveness of mitigation measures throughout the project's lifecycle.

Environmental monitoring is an integral component of the road project, serving as a proactive measure to safeguard against potential adverse impacts on the surrounding environment and communities.

#### **10.1.1 Internal Monitoring**

The primary objectives of internal monitoring and audit are as follows:

- Identify any significant environmental and social non-compliance and assess the effectiveness of existing Environmental and Social Management Systems (ESMS) in place.
- Ensure compliance with legal requirements outlined in the AfDB Safeguard Policies and the Environmental Management & Coordination (Amendment) Act, 2015.

The Kenyan National Highways Authority (KeNHA), operating under the Directorate of Environment and Social Safeguards, will conduct regular monthly and annual internal monitoring of the project. This monitoring aims to verify the Contractor's results and audit the direct implementation of environmental and social mitigation measures outlined in the Environmental and Social Monitoring Plan (ESMoP) and construction contract clauses. KeNHA is also directly responsible for overseeing and monitoring social issues related to land acquisition and compensation resulting from project land-take. The monitoring process should involve a systematic evaluation of project activities against the specified criteria outlined in the approval conditions.

The Resident Engineer (RE) collaborates closely with KeNHA's Environmental and Social Manager to ensure the implementation of safeguards and compliance with national policies, guidelines, and AfDB policies. The RE's responsibilities include ensuring that environmental management and monitoring encompass:

- Current environmental and social issues and parameters requiring mitigation.
- Mitigation measures.
- Countermeasures.
- Defined lines of responsibilities.
- Cost estimates for undertaking environmental and social mitigation measures.
- Time frames for implementing these mitigation measures.

Under the contract, the Contractor is mandated to engage competent safeguards specialists such as Environmentalists, Sociologists, community liaison officers, and Health and Safety Advisors/Officers. These specialists will provide guidance on ESMP compliance. The contractor's staff will conduct environmental, social, and occupational health risk assessments and prepare project-specific Construction ESMPs for review and approval by the RE and the client. The Contractor is obligated to monitor the daily implementation of safeguards through their staff, including actual training and coordination of external training for all workers and staff involved in the project. This monitoring process should involve a systematic evaluation of all project activities, providing recommendations, and suggesting remedies to enhance safeguards performance.

### **10.1.2 External Monitoring and Evaluation**

The National Environmental Management Authority (NEMA) holds the overall responsibility for granting approval for the project and ensuring adherence to their environmental guidelines throughout implementation. NEMA's role primarily involves reviewing environmental monitoring and compliance documentation submitted by the implementing authorities. While NEMA is not typically directly engaged in monitoring the project on a routine basis, they may intervene if specific major environmental issues arise, and they retain the authority to conduct audits at any point.

The Directorate of Occupational Safety and Health Services (DOSHS) is tasked with enforcing the Occupational Safety and Health Act (OSHA), 2007, and its associated regulations. DOSHS plays a crucial role in ensuring that all construction sites are registered with the Directorate. Additionally, DOSHS oversees the implementation of safety management plans, training programs, and emergency preparedness in accordance with the guidelines issued by DOSHS. The Directorate is responsible for conducting inspections related to workers' safety and health, either proactively or in response to reports on associated issues.

The parameters to be monitored are detailed in Table 12.1, providing a comprehensive overview of the aspects that will be subject to monitoring and scrutiny during the project's implementation.

## **10.2 Other Enhancement Measures**

The implementing agency will also need to set up the following enhancement measures to manage the social and environmental safeguard elements effectively. The contractor's contract will also need to contain clauses binding it to cooperate with the implementing agency in each of these areas and sanctions for non-compliance.

### **10.2.1 Community engagement and communication**

The implementing agency, Kenya National Highways Authority (KeNHA), is tasked with developing and executing a comprehensive Communication and Community/Stakeholder Engagement Plan to address various project issues. Monthly progress meetings should involve the heads of local authorities and community leaders, attended by the project manager from the implementing agency, the contractor's manager, and the Resident Engineer. The Resident Engineer (RE) is responsible for establishing effective communication mechanisms to ensure a continuous flow of information to communities regarding the project's progress, compensation matters, and the



resolution of emerging issues. The specific obligations of the contractor and RE in these aspects are stipulated in their respective contracts.

The Stakeholder Engagement and Management Plan aims to achieve the following specific objectives:

- Mobilize and engage stakeholders toward a common understanding of the project.
- Define common guiding principles and approaches for engaging stakeholders in the project.
- Establish a procedure for the stakeholder engagement process within the project.
- Support capacity-building processes for stakeholders to enable effective participation in the project.

A standalone Stakeholder Engagement Plan (SEP) has been developed to guide the project in stakeholder engagement throughout the project cycle. The SEP includes the identification of stakeholders, categorizing individuals, groups, and organizations significantly influencing the project or significantly impacted by it. Key stakeholder categories for this project include KeNHA, NEMA, Elgeyo Marakwet and Baringo counties, the contractor, RE, local residents along the road, local administration, traders, business people, local transport providers, schools, hospitals, among others.

The Stakeholder Engagement Management outlines processes and steps for executing planned strategies. It includes communication materials, communication vehicles (e.g., local radio, newspapers), frequency of communication, scheduling of consultative meetings on project progress, and the incorporation of grievance redress mechanisms. Stakeholder Engagement Monitoring describes methods to monitor engagement, alerting the project team to emerging problems. Proposed monitoring parameters include awareness levels, grievances received and resolved, stakeholder participation levels, and general satisfaction with project activities.

### **10.3 Contractor Clauses**

During the construction phase of the project, the Contractor is mandated to develop and implement various plans and safeguards as outlined in the Environmental and Social Management Plan (ESMP). These plans, integral to the bidding documents' requirements, must be prepared by the contractor, reviewed by the Resident Engineer (RE), and undergo further scrutiny and approval by the Kenya National Highways Authority (KeNHA) before commencing the works.

The required safeguard documents encompass a comprehensive Contractors Environmental and Social Management Plan (CESMP) with specific subplans, including:

- i. Occupational Health and Safety Plan
- ii. Waste Management Plan
- iii. Traffic Management Plan
- iv. Borrow Pit and Quarry Site Rehabilitation Plan
- v. Child Protection Strategy
- vi. HIV/AIDS Management Plan
- vii. Code of Conduct
- viii. Grievance Redress Mechanism
- ix. Prevention and Protection Against Gender-Based Violence and Sexual Exploitation
- x. Labour Influx Plan
- xi. Stakeholder Engagement Plan
- xii. Whistleblower Policy

Throughout the bidding process, the Contractor is required to incorporate a brief methodology outlining the implementation of these Environmental and Social Safeguards, along with the associated cost of implementation, within the proposal bid.

Furthermore, the Contractor is obligated to assign relevant staff for the effective implementation of these safeguards during the construction period, including a Community Liaison Officer and an Environmental, Health, and Safety (EHS) Advisor. These measures are essential to ensuring that the construction activities adhere to environmental and social standards, promoting the well-being and safety of both workers and local communities.

Table 10-1: ESMoP during Construction and Operation phase

Monitoring Item	Monitoring Phase	Parameters	Indicators	Location	Frequency	Responsibility
<b>ENVIRONMENTAL IMPACTS</b>						
Vegetation Loss	Construction and Operation	% cover	No. of Trees felled and compensated Areas of land cleared	Entire Site	Weekly	Contractor, KeNHA
camps Site management	Construction	Solid waste, wastewater, sanitation	General camp management and cleanliness	Workers Camp sites	Weekly	Contractor, KeNHA
Excessive Noise and Vibration	Construction	dB and m/s, respectively	Noise levels <sup>3</sup> , complaints log	Active areas	monthly	Contractor, KeNHA
Construction dust and Air Quality	Construction	TSP, NOx, SO2, CO, Dust particles, particulate matter etc.	Records on issuance and use of PPEs Equipment and Number of times road is sprinkled Safety induction records Compliance with NEMA regulations and WHO guidelines Complaints from community	Active areas	Continuous, with Quarterly air quality measurements	Contractor, KeNHA
Solid Waste management	Construction, Decommissioning and Operation	Domestic refuse, metallic scraps, sludge	Waste management plan Waste collection and disposal records Level of housekeeping Agreements with waste handlers Licenses of waste handlers/transporters engaged	Entire Site	Monthly	Contractor, KeNHA
Soil Erosion	Construction and Operation	Eroded surfaces	Gulley formation; Sedimentation Protection measures in place	Entire Site	Monthly	Contractor, KeNHA
Water Quality and Contamination by Liquid Waste	Construction	Contaminated surfaces pH, Total Suspended Solids	Records on water quality; Compliance with NEMA regulations	Rivers, streams, other water	monthly	Contractor, KeNHA

<sup>3</sup> Noise, Air, and Water quality baseline parameters will be undertaken before commencement of the project

Monitoring Item	Monitoring Phase	Parameters	Indicators	Location	Frequency	Responsibility
and Spills		(TSS) and Total Dissolved Solids (TDS), heavy metals, oils and grease	and WHO guidelines; Soil conditions at the sites; Bunded hydrocarbon storage areas	sources including boreholes and water pans;  Entire Site		
Habitat Loss and Disturbance	Construction and Operation	Vegetation cover and wildlife habitat	Number of seedlings replanted; Percent of ground vegetation cover	Entire Site	Weekly	Contractor, KeNHA
Impact on materials borrow sites	Construction and Operation	Rehabilitation, Landscape restoration	EIA reports and licenses Other relevant permits and authorizations Decommissioning plan Number of material sites restored as recommended	Material sites	Decommissioning	Contractor, KeNHA
Inhibited wildlife and livestock movements	Construction and Operation	Animal crossing	Number of animal crossings provided Installed signages	Entire site	Project life	Contractor, KWS, KeNHA
Increased deadwood collection and charcoal	Construction and Operation	% cover	% cover declining or increasing	Entire site	Project life	KFS, KWS, County government
Environmental and Social Risks	Construction and Operation	Fire outbreaks, floods, terrorism, etc	Areas for potential hazards	Entire site	Continuous during project life	KeNHA
<b>SOCIAL IMPACTS</b>						
Disruption of Livelihood due to land take	Construction	PAPs	RAP implementation progress report	Right of way	Monthly	Contractor, KeNHA
Increased water demand	Construction	Projected water requirements against available water volumes	Water assessment report; abstraction permits	Entire site	Monthly	Contractor, KeNHA, WRA
Construction induced traffic and disruptions	Construction	Traffic management plan	Number of accidents reported Number of grievances registered;	Entire site	Monthly	Contractor, KeNHA
Disruption of Public Utilities and Accesses	Construction	Utility relocation plans Construction management plans	Number of grievances registered; Communications and agreements with utility companies; Notices to the affected public	Right of way	Monthly	Contractor, KeNHA

Monitoring Item	Monitoring Phase	Parameters	Indicators	Location	Frequency	Responsibility
Spread of communicable diseases	Construction and Operation	Sensitization and testing campaigns	Number of reported infections; Number of Medical camps held;	Entire site and immediate neighbouring communities	Monthly	Contractor, KeNHA
Spread of HIV/AIDS and Other Sexually Transmitted Diseases (STDs)	Construction	Sensitization and awareness campaigns	Agreements with HIV/AIDS awareness service provider Sensitization and monitoring records; Number of Medical camps for testing and counselling; Campaign materials; Signed code of conduct	Entire site and immediate neighbouring communities	Monthly	Contractor, KeNHA
Conflict with local communities on labour issues	Construction	Social unrest by local communities	Number of social unrest registered Number of Grievances on labour issues	Entire site	Monthly	Contractor, KeNHA
Workers welfare	Construction	Non-compliance with workers safety	Accident reports Number of grievances by workers	Entire site	Monthly	Contractor
Community Health and Safety	Construction	Incidences of injuries to local communities and road users Occupational safety and health advisor engaged; Safety training for workers	Number of accident cases reported Severity of cases reported Community feedback	Entire site	Daily	Contractor
Labour Influx and Social Change	Construction	Cultural integration and social harmony	Number of awareness trainings and sensitization campaigns Cases of deviant behaviours by immigrant workers reported	Entire site	Monthly	Contractor; Gender Dept, police
Crime Management	Construction and Operation	Incidences	Number of crimes reported	Entire site	Monthly	Contractor, Police Dept
Child Protection, Sexual exploitation and abuse (SEA) of underage girls	Construction	Sexual misconduct of employees	Incidents of sexual exploitation Police records Number of Grievances	Entire site	Monthly	Contractor, Gender dept, police dept

Monitoring Item	Monitoring Phase	Parameters	Indicators	Location	Frequency	Responsibility
Absenteeism in Schools	Construction	School attendance	Number of absent students in schools Sexual incidences reported	Entire site	Monthly	Contractor / Schools
Gender equity and Mainstreaming	Construction	Participation by women	Number of women benefiting from the project Number of Grievances related to gender equity	Entire site	Monthly	Contractor, Gender Dept
GBV, Rape and Sexual harassment	Construction	Incidences	No of cases reported Number of grievances Number of sensitization and awareness campaigns	Entire site	Monthly	Contractor, Gender Dept
Alcohol and drug abuse by workers	Construction	Workers conduct Drug and alcohol abuse	Number of workers reported on drug and alcohol abuse Police reports	Entire site	Monthly	Contractor
Increase in the prices of goods and services in the community	Construction and Operation	Prices of commodities	Increase in cost of living in the area Increase of key commodities in the region	Entire site	Monthly	Contractor/ County Ministry of Trade
Impacts on Vulnerable groups	Construction	Participation by VMGs	Number of projects targeting VGs Number of grievances related to VGs participation	Entire site	Monthly	Contractor/ KeNHA
<b>OCCUPATIONAL HEALTH AND SAFETY</b>						
Occupational Safety and Health Hazards	Construction and Operation	Visual inspection; Accident and Incident records Safety and Health Management Plan with relevant procedures incorporating: Emergency response plan	Traffic management Plan No. of OHS trainings and Audit records Health and safety management plan; Compliance with DOSHS regulations and AfDB policies Accident and Incident Register.	Entire site	Daily	Contractor, KeNHA
Impacts related to High temperature and Humidity Levels	Construction	Temperature & humidity	Human health change	Entire site	Daily	Contractor, KeNHA
Road safety	Construction	Road accidents	Traffic management Plan	Entire site	Monthly	Contractor;

Monitoring Item	Monitoring Phase	Parameters	Indicators	Location	Frequency	Responsibility
	and Operation		Number of awareness trainings and sensitization campaigns Installed signages and traffic calming devices Accident records			KeNHA, NTSA
Security challenges	Construction and Operation	Incidences	Number of intelligence briefings and reports Incident records	Entire site	Daily	Contractor, KeNHA
Loss of life, injury or damage to people and private property	Construction	Accidents, Fatalities, and property damage	Number of accidents Number of fatalities Number of claims/grievances	Entire site	Daily	Contractor /KeNHA

## 11 CONCLUSION AND RECOMMENDATIONS

### 11.1 Conclusion

The Biretwo-Arror-Chesongoch Road project is a critical development initiative in Elgeyo-Marakwet County, located in Kenya's North Rift region. This project aims to upgrade an essential but currently unpaved road, improving its structure, accessibility, and safety. At its heart, the project seeks to enhance agricultural connectivity, improve security, boost regional economic growth, and promote tourism. By upgrading the road to bitumen standards, it will make transporting agricultural produce easier, help security forces respond more quickly to regional challenges, and reduce travel time and vehicle maintenance costs. The project will also provide better access to the Rimoi National Reserve, which could bring in more tourists and contribute to the region's economic prosperity.

Alongside the physical upgrades, the project is mindful of its environmental and social impacts. An Environmental Impact Assessment (EIA) has been carried out to ensure that the development is both sustainable and sensitive to the community's needs. This assessment helps identify and address any potential risks, such as environmental degradation or disruptions to local communities, and ensures that the project adheres to legal requirements. It also promotes resource management practices that minimize harm to the environment, ensures fair compensation for those affected, and fosters transparency through community engagement.

By integrating development with environmental care and social responsibility, this road project will not only improve infrastructure but also create opportunities for the local population, paving the way for a more prosperous and sustainable future for Elgeyo-Marakwet County and the surrounding areas.

## 11.2 Recommendations

Recommendations for the prevention and mitigation of adverse impacts are as follows:

1. **Adherence to Mitigation Measures**

Ensure that all mitigation measures outlined in the Environmental Impact Assessment (EIA) report are fully implemented. Establish erosion control systems, dust suppression methods, and noise reduction practices to minimize environmental degradation. Manage construction waste effectively to prevent contamination of surrounding ecosystems. Immediate action must be taken to ensure compliance with these measures throughout the construction phase.

2. **Ongoing Environmental Monitoring**

Implement regular environmental monitoring throughout both the construction and operational phases. Focus on air and water quality, vegetation health, and the welfare of local wildlife. Any deviations from the expected environmental standards must be promptly addressed, and necessary adjustments to construction practices should be made immediately to mitigate adverse impacts. Monitoring reports are to be submitted at regular intervals for review.

3. **Community Engagement and Stakeholder Consultation**

Maintain continuous communication with local communities and stakeholders. Hold regular community meetings to provide updates on the project's progress, environmental management strategies, and safety precautions. Actively address any concerns or grievances raised by the community and ensure their participation in the decision-making process. The project team will be responsible for ensuring these engagements are carried out consistently.

4. **Social Safeguards Implementation**

Ensure full implementation of social safeguards as outlined in the EIA. Provide fair compensation for land acquisition and resettlement support to affected communities in a timely manner. Establish alternative livelihood programs for those displaced by the project and involve community members in key decisions that affect their lives. All actions must be documented, and the community must be kept informed of any developments.

5. **Sustainable Resource Management**

Prioritize the use of sustainable materials and construction technologies. Ensure the use of recycled aggregates where feasible and implement energy-efficient construction practices. Strictly monitor water and energy consumption during the construction phase and ensure that best practices for sustainable resource management are adhered to. The project manager will oversee that these practices are consistently followed.

6. **Eco-friendly Road Design Features**

Implement eco-friendly features in the road design, such as wildlife corridors, erosion-preventing drainage systems, and noise barriers in sensitive areas. Use native vegetation to stabilize road embankments and cut slopes. Ensure that all these features are included in the design phase and that proper materials and construction techniques are used to protect the local ecosystem.

7. **Capacity Building and Local Employment**

Ensure that local communities are actively involved in the project by providing training programs in construction and environmental management. Create employment



opportunities for local workers and ensure a significant portion of the workforce comes from surrounding areas. The recruitment process should prioritize local talent, and training must be provided to enhance skills and ensure long-term job creation.

8. **Post-construction Maintenance Plan**

Develop and implement a robust road maintenance plan to ensure the road's long-term performance and safety. Conduct regular inspections and address wear and tear or environmental degradation promptly. Ensure that the maintenance plan is fully operational immediately following the completion of the road and that regular updates are provided on the condition of the road infrastructure.

9. **Biodiversity Conservation**

Integrate biodiversity conservation efforts into the project by using native plant species along the road corridor. Establish buffer zones to protect sensitive habitats and ensure that no construction takes place in ecologically sensitive areas. Implement habitat restoration projects to support local wildlife and enhance ecological balance. A team should be designated to monitor and enforce biodiversity conservation efforts.

## **12 REFERENCES**

Individual County Integrated Development Plan (CIDP), 2023 -2027 for Elgeyo Marakwet County

Draft Final Engineering reports - (April 2014) for the Preliminary and Detailed Design of Marich Pass - Lodwar (A1) road.

F. White, 1983. The vegetation of Africa A descriptive memoir to accompany the UNESCO/AETFAT/UNSO vegetation map of Africa. UNESCO.

Ministry of Education Science and Technology and UNICEF, 2014. Basic Education Statistical Booklet

Ministry of Health (2017), Kenya HIV County Profiles.

The 2019 Kenya Population and Housing Census – Population Distribution by Administrative Units. Volume 1, August 2020 prepared by KNBS.

### 13 ANNEX 1: SAMPLE GRIEVANCE REDRESS FORM

Reference No.	
Contact Information  Please mark how you wish to be contacted (mail, telephone, e-mail)	Address:  Telephone: -  Email: -
Preferred Language for Communication (Please mark how you wish to be contacted)	English  Kiswahili
National Identity Number	
Description of Incident or Grievance: What happened? Where did it happen? Who did it happen to? What is the result of the problem?	
Date of Incident/ Grievance	
	One-time incident/ grievance (date-----) Happened more than once (How many times-----) Ongoing (Currently experiencing problem.....)
What would you like see happen to resolve the problem?	

Signature: ..... Date: .....

Please return this form to: COMMITTEE

### 14 ANNEX 2: SAMPLE CHANCE FIND PROCEDURES

Chance find procedures are an integral part of the project ESMoP and civil works contracts.

If the Contractor discovers archeological sites, historical sites, remains and objects, including graveyards and/or individual graves during excavation or construction, the Contractor shall:

- Stop the construction activities in the area of the chance find;
- Delineate the discovered site or area;
- Secure the site to prevent any damage or loss of removable objects. In cases of removable antiquities or sensitive remains, a night guard shall be arranged until the responsible local authorities or the Ministry of State for National Heritage and Culture take over;
- Notify the Supervising Consultant, who in turn will notify the KeNHA, responsible local authorities and the Ministry of State for National Heritage and Culture immediately (within 24 hours or less);

Responsible local authorities and the Ministry of State for National Heritage and Culture would then be in charge of protecting and preserving the site before deciding on subsequent appropriate procedures. This would require a preliminary evaluation of the findings to be performed by the archaeologists of the National Museums of Kenya. The significance and importance of the findings should be assessed according to the various criteria relevant to cultural heritage, namely the aesthetic, historic, scientific or research, social and economic values.

Decisions on how to handle the find shall be taken by the responsible authorities and the Ministry of State for National Heritage and Culture. This could include changes in the layout (such as when finding irremovable remains of cultural or archeological importance) conservation, preservation, restoration and salvage.

Implementation for the authority decision concerning the management of the finding shall be communicated in writing by relevant local authorities.

Construction work may resume only after permission is given from the responsible local authorities or the Ministry of State for National Heritage and Culture concerning safeguard of the heritage.

## 15 ANNEX 3: MINUTES OF PUBLIC CONSULTATION MEETINGS



**Kenya National Highways Authority**

Quality Highways, Better Connections

Barabara Plaza, Block A & C, Jomo Kenyatta International Airport (JKIA), Off Airport South Road, along Mazao Road,  
P.O Box 49712 - 00100 Nairobi, Tel 020 - 4954000 / 0700 423 606 Email dg@kenha.co.ke / Website www.kenha.co.ke

### DIRECTORATE OF HIGHWAY DESIGN AND SAFETY

**MINUTES OF THE PUBLIC CONSULTATIVE MEETING HELD ON 5<sup>th</sup> FEBRUARY 2024 AT THE ELGEYO MARAKWET COUNTY GOVERNMENT BOARDROOM FROM 1000-1300HRS IN REGARDS TO THE CONSTRUCTION OF BIRETWO-ARROR-CHESONGOCH (B126) ROAD.**

**Members present** (attached attendance list)

#### Agenda

1. Introductions
2. Opening remarks
3. Objective of the exercise
4. Stakeholders perspective and input
5. Preliminary Session
6. AOB
7. Closing remarks

Min	Description
1.0	<p><b>Introductions</b></p> <p>The meeting was held at the County Government Boardroom hosted by the Governor Elgeyo Marakwet, His Excellency Mr. Wisley Rotich at 10:00 AM. The Governor extended a warm welcome to all attendees, acknowledging the presence of the Senator Elgeyo Marakwet Hon. William K. Kisang, the Deputy Governor, Member of County Assembly, County Police Commander, County Secretary, County Executive Committee (CEC) members, and technical staff.</p> <p>The Governor initiated the proceedings by inviting each participant to introduce themselves and subsequently, he granted the floor to the Kenya National Highways Authority (KeNHA) team, affording them the opportunity to present their introductions as well.</p>
2.0	<p><b>Opening Remarks</b></p> <p><b>Governor</b></p> <p>The Governor provided an overview of Elgeyo Marakwet County, emphasizing its prominence in sports, agriculture, and various other sectors. Additionally, he acknowledged the significant contribution of KeNHA to the county's development through Corporate Social Responsibility initiatives, particularly in tree planting. Highlighting the proposed Biretwo-Arror-Chesongoch road, the Governor expressed optimism about its potential to spur extensive development and enhance security in the region. This infrastructural advancement is poised to fortify connectivity and accessibility, fostering lasting growth, economic prosperity, and an improved quality of life for the residents of Elgeyo Marakwet.</p> <p>The Governor also noted that the project has been an integral part of the County Integrated Development Plan (CIDP) spanning the years 2013, 2017, and 2022. As the initiative progresses, reaching a crucial stage, the Governor expressed optimism and confidence that the envisioned benefits are now becoming tangible. The community can now see the light at the end of the tunnel, marking a significant step forward in realizing the long-term goals outlined in the CIDP.</p>

	<p><b>Regional Director</b></p> <p>The KeNHA Regional Director for the North Rift Region announced that the Government of Kenya (GoK), through its implementing agency, the Kenya National Highways Authority (KeNHA), is set to upgrade the Biretwo-Arror-Chesongoch road to bitumen standards. This crucial initiative aims to contribute significantly to regional integration, enhancing accessibility, affordability, and improving the security and reliability of the road transport network across Elgeyo-Marakwet, Uasin-Gishu, and Baringo Counties.</p> <p>The Director emphasized that the project's primary objectives include fostering cooperation, promoting socio-economic development in the untapped potential of the Northern Part of Kenya, and addressing reduction in maintenance cost for both the road and vehicles, improve of travel time and creating proper drainage in the area. This transformative road upgrade is poised to unlock opportunities, encourage collaboration, and uplift the overall well-being of the communities in the region.</p> <p>He stated that the the entire project road is approximately 75 Km long and has, on average, a 40 m wide right of way. The project starts at Biretwo centre and takes a general Northernly direction through Rimoi Reserve and Tourist Attraction Centre Kabulwa, Aror, Mogil, and ends at Chesongoch. He stated that other teams, including those responsible for geometric design, traffic and axle load survey, structures, economic feasibility study, material testing and investigation, topographical survey, and environmental and social impact studies, have been actively collecting data at the project site. This comprehensive approach underscores the commitment to thorough planning and ensures that the Biretwo-Arror-Chesongoch road project is meticulously designed, taking into account various technical aspects and environmental considerations.</p> <p>The he also expressed a commitment to fostering collaborative partnerships with both the county government and the county commissioner. This collaboration aims to ensure seamless operations during the construction phase, particularly in the extraction of materials from the local community. Additionally, upon completion of the design phase, the leadership intends to actively assist in the relocation of individuals situated on the road reserve, with the overarching goal of optimizing project efficiency and adhering to the predetermined timeline for project completion.</p>
3.0	<p><b>Objective of the Exercise</b></p> <p>The KeNHA team leader begun by acknowledging the Governor for the efforts in mobilizing the key Stakeholders present and his technical team. This showed a testament of the administrative unwavering support for the road project. The she explained that the purpose of the visit was to conduct public consultations and meaningful stakeholder engagement with project-affected persons about the project's environmental and social impacts, as well as offer opportunity to receive their opinions and feedback so as to take their views into account and reflect the issues raised into the final design for the project. Prior to the meeting site investigations were carried out to collect primary data and review available relevant secondary data to establish a comprehensive environmental and social baseline, indicators, and data collection methodology.</p> <p>She added that the data collected will help in identifying all the potential significant positive and adverse environmental and social impacts, including direct, indirect and cumulative impacts associated with the project. As a result all the information will aid in the development of an Environmental and Social Management Plan (ESMP) which will demonstrate how site-specific concerns and mitigation measures are addressed during construction and operation</p>

	<p>of the proposed project development activities.</p> <p>The team lead emphasized that the authority is committed to ensuring that the road construction harmonizes seamlessly with both the local community and the environment. This dedication involves fostering a collaborative and cooperative relationship between the construction activities, the people living in the area, and the natural surroundings. The aim is not only to construct a road but to do so in a manner that minimizes disruptions to the community's way of life and preserves the ecological balance of the environment.</p>
4.0	<p><b>Stakeholders perspective and input</b></p> <p><b>Governor</b></p> <p>In relation to the ongoing project, the Governor has put forth a comprehensive proposal urging the Authority to incorporate key elements that resonate with community development. In regards to trade, he requested for the establishment of five small markets strategically positioned along the road, including Kabulwa, Arror, Mogil, and Mutitu Junction. This strategic move aims to invigorate economic activities and create localized trading opportunities, fostering community growth.</p> <p>Aligning with Corporate Social Responsibility, the Governor underscores the importance of health infrastructure. He proposes the integration of two hospitals into the project—one between Arror and Mogil and another between Kabulwa and Chegulet. This commitment prioritizes accessibility to essential healthcare services, championing the cause of public health and well-being.</p> <p>In addressing water needs, the Governor suggests the drilling of boreholes along the project route, specifically near public institutions for community use. This foresighted initiative seeks to establish a sustainable and reliable water supply, contributing to improved living conditions for the local populace.</p> <p>Additionally, the Governor emphasizes the importance of technological connectivity by proposing the installation of fiber optic cables along public institutions. This forward-thinking measure aligns with broader goals of enhancing local connectivity, facilitating access to information and technology within the region.</p> <p>To bolster safety measures, the Governor advocates for sufficient street lighting in all major centers along the project road. This safety-centric initiative aims to enhance security during nighttime hours, ensuring improved visibility and overall safety in public spaces.</p> <p>Recognizing the economic importance of the livestock sector, the Governor proposes the establishment of a livestock sell yard along the project route. This facility is envisioned as a centralized hub to streamline the buying and selling of animals, contributing to the economic vibrancy of the local agricultural community.</p> <p>The Governor proposed the upgrading of escarpment roads at Kabulwet, Chegulet, and Koitiliab to improve transportation infrastructure and enhance connectivity in these areas.</p> <p><b>Senator</b></p> <p>The senator emphasized the crucial significance of the project and fully acknowledged how the road project would significantly enhance the lives of the people along its route by opening up the area for robust economic development. The improved accessibility and increased opportunities for commerce, trade, and overall growth were underscored as pivotal outcomes of this transformative initiative.</p> <p>He also noted that in terms of optic cable connectivity, KeNHA will need to partner with the</p>

	<p>Ministry of Information Communication and Technology (ICT) to ensure seamless integration and effective implementation of this technological aspect within the project.</p> <p>The County Government technical team should also submit a comprehensive document to KeNHA, detailing the various inputs that can be extracted and seamlessly incorporated into the project from the provided documents.</p> <p>The Authority could also use the road construction project to sensitize the community on Female Genital Mutilation (FGM), promoting awareness and education to address this important social issue and contribute to its eradication. The authority can also upgrade the road leading up to Rimoi National Reserve, enhancing accessibility and promoting tourism to this vital conservation area.</p> <p>Along Chepsigot to Kimnai road at Chesongoch, there is a bridge that needs to be renovated to ensure the safety and functionality of the transportation infrastructure in the area.</p> <p>The authority can also explore ways in which it can provide support to the police stations along the project route, enhancing security measures and ensuring the overall safety of the communities in the vicinity.</p> <p>The Senator discussed the positive impact of the road construction on the overall growth and development of the area. He emphasizes that the region holds untapped potential, including abundant resources such as fruits i.e. mangoes, Piksi, staple foods (like millet) and mineral resources (like oil). In his characterization, the Senator likened the area to the "Canaan of Kenya," underscoring its immense promise and potential for prosperity.</p> <p><b>County Commissioner</b></p> <p>He emphasized that the authority enjoys steadfast support from the County Commissioner, who is committed to aiding in the coordination of local authorities and stakeholders engaged in the road construction project. This collaborative effort ensures a streamlined approach and effective coordination, promoting a cohesive and successful implementation of the project.</p> <p><b>CECM Roads, Public Works and Transport</b></p> <p>She suggested the establishment of boda boda shades and bus stops along the project route. Additionally, she proposed that KeNHA explore the possibility of facilitating industrial attachment opportunities for the youth. This initiative aims at knowledge transfer and skill development among the younger population.</p> <p>She also provided a suggestion that the Rimoi access road be upgraded to bitumen standard, especially considering its significance as the route leading to the Remoi Game Reserve.</p> <p><b>EMC Roads</b></p> <p>He requested that, upon the completion of the construction phase, the equipment utilized for the road construction be considered for allocation or transfer to the county government for their ongoing use i.e. Vehicles, laboratories under the department of roads. He highlighted the importance of ensuring an adequate allocation of water furrows for community use. This suggests a focus on providing sufficient water channels or irrigation systems for the community, emphasizing the need for an ample and reliable water supply to meet the local needs.</p> <p>For erosion control and slope stabilization in the road project, consider incorporating stone pitching. Stone pitching will be an effective solution to mitigate the impact of water flow and ensure the long-term resilience of the infrastructure.</p> <p><b>CECM Agriculture, livestock and irrigation</b></p>
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<p>In his concise address regarding the road project, he warmly welcomed the initiative and underscored its potential to make a meaningful impact. He highlighted that the road's extensive coverage across all four sub-counties within the county would play a pivotal role in alleviating poverty. Emphasizing the broader socioeconomic benefits, he expressed optimism that the project would enhance the overall quality of life and livelihoods for the local population.</p> <p>He also proposed the implementation of mass vaccination for animals in the region, aiming to improve overall animal health and reduce the risk of diseases spreading. Additionally, the plan includes the establishment of water systems and providing technical skills to the youth through scholarships.</p> <p><b>CEC Education and technical training</b></p> <p>He addressed infrastructure and safety concerns in the region. He emphasizes the importance of establishing clear culverts to manage water flow effectively, especially with large fallows in the waterway. Additionally, as part of Corporate Social Responsibility, there's a request for the authority to create two model farrows that can be adapted for community use, promoting agricultural and community development. Lastly, the statement touches upon the security situation in St. Benedict, advocating for proper lighting in the area as a measure to deter insecurity.</p> <p><b>CECM Water, Environment and climate change</b></p> <p>He emphasized the importance of planting trees along the road corridor to contribute to carbon sequestration. Additionally, he addressed the issue of erosion in the area caused by stormwater runoff from the escarpments, posing a threat to infrastructure. Therefore, the implementation of effective erosion control measures is deemed imperative to safeguard and preserve the infrastructure in the region.</p> <p><b>CECM Health</b></p> <p>Impact of construction on local cultural heritage sites or traditions, leading to concerns about preservation and cultural identity. He suggested having a mobile clinic working along the construction site to curb and sensitize the community on the potential health and well-being implications of the ongoing construction activities.</p> <p>He also suggested the implementation of proper sanitation facilities equipped with adequate water along public institutions and centers on the road section.</p> <p>In the Environmental Management Plan (EMP), he said we should establish a comprehensive air quality control measures to monitor, assess, and mitigate any potential impacts arising from the construction activities so that it doesn't affect the locals along the project route.</p> <p><b>CECM Sports, Youth Affairs, Culture, Children and Social Services</b></p> <p>She recommended a comprehensive approach to the project, suggesting not only the grading of sports fields along the route for enhanced quality and usability but also the strategic incorporation of fiber optic hubs. These hubs would play a crucial role in facilitating efficient data distribution, interconnection of fiber optic cables, and centralized control for effective network management.</p> <p>Furthermore, she proposed the development of a cultural center. This dedicated space would serve as a focal point for social, artistic, and educational activities, fostering unity among the community members and celebrating the rich diversity within the locality. She</p>
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	<p>also suggested upgrading of Biretwo access road leading up to Biretwo Museum.</p> <p><b>MCA Lobut Constituency</b> He acknowledged that despite the road project not directly crossing his constituency, its impact will be greatly beneficial to the entire region. This will significantly contribute to reducing security issues. Additionally, the emphasis will be on establishing water points and markets strategically along the project route, enhancing community well-being and economic opportunities.</p> <p><b>Deputy Governor</b> She emphasized the importance of departments sharing their write-ups with the KeNHA team to ensure effective collaboration and the integration of various perspectives into the project planning and implementation processes. Additionally, she suggested planting citrus fruits along the road and in urban areas to serve as a model for road landscaping.</p> <p>Furthermore, she recommended the establishment of two centers where all the aforementioned activities can be conducted, creating model centers that showcase best practices in road landscaping, agricultural initiatives, and collaborative project planning.</p>	
5.0	<b>Preliminary Session</b>	
	<b>View/Concern/Question</b>	<b>Remarks</b>
	<p><b>SENATOR</b> Will the road follow the current alignment, or is there a possibility that it will encroach into private properties</p>	<p><b>KeNHA RD North Rift Region</b> The authority is inclined to maintain the road within its current alignment, but if the existing alignment proves inadequate for project needs, there is a willingness to encroach into private properties as a potential solution.</p>
	<p><b>CECM Agriculture, livestock and irrigation</b> In areas where the road is moves in to someone's property. In this case what will be done</p>	<p><b>KeNHA RD North Rift Region</b> When the road encroaches into someone's property, we would initiate a thorough assessment to evaluate the impact. This process would involve engaging with the property owner and ensuring fair compensation or mitigation measures in compliance with legal and ethical standards. Transparent communication and collaboration with the affected parties would be prioritized throughout the resolution process.</p>
	<p><b>Governor</b> In areas with poor soil profile there is a risk of road being susceptible to erosion and being washed away during rainfall.</p>	<p><b>Senior Environmentalist</b> Specific measures to address soil instability and erosion control in these areas, possibly through proper drainage systems, soil stabilization techniques, or other engineering solutions will ensure the road's resilience against adverse weather conditions.</p>
	<p><b>Senator</b> An alternative route has been proposed, diverting away from the center of Arror. This alternative road aims to provide an option, while concurrently, the plan involves transforming Arror center into a</p>	<p><b>KeNHA RD North Rift Region</b> The proposed alternative route, which diverges from the center of Arror, will undergo thorough examination. Every aspect of the design will be carefully considered before reconvening to discuss the final layout.</p>

	loop road.	
	<b>EMC Roads</b> We have young engineers who would like to learn from the construction project.	<b>KeNHA RD North Rift Region</b> The authority has initiated a program aimed at transitioning graduate engineers into professional engineers. Consequently, engineers are encouraged to apply for this program, providing them with an opportunity for further professional development and growth from this project.
	<b>CECM Water, Environment and climate change</b> Will there be sufficient allocation of water furrows in the project	<b>KeNHA RD North Rift Region</b> Adequate sleeve ducts will be installed to facilitate the efficient passage of water into the farms. This ensures a well-organized and controlled distribution of water, addressing the concerns related to water furrows and enhancing the irrigation process for agricultural use.
	<b>CEC Education and technical training</b> Proper safety measures need to be considered along school and proper safety measures for the people	<b>Engineer HDS</b> Proper walkways will be provided along schools, and comprehensive safety sensitization programs will be conducted to enhance awareness and ensure the well-being of the community.
	<b>Governor</b> Give priority to local employment for the road project	<b>KeNHA RD North Rift Region</b> The locals will be given significant consideration for employment opportunities during the road construction phase, with a focus on engaging both skilled and unskilled labor to contribute to the project's success and promote local economic participation.
	<b>Governor</b> On trade could the traders be allocated space for the to sell their produce	<b>Engineer HDS</b> If the county government has market allocated along the project route of have place to establish a market a particular area this will aid the Authority during the design phase. This will thus help us incorporate designated market spaces seamlessly into the design phase, ensuring optimal utilization and alignment with the county government's plans for economic development and community well-being.

#### a. Closing Remarks

The Governor, representing the county administration, expressed sincere gratitude to the KeNHA team for their dedicated efforts and insightful contributions throughout the public consultative meeting. The Governor reiterated the commitment to fostering a strong partnership, ensuring that the concerns and suggestions shared by the community are thoughtfully considered in the ongoing and future phases of the Biretwo-Arror-Chesongoch (B126) Road construction project. He concluded by expressing optimism for the positive impact the project would have on the community's well-being, economic growth and overall development.

The KeNHA Regional Director expressed gratitude to the entire county government team for their active participation and valuable input. He emphasized that this meeting marks just one phase in an ongoing partnership, as the collaborative process continues towards the completion of the project. While every aspect discussed has been carefully considered, not all suggestions can be implemented immediately. The inputs provided will undergo a

prioritization process, and future discussions will focus on the selected priorities to ensure effective and meaningful progress in the road construction project.

The meeting ended with a word of prayer.

**Minutes prepared by:**

Name	Designation	Signature	Date
Brian Aila	IE	.....	.....
June Koros	IS	.....	.....

Name	Designation	Signature	Date
Patricia Agula	SS	.....	.....
Sylvia Tipape	SE	.....	.....


**Kenya National Highways Authority**
**Quality Highways, Better Connections**

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**DIRECTORATE OF HIGHWAY DESIGN AND SAFETY**
**MINUTES OF THE MEETING FOR THE ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT FOR THE  
STAKEHOLDER ENGAGEMENT AND PUBLIC PARTICIPATION OF THE IN-HOUSE DESIGN BIRETWO-  
ARROR-CHESONGOCH (B126) ROAD HELD ON 6TH FEBRUARY 2024 AT BIRETWO ELGEYO MARAKWET  
COUNTY CHIEFS OFFICE FROM 1000-1300HRS**
**Members present** (attached attendance list)

**Agenda**

1. Introductions
2. Opening remarks
3. Objective of the exercise –
  - Team Leader- Senior Environmentalist
  - Senior Sociologist
  - Engineer - HDS
4. Preliminary Session
5. AOB
6. Closing remarks

Min	Description
1.0	<b>Introductions</b> <p>The meeting convened under the auspices of Deputy county commissioner Keiyo South Sub-County, began at 10:00 AM. The deputy county commissioner extended a warm welcome to all attendees, acknowledging the presence of the Senator Elgeyo Marakwet Hon. William K. Kisang, Area MCAs and other technical staff.</p> <p>The Deputy County Commissioner initiated the proceedings by inviting each participant to introduce themselves, fostering an atmosphere of inclusivity and collaboration. Subsequently, he granted the floor to the Kenya National Highways Authority (KeNHA) team, affording them the opportunity to present their introductions as well.</p>
2.0	<b>Opening Remarks</b> <p><b>Senator – Elgeyo Marakwet</b></p> <p>The Senator provided a brief overview of the road emphasizing the significance of the proposed Biretwo-Arror-Chesongoch road. He underscored the prolonged anticipation for this critical infrastructure and expressed satisfaction that it is finally underway. The Senator conveyed his optimism regarding the road's potential to catalyze extensive development and bolster security in the region.</p> <p>Acknowledging the transformative impact of this infrastructural initiative, the Senator highlighted its capacity to strengthen connectivity and accessibility. This, in turn, is poised to stimulate enduring growth, foster economic prosperity, and enhance the overall quality of life for the residents of Elgeyo Marakwet.</p>

	<p>In a show of solidarity, the Senator assured the KeNHA team of unwavering support, emphasizing the importance of their role in realizing this vital project.</p> <p>Additionally, he urged the local community to extend maximum cooperation to the team throughout the execution of the project, recognizing the collaborative effort required for its successful implementation.</p> <p><b>KeNHA Team Lead- Senior Environmentalist</b></p> <p>The KeNHA Senior Environmentalist – Team Lead explained that that the Government of Kenya (GoK), through its implementing agency, the Kenya National Highways Authority (KeNHA), is set to upgrade the Biretwo-Arror-Chesongoch road to bitumen standards. This crucial initiative aims to contribute significantly to regional integration, enhancing accessibility, affordability, and improving the security and reliability of the road transport network across Elgeyo-Marakwet, Uasin-Gishu, and Baringo Counties.</p> <p>The Senior Environmentalist emphasized that the project's primary objectives include fostering cooperation, promoting socio-economic development in the untapped potential of the Northern Part of Kenya, and addressing reduction in maintenance cost for both the road and vehicles, improve of travel time and creating proper drainage in the area. This transformative road upgrade is poised to unlock opportunities, encourage collaboration, and uplift the overall well-being of the communities in the region.</p> <p>She stated that the the entire project road is approximately 75 Km long and has, on average, a 40 m wide right of way. The project starts at Biretwo centre and takes a general Northernly direction through Rimoi Reserve and Tourist Attraction Centre Kabulwo, Aror, Mogil, and ends at Chesongoch. She added that other teams, including those responsible for geometric design, traffic and axle load survey, structures, economic feasibility study, material testing and investigation, topographical survey, and environmental and social impact studies, have been actively collecting data at the project site. This comprehensive approach underscores the commitment to thorough planning and ensures that the Biretwo-Arror-Chesongoch road project is meticulously designed, taking into account various technical aspects and environmental considerations.</p> <p>She also expressed a commitment to fostering collaborative partnerships with both the county government and the county commissioner. This collaboration aims to ensure seamless operations during the construction phase, particularly in the extraction of materials from the local community. Additionally, upon completion of the design phase, the leadership intends to actively assist in the relocation of individuals situated on the road reserve, with the overarching goal of optimizing project efficiency and adhering to the predetermined timeline for project completion.</p>
3.0	<p><b>Objective of the Exercise</b></p> <p>The KeNHA team leader begun by acknowledging the Deputy County Commissioner Keiyo South for the efforts in mobilizing the key Stakeholders and residents present. This showed a testament of the administrative unwavering support for the road project. She explained that the purpose of the visit was to conduct public consultations and meaningful stakeholder engagement with project-affected persons about the project's environmental and social impacts, as well as offer opportunity to receive their opinions and feedback so as to take their views into account and reflect the issues raised into the final design for the project. Prior to the meeting site investigations were carried out to collect primary data and review available relevant secondary data to establish a comprehensive environmental and social baseline, indicators, and data</p>

<p>collection methodology.</p> <p>She added that the data collected will help in identifying all the potential significant positive and adverse environmental and social impacts, including direct, indirect and cumulative impacts associated with the project. As a result all the information will aid in the development of an Environmental and Social Management Plan (ESMP) which will demonstrate how site-specific concerns and mitigation measures are addressed during construction and operation of the proposed project development activities.</p> <p>The team lead emphasized that the authority is committed to ensuring that the road construction harmonizes seamlessly with both the local community and the environment. This dedication involves fostering a collaborative and cooperative relationship between the construction activities, the people living in the area, and the natural surroundings. The aim is not only to construct a road but to do so in a manner that minimizes disruptions to the community's way of life and preserves the ecological balance of the environment.</p> <p><b>KeNHA Senior Sociologist</b></p> <p>KeNHA Senior sociologist provided a brief presentation aligning the Biretwo-Arror-Chesongoch road project with the social fabric of Elgeyo Marakwet County. She emphasized the potential positive impacts on the local community, such as job creation, skill development, and increased economic opportunities. Furthermore, attention was drawn to the sociocultural aspects, anticipating that improved infrastructure could lead to enhanced community cohesion and cultural preservation.</p> <p>In an innovative approach, it was revealed that the contractor would sub-contract services related to HIV/AIDS and alcohol and drug abuse. This strategic decision underscores a commitment to addressing social issues that may arise during the project, demonstrating a holistic approach to community well-being. Additionally, collaboration with a supervisory consultant was highlighted, emphasizing the joint efforts of the contractor and the authority to ensure the project's smooth execution while adhering to social responsibility initiatives.</p> <p>This multi-faceted approach aims not only to enhance the physical landscape of the region but also to address social dynamics and challenges, reflecting a comprehensive understanding of the project's broader impact on the community.</p> <p><b>KeNHA Engineer</b></p> <p>The engineer presented a detailed overview of the Biretwo-Arror-Chesongoch road as a Class B road with a total width of 40 meters. The road's carriageway consists of a 7-meter wide tarmac, with 3.5 meters allocated to the right and 3.5 meters to the left. The designed road will be an 80km/h road.</p> <p>One noteworthy point highlighted by the engineer was the strategic placement of beacons by the Kenya National Highways Authority (KeNHA) along the road. This implementation minimizes the need for extensive land acquisition, streamlining the project and reducing potential disruptions to local communities.</p> <p>The engineer also addressed safety considerations, particularly in proximity to schools, acknowledging that slight adjustments to the measurements may be necessary to ensure the well-being of students and pedestrians. This reflects a commitment to prioritizing safety and</p>
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	<p>community welfare throughout the project.</p> <p>Moreover, the engineer emphasized the importance of key features to enhance road safety and functionality. Speed bumps, road signs, and access culverts were identified as priority elements, underscoring the project's dedication to creating a safe and efficient transportation network.</p> <p>In specific areas, the engineer mentioned the incorporation of both access culverts and box culverts. These features are integral to managing water drainage, preventing flooding, and ensuring the road's longevity, particularly in areas prone to environmental challenges.</p>	
<b>4.0</b>	<b>Preliminary Session</b>	
	<b>View/Concern/Question</b>	<b>Remarks from KeNHA</b>
	<p><b>Senator</b></p> <p>How will loose soil areas be addressed?</p>	<p><b>Senior Environmentalist</b></p> <p>In areas with loose soils, comprehensive soil stabilization measures will be employed to ensure the stability of the infrastructure. This includes the expertise of Engineers and Environmentalist who will oversee environmentally friendly approaches such as cut and fill methods.</p>
	<p><b>Area MCA</b></p> <p>Requested for the construction of a 400m access road to connect to Biretwo Museum, managed by the county, and a Biretwo slaughterhouse</p> <p>The MCA has written a letter to Kenha, formally requesting the construction of an access road to the Blinds Special School along the road</p> <p>At Biretwo Centre, construct a loop road taking in account measurements that were taken by the county physical planning team</p> <p>Place streetlights along the road</p> <p>Consider provision of water along the road.</p>	<p><b>Senior Environmentalist</b></p> <p>The Authority will consider the specific needs of the access road to the museum and slaughterhouse, ensuring improved accessibility and functionality</p> <p>Following the MCA's request, an access road to the Blinds Special School will be taken into consideration.</p> <p>The proposed loop road at Biretwo Centre with streetlights and water provision is noted. These considerations will be integrated into the project plans to enhance the overall infrastructure and amenities in the area</p> <p>The authority is committed to enhancing security along the road. Streetlights will be strategically placed at centers along the road to ensure optimal coverage and improved security.</p> <p>The authority acknowledges the scarcity of water in the area. In response, we will ensure that the contractor includes provisions for boreholes and water pans at strategic points to address the community's water needs and those used during construction be left for communal use</p>



	<p>In most schools along the road , main gates are facing the road, consider the safety of the school going children</p> <p>In the junction area around Biretwo Centre, where some tenants have pre-paid rent to the municipality for the next 10 years, will there be considerations to minimize impact? If the need arises to pass through one of the traders' shops, will there be a collaborative solution will be sought to address any concerns, ensuring fair and amicable resolutions for the affected parties or kenha will work alone?</p>	<p>The project will collaborate with school authorities to address safety concerns, providing measures such as walkways and raised pedestrian paths. Changes to school entrances and exits for enhanced safety by the school administration is also encouraged. Road Safety campaigns will also be done by a subcontractor in schools</p> <p>Kenha project team will closely collaborate with surveyors from Kenha, the Elgeyo Marakwet physical planning team, and the NLC Team. This collaborative effort will establish a common ground. We will involve surveyors in the next stakeholders' engagement. By working together, we aim to ensure a comprehensive understanding of the project's impact and address any concerns that may arise during the planning and execution phases</p>
	<p><b>Water department representatives</b></p> <p>Take care of existing infrastructure along the road</p> <p>Provide water ducts for passing water.</p> <p>Enhance borehole at rimoi primary</p> <p>At the valley we have lots of water but we don't have capability to drill it, if its possible put all public schools a borehole</p>	<p><b>Senior Sociologist</b></p> <p>The Water Department is a significant stakeholder for Kenha. While Kenha's primary mandate is road construction, we are committed to considering and relocating existing water ducts to suitable areas. Additionally, access culverts and box culverts will be strategically placed for water furrows to ensure minimal destruction of farming activities. We strongly encourage the Water Department to collaborate closely with us, ensuring effective execution of their mandate. This collaborative effort will contribute to the successful implementation of both road construction and water infrastructure projects for the benefit of the community.</p> <p>Expanding the CSR budget similar to the construction budget may lead to project delays. It's essential to approach CSR initiatives with an open mind, considering realistic timelines and resource allocation to ensure a balanced and efficient implementation process. Prioritizing key initiatives that align with community needs will enable us to make a meaningful impact without compromising project timelines</p>

	<p><b>Local representative</b></p> <p>Requested for Construction of Kapchelimo access road to join the highway to decongest the biretwo centre</p> <p>Provision of street lights along the road and water access through water tanks</p> <p>Avoid public institution during construction Ensure Security of the schools going children through provision of walkways</p> <p>Provide access road to Chepsigot primary school</p>	<p><b>Senior Sociologist</b></p> <p>To ensure transparency, all proposed CSR initiatives will be compiled and considered based on priority.</p> <p>The contractor will see it through that streets light are put in centers to enhance security</p> <p>The authority emphasizes minimizing acquisition in public schools, proper diversion to schools and health facilities, and will establish an Environmental and Social Management Plan (ESMP) for safety concerns. All access roads will be developed as part of the comprehensive project plan</p>
	<p><b>Moses Cheboror- Assistant chief</b></p> <p>Surveyors came and measure Biretwo health center, does this mean that it will be affected?</p>	<p><b>Senior Sociologist</b></p> <p>A survey map will be utilized, incorporating survey control points, to accurately determine the road's alignment and extensions onto the land. Compensation processes will be initiated to address any land acquisition or impact on existing structures, ensuring a fair and transparent resolution for affected parties</p>
	<p><b>Joseph Chesire</b></p> <p>In case of any land acquisition cases what will be done?</p>	<p><b>Senior Sociologist</b></p> <p>In the case of individuals owning land along the road corridor without title deeds, KeNHA will conduct a thorough verification process, considering alternative forms of proof of ownership. Compensation will be based on fair market value, with careful assessment and consultations to ensure a just and equitable resolution for affected property owners.</p>
	<p><b>William Too- school Principal</b></p> <p>While constructing the road consider enhancing the schools as part of the CSRs</p>	<p><b>Senior Sociologist</b></p> <p>As we construct the road, community development is a priority, and we acknowledge the importance of enhancing schools. While we're considering various initiatives as part of our CSR, specific plans are subject to evaluation and collaboration with stakeholders. Your interest in community improvement is appreciated, and we'll keep you informed as plans progress.</p>
	<p><b>Cherop</b></p> <p>Proposed that the campsite be placed at Biretwo to promote business</p>	<p><b>Senior Sociologist</b></p> <p>As we plan the campsite location, we'll explore the possibility of placing it at Biretwo to promote local business growth. Your consideration for this option is appreciated, and we can see the</p>

		potential benefits it might bring to the community.
	<b>Luka Rotich</b> Water furrows- I am a tomato farmer in the area. What will be done to ensure we are not affected?	<b>Senior sociologist</b> I understand the importance of water furrows for agricultural activities. To ensure minimal impact, the project will implement proper access culverts and box culverts on the waterways.
	<b>Samuel Kurui</b> Construct access road to Chepsigot chiefs office	<b>Engineer-HDS</b> The authority aims to enhance connectivity while minimizing inconvenience to the community during and after construction process. The access road to Chepsigot Chiefs office will be taken into consideration
	<b>Abraham</b> Consider Person Living with disabilities during employment	<b>Senior Sociologist</b> Ensuring inclusivity in employment is paramount For the authority Our hiring practices will actively consider persons living with disabilities. The contractor will be encouraged to involve PLWDs
	Put up a campsite at a school in Keiyo North	<b>Senior Sociologist</b> We appreciate the suggestion for a campsite at a school in Keiyo North. To ensure minimal disruption, the authority avoids campsites around schools and other institutions but will ensure the contractor strategically places it in location that benefits both the project and the schools and local community at large.
	<b>Giedion Kimayo</b> Employ locals, youths, women and men	<b>Senior Sociologist</b> Local employment is a key focus. We are committed to transparent recruitment processes, ensuring fair opportunities for locals, youths, women, and men. Specific initiatives will be implemented to promote diversity and inclusivity, kenha has a 70: 30 rule skilled and unskilled. and some positions are reserved for the women
	<b>Josephat Lelit- Biretwo Business Community Chair Person</b> Construct bust stops and boda boda shades	<b>Engineer-HDS</b> Constructing bus stops and boda boda shades is integral for transportation. We will strategically locate these facilities based on community needs and traffic patterns, considering safety and convenience for all users.
	<b>Jesicah</b> The area is a wetland consisting of underground springs and water resources such as rivers. Environmental management plan should be highly considered during the construction phase to avoid disruption of the environment.	<b>Senior Environmentalist</b> Environmental preservation is a priority. Kenha adheres to strict environmental standards. We will implement measures through ESMP such as waste management, afforestation, and eco-friendly construction practices to minimize our ecological footprint.
	<b>Andrew Chelal</b> Please let us know when our structures are near the road reserve, if well be compensated or not early enough, let's not	<b>Senior Environmentalist</b> The authority will notify you promptly if your structures are near the road reserve. Compensation process will be communicated

	be like the earlier years where people were not told the truth	early on to avoid any misinformation and ensure a fair and honest process
	<b>Amos Korir</b> KeNHA should prioritizes safety of pedestrians when designing the roads by placing road signs/labels and bumps along the road corridor	<b>Senior Environmentalist</b> KeNHA will see it through that the contractor prioritizes pedestrian safety by incorporating road signs, labels, and speed bumps strategically along the road corridor to enhance safety for all road users.
	<b>Nicholas Kimtai</b> In case of demolition of peoples' house, is KeNHA ready to give compensation	<b>Senior Environmentalist</b> Any genuine demolition of a house or a structure that is not within the road reserve will be compensated.
	<b>Hosea Malakwen</b> Class a road is 60 m but you dint tell us about class b road. My structure is near the road will it be affected	<b>Senior Environmentalist</b> The road, classified as a Class B road spanning 40m, serves as a crucial link connecting counties. Survey maps, incorporating precise measurements, will guide the establishment of control points. In the event of any potential land acquisition, a thorough and proper process will be followed, adhering to established guidelines and ensuring fairness and transparency.
	<b>Abraham</b> We have farm where we remove tomatoes and watermelon about 6km to kerio valley construct access road for us	<b>Senior Sociologist</b> If the access road will benefit the community it will be noted and taken into consideration
	<b>Hillary Kipchumba</b> Will we have committee to see that the road implementation is going smoothly and issues and other issues	<b>Senior Environmentalist</b> Acknowledging that impacts will occur, we are committed to developing an Environmental and Social Management Plan (ESMP) to effectively manage these impacts. Throughout the design and implementation phases, supervision engineers will ensure strict adherence to laws and regulations. Both the Kenha regional office and headquarters will provide additional oversight. To address grievances, committees with representatives at the sub-county, county, and national levels will be established, with the Deputy County Commissioner (DCC) serving as the head of the committee in the sub county.
	<b>Samuel kurui</b> Employment for youths and men Tell us the width of the road Diversion of the road, how will it be, there a road we took to land committees, we don't know if it will go through. from kipcheptem to tunyo primary school, but we don't know if it be considered	<b>Senior Sociologist</b> Kenha has a workforce distribution ratio of 70:30, inclusive of both skilled and unskilled workers, with a specific percentage reserved for women. To ensure professionalism and adherence to standards, all employees will sign a code of conduct. It's important to note that this project involves constructing an access road, not a diversion.

	<b>Amos Kipkosom- headteacher</b> Let the road reach the school Before construction, measure where road will reach , so that people can plan themselves lets avoid last minutes, place beacons	<b>Engineer-HDS</b> The construction will be done with minimal disruption, considering safety and efficiency.
	<b>Pius ruto</b> You are saying the road is 60 metres, but before it was 30 m, what brings about the change, what will happen to those who have been there all along	<b>Senior Environmentalist</b> The road, classified as a Class B road spanning 40m, serves as a crucial link connecting counties. Survey maps, incorporating precise measurements, will guide the establishment of control points. In the event of any potential land acquisition, a thorough and proper process will be followed, adhering to established guidelines and ensuring fairness and transparency.
	<b>William Too- Headteacher</b> Tarmac to be done also done to schools about even 50 m	<b>Engineer-HDS</b>  This will be taken into consideration.
	<b>Leonard Chebii</b> What about morality issues, how will it be managed? We don't want to lose our culture	<b>Senior Sociologist</b> We understand the importance of morality and preserving cultural values. To address these concerns, the project will enforce a code of conduct among workers, emphasizing respect for local customs and traditions. Additionally, cultural sensitivity training will be provided to the workforce, authority will have an HIV and ADA subcontractor to conduct trainings
	<b>Paul Ruto</b> On cultural sites, we have Aror River which we would not like the contractor using	<b>Engineer-HDS</b> We acknowledge its significance of the river as a cultural site. The contractor will find other sources of water
	<b>Biretwo Business Community-Chairman</b> Attached is a proposal from the biretwo business community for consideration	<b>KeNHA team Lead</b>  KeNHA team noted the proposals and attached herein the minutes

#### a. Closing Remarks

The Deputy county commissioner Keiyo South thanked the public for the participation and urged them to offer any kind of support to KeNHA and the Contractor of the proposed project for smooth implementation of the project, she asserted that the residents should provide conducive environment to the contractor.

KeNHA team leader appreciated the stakeholders and the locals for giving their views/concerns, he assured that their views will be put in consideration. She acknowledged the DCC for her overwhelming support by making the day success and thanked the residents for their participation.

The Member of Parliament Representative for Keiyo South expressed gratitude to the residents, stakeholders, and KeNHA officials who attended for their efforts and organization of the public Barraza. Their active participation and valuable insights were acknowledged as crucial to the success of the project. Participants were encouraged to continue supporting initiatives that benefited the community, and together, a brighter future for Keiyo South was created.

The Area MCA, representing the local government, sincerely appreciated the engagement of participants in the discussion. The concerns and suggestions shared by the community played a vital role in shaping the development of the area. The commitment of the residents was recognized as key to collective progress, and a call was made to continue working hand in hand for the successful implementation of the proposed project

The Senator extended heartfelt thanks to the residents, the Deputy County Commissioner, KeNHA team lead, and all stakeholders who attended. The active involvement of the community was acknowledged as a demonstration of a strong community spirit. The Senator assured participants that advocacy for necessary resources and support at the legislative level was undertaken. Together, collaborative efforts were made to enhance the prosperity and well-being of the region

The DCC thanked the authority for remembering the locals by being on the process to initiate a major project

The meeting ended with a word of prayer.

**Minutes prepared by:**

<b>Name</b>	<b>Designation</b>	<b>Signature</b>	<b>Date</b>
June Koros	IS	.....	.....
Brian Aila	IE	.....	.....

**Minutes Signed by:**

<b>Name</b>	<b>Designation</b>	<b>Signature</b>	<b>Date</b>
Patricia Agula	SS	.....	.....
Sylvia Tipape	SE	.....	.....


**Kenya National Highways Authority**
**Quality Highways, Better Connections**

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**DIRECTORATE OF HIGHWAY DESIGN AND SAFETY**
**MINUTES OF THE MEETING FOR THE ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT FOR THE  
STAKEHOLDER ENGAGEMENT AND PUBLIC PARTICIPATION OF THE IN-HOUSE DESIGN BIRETWO-  
ARROR-CHESONGOCH (B126) ROAD HELD ON 6TH FEBRUARY 2024 AT KABULWO ELGEYO MARAKWET  
COUNTY CHIEFS OFFICE FROM 0200-1600HRS**
**Members present** (attached attendance list)

**Agenda**

1. Introductions
2. Opening remarks
3. Objective of the exercise –
  - Team Leader- Senior Environmentalist
  - Senior Sociologist
  - Engineer - HDS
4. Preliminary Session
5. AOB
6. Closing remarks

Min	Description
1.0	<b>Introductions</b> <p>The meeting convened under the auspices of the assistant chief kabulwo Keiyo North Sub-County, began at 2:00 PM. The assist chief extended a warm welcome to all attendees, acknowledging the presence of the Senator Elgeyo Marakwet Hon. William K. Kisang, deputy county commissioner Area MCAs, and other technical staff.</p> <p>The assistant chief invited The Deputy County Commissioner who initiated the proceedings by inviting each participant to introduce themselves, fostering an atmosphere of inclusivity and collaboration. Subsequently, he granted the floor to the Kenya National Highways Authority (KeNHA) team, affording them the opportunity to present their introductions as well.</p>
2.0	<b>Opening Remarks</b> <p><b>Senator – Elgeyo Marakwet</b></p> <p>The Senator provided a brief overview of the road emphasizing the significance of the proposed Biretwo-Arror-Chesongoch road. He underscored the prolonged anticipation for this critical infrastructure and expressed satisfaction that it is finally underway. The Senator conveyed his optimism regarding the road's potential to catalyze extensive development and bolster security in the region.</p> <p>Acknowledging the transformative impact of this infrastructural initiative, the Senator highlighted its capacity to strengthen connectivity and accessibility. This, in turn, is poised to stimulate enduring growth, foster economic prosperity, and enhance the overall quality of life for the residents of Elgeyo Marakwet.</p> <p>In a show of solidarity, the Senator assured the KeNHA team of unwavering support, emphasizing the importance of their role in realizing this vital project.</p>

	<p>Additionally, he urged the local community to extend maximum cooperation to the team throughout the execution of the project, recognizing the collaborative effort required for its successful implementation.</p> <p><b>KeNHA Team Lead- Senior Environmentalist</b></p> <p>The KeNHA Senior Environmentalist – Team Lead explained that the Government of Kenya (GoK), through its implementing agency, the Kenya National Highways Authority (KeNHA), is set to upgrade the Biretwo-Arror-Chesongoch road to bitumen standards. This crucial initiative aims to contribute significantly to regional integration, enhancing accessibility, affordability, and improving the security and reliability of the road transport network across Elgeyo-Marakwet, Uasin-Gishu, and Baringo Counties.</p> <p>The Senior Environmentalist emphasized that the project's primary objectives include fostering cooperation, promoting socio-economic development in the untapped potential of the Northern Part of Kenya, and addressing reduction in maintenance cost for both the road and vehicles, improve of travel time and creating proper drainage in the area. This transformative road upgrade is poised to unlock opportunities, encourage collaboration, and uplift the overall well-being of the communities in the region.</p> <p>She stated that the the entire project road is approximately 75 Km long and has, on average, a 40 m wide right of way. The project starts at Biretwo centre and takes a general Northernly direction through Rimoi Reserve and Tourist Attraction Centre Kabulwo, Aror, Mogil, and ends at Chesongoch. She added that other teams, including those responsible for geometric design, traffic and axle load survey, structures, economic feasibility study, material testing and investigation, topographical survey, and environmental and social impact studies, have been actively collecting data at the project site. This comprehensive approach underscores the commitment to thorough planning and ensures that the Biretwo-Arror-Chesongoch road project is meticulously designed, taking into account various technical aspects and environmental considerations.</p> <p>She also expressed a commitment to fostering collaborative partnerships with both the county government and the county commissioner. This collaboration aims to ensure seamless operations during the construction phase, particularly in the extraction of materials from the local community. Additionally, upon completion of the design phase, the leadership intends to actively assist in the relocation of individuals situated on the road reserve, with the overarching goal of optimizing project efficiency and adhering to the predetermined timeline for project completion.</p>
3.0	<p><b>Objective of the Exercise</b></p> <p>The KeNHA team leader begun by acknowledging the Deputy County Commissioner Keiyo South for the efforts in mobilizing the key Stakeholders and residents present. This showed a testament of the administrative unwavering support for the road project. She explained that the purpose of the visit was to conduct public consultations and meaningful stakeholder engagement with project-affected persons about the project's environmental and social impacts, as well as offer opportunity to receive their opinions and feedback so as to take their views into account and reflect the issues raised into the final design for the project. Prior to the meeting site investigations were carried out to collect primary data and review available relevant secondary data to establish a comprehensive environmental and social baseline, indicators, and data collection methodology.</p>



<p>She added that the data collected will help in identifying all the potential significant positive and adverse environmental and social impacts, including direct, indirect and cumulative impacts associated with the project. As a result all the information will aid in the development of an Environmental and Social Management Plan (ESMP) which will demonstrate how site-specific concerns and mitigation measures are addressed during construction and operation of the proposed project development activities.</p> <p>The team lead emphasized that the authority is committed to ensuring that the road construction harmonizes seamlessly with both the local community and the environment. This dedication involves fostering a collaborative and cooperative relationship between the construction activities, the people living in the area, and the natural surroundings. The aim is not only to construct a road but to do so in a manner that minimizes disruptions to the community's way of life and preserves the ecological balance of the environment.</p> <p><b>KeNHA Senior Sociologist</b></p> <p>KeNHA Senior sociologist provided a brief presentation aligning the Biretwo-Arror-Chesongoch road project with the social fabric of Elgeyo Marakwet County. She emphasized the potential positive impacts on the local community, such as job creation, skill development, and increased economic opportunities. Furthermore, attention was drawn to the sociocultural aspects, anticipating that improved infrastructure could lead to enhanced community cohesion and cultural preservation.</p> <p>In an innovative approach, it was revealed that the contractor would sub-contract services related to HIV/AIDS and alcohol and drug abuse. This strategic decision underscores a commitment to addressing social issues that may arise during the project, demonstrating a holistic approach to community well-being. Additionally, collaboration with a supervisory consultant was highlighted, emphasizing the joint efforts of the contractor and the authority to ensure the project's smooth execution while adhering to social responsibility initiatives.</p> <p>This multi-faceted approach aims not only to enhance the physical landscape of the region but also to address social dynamics and challenges, reflecting a comprehensive understanding of the project's broader impact on the community.</p> <p><b>KeNHA Engineer</b></p> <p>The engineer presented a detailed overview of the Biretwo-Arror-Chesongoch road as a Class B road with a total width of 40 meters. The road's carriageway consists of a 7-meter wide tarmac, with 3.5 meters allocated to the right and 3.5 meters to the left. The designed road will be an 80km/h road.</p> <p>One noteworthy point highlighted by the engineer was the strategic placement of beacons by the Kenya National Highways Authority (KeNHA) along the road. This implementation minimizes the need for extensive land acquisition, streamlining the project and reducing potential disruptions to local communities.</p> <p>The engineer also addressed safety considerations, particularly in proximity to schools, acknowledging that slight adjustments to the measurements may be necessary to ensure the well-being of students and pedestrians. This reflects a commitment to prioritizing safety and community welfare throughout the project.</p>
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	<p>Moreover, the engineer emphasized the importance of key features to enhance road safety and functionality. Speed bumps, road signs, and access culverts were identified as priority elements, underscoring the project's dedication to creating a safe and efficient transportation network.</p> <p>In specific areas, the engineer mentioned the incorporation of both access culverts and box culverts. These features are integral to managing water drainage, preventing flooding, and ensuring the road's longevity, particularly in areas prone to environmental challenges.</p>	
<b>4.0</b>	<b>Preliminary Session</b>	
	<b>View/Concern/Question</b>	<b>Remarks from KeNHA</b>
	<p><b>Area MCA</b></p> <p>Security roads in the area to be tarmacked</p> <p>Install streetlights at various centres</p>	<p><b>Engineer-HDS</b></p> <p>The authority will take this into consideration</p> <p>The authority is committed to enhancing security along the road. Streetlights will be strategically placed at centers along the road to ensure optimal coverage and improved security.</p>
	<p><b>Thomas Kemboi</b></p> <p>Requested provision of a training centre in Kamaigan</p> <p>Boarding school at kamaigat primary school</p> <p>Let employment be free and fair</p>	<p><b>Senior Sociologist</b></p> <p>Expanding the CSR budget similar to the construction budget may lead to project delays. It's essential to approach CSR initiatives with an open mind, considering realistic timelines and resource allocation to ensure a balanced and efficient implementation process. Prioritizing key initiatives that align with community needs will enable us to make a meaningful impact without compromising project timelines. Therefore all proposed CSR initiatives will be noted down and tabled for discussion with the leaders and be communicated in the next stakeholders engagement meetings</p> <p>A committee comprising various representatives from this sub-county will be established to actively participate in the recruitment process, ensuring a fair, equal, and inclusive selection process.</p>
	<p><b>Deputy head teacher – St Thomas Kabulwo</b></p> <p>Provision of a digital model library</p> <p>Proper pavements for the building in the school</p> <p>Consider safety of school going children</p>	<p><b>Senior Sociologist</b></p> <p>To ensure transparency, all proposed CSR initiatives will be compiled and considered based on priority.</p> <p>The project will collaborate with school</p>

		<p>authorities to address safety concerns, providing measures such as walkways and raised pedestrian paths. Changes to school entrances and exits for enhanced safety by the school administration is also encouraged. Road Safety campaigns will also be done by a subcontractor in schools</p>
<p><b>Beneth Kiptoo- youth representative</b></p> <p>Consider youth employment opportunities</p> <p>Employ health workers for emergency issues that may arise during construction</p>		<p><b>Senior Sociologist</b></p> <p>Local employment is a key focus. Kenha committed to transparent recruitment processes, ensuring fair opportunities for locals, youths, women, and men. Specific initiatives will be implemented to promote diversity and inclusivity, kenha has a 70; 30 rule skilled and unskilled. some positions are reserved for the women.</p> <p>To address potential emergency issues during construction, the contractor will collaborate with health centers in the area. This collaborative effort aims to ensure swift and effective responses to any health-related challenges that may arise on-site.</p>
<p><b>Chief-kabulwo location</b></p> <p>Consider Youth employment</p> <p>In regards to Compensation, how is done?</p> <p>Rehabilitate land after construction</p>		<p><b>Senior Environmentalist</b></p> <p>Local employment is a key focus. We are committed to transparent recruitment processes, ensuring fair opportunities for locals, youths, women, and men. Specific initiatives will be implemented to promote diversity and inclusivity, kenha has a 70; 30 rule skilled and unskilled and some positions are reserved for the women.</p> <p>In the case of individuals owning land along the road corridor without title deeds, KeNHA will conduct a thorough verification process, considering alternative forms of proof of ownership. Kenha in collaboration with NLC, Compensation will be based on fair market value, with careful assessment and consultations to ensure a just and equitable resolution for affected property owners.</p> <p><b>Senior Environmentalist</b></p> <p>The contractor is tasked with rehabilitating borrowed land to meet the required standards after use. This ensures the restoration of the land to its original or improved condition, minimizing any potential environmental impact and</p>

		maintaining community well-being.
	<p><b>Thomas kiplagat</b></p> <p>Consider youths on employment during construction The area is blessed with both skilled and unskilled and technical staff</p> <p>There are materials for quarry extraction that can also be sourced locally and can be source of income to the residents of keiyo north</p> <p>Bursary deployment to school going children to be considered</p>	<p><b>Senior Sociologist</b></p> <p>Local employment is a key focus. We are committed to transparent recruitment processes, ensuring fair opportunities for locals, youths, women, and men. Specific initiatives will be implemented to promote diversity and inclusivity, kenha has a 70; 30 rule skilled and unskilled. And some positions are reserved for the women.</p> <p><b>Senior environmentalist</b></p> <p>The contractor will prioritize the utilization of locally available raw materials in the road construction process. Additionally, landowners providing these materials will be compensated according to the agreed terms, recognizing their contribution as a source of income.</p> <p>To ensure transparency, all proposed CSR initiatives will be compiled and considered based on priority.</p>
	<p><b>Teresa keiyo</b></p> <p>There's water scarcity problems in the area, the authority should see what to do about it during construction as there is no permanent source of water, provision of borehole would be of great aid for domestic use for the residents</p> <p>Consider women during employment of project staff</p>	<p><b>Senior Environmentalist</b></p> <p>The authority acknowledges the scarcity of water in the area. In response, we will ensure that the contractor includes provisions for boreholes and water pans at strategic points to address the community's water needs and those used during construction be left for communal use.</p> <p><b>Senior Sociologist</b></p> <p>Local employment is a key focus. We are committed to transparent recruitment processes, ensuring fair opportunities for locals, youths, women, and men. Specific initiatives will be implemented to promote diversity and inclusivity, kenha has a 70; 30 rule skilled and unskilled. and 30% of the positions are reserved for the women</p>
	<p><b>Benjamin chemisit</b></p> <p>Keiyo centre to be upgraded as part of CSR</p> <p>Kabulwo market to be constructed</p> <p>Social challenges- children may be born of</p>	<p><b>Senior Sociologist</b></p> <p>To ensure transparency, all proposed CSR initiatives will be compiled and considered based on priority.</p> <p>To ensure transparency, all proposed CSR initiatives will be compiled and considered based on priority.</p>

	Chinese	Kenha has policies in place to ensure that any inappropriate practices, including concerns related to relationships with Chinese workers, are not tolerated. Educating our girls on these practices will also be beneficial in promoting awareness and preventing any misunderstandings during the road construction process.
	<p><b>Paul chebii</b> Will compensation be done when the road enfringes the land?</p> <p>Chepkundo and tawilale access road to be constructed Feeder roads to be considered during construction</p> <p>Will there be compensation on land leased to the contractor?</p>	<p><b>Senior Sociologist</b> In the case of individuals owning land along the road corridor without title deeds, KeNHA will conduct a thorough verification process, considering alternative forms of proof of ownership. Kenha in collaboration with NLC, Compensation will be based on fair market value, with careful assessment and consultations to ensure a just and equitable resolution for affected property owners.</p> <p><b>Engineer-HDS</b> The authority aims to enhance connectivity while minimizing inconvenience to the community during and after construction process. All access and feeder roads to public institutions will be done</p> <p><b>Senior Environmentalist</b> Indeed, any land leased by the contractor will be paid as per the agreed terms with the lessor during the construction process.</p>
	<p><b>Joseph</b> Proper channels to be followed in case of any land acquisition</p>	<p><b>Senior Sociologist</b> In the case of individuals owning land along the road corridor without title deeds, KeNHA will conduct a thorough verification process, considering alternative forms of proof of ownership. Compensation will be based on fair market value, with careful assessment and consultations to ensure a just and equitable resolution for affected property owners.</p>

#### a. Closing Remarks

The Deputy County Commissioner Keiyo North thanked the public for the participation and urged them to offer any kind of support to KeNHA and the Contractor of the proposed project for smooth implementation of the project, she asserted that the residents should provide conducive environment to the contractor.

KeNHA team leader appreciated the stakeholders and the locals for giving their views/concerns, he assured that their views will be put in consideration. She acknowledged the DCC for her overwhelming support by making the day success and thanked the residents for their participation.

The Area MCA, representing the local government, sincerely appreciated the engagement of participants in the discussion. The concerns and suggestions shared by the community played a vital role in shaping the development of the area. The commitment of the residents was recognized as key to collective progress, and a call was made to continue working hand in hand for the successful implementation of the proposed project

The Senator extended heartfelt thanks to the residents, the Deputy County Commissioner, KeNHA team lead, and all stakeholders who attended. The active involvement of the community was acknowledged as a demonstration of a strong community spirit. The Senator assured participants that advocacy for necessary resources and support at the legislative level was undertaken. Together, collaborative efforts were made to enhance the prosperity and well-being of the region

The DCC thanked the authority for remembering the locals by being on the process to initiate a major project

The meeting ended with a word of prayer.

**Minutes prepared by:**

Name		Designation	Signature	Date
June Koros	IS		.....	.....
Brian Aila		IE	.....	.....

**Minutes Signed by:**

Name		Designation	Signature	Date
Patricia Agula	SS		.....	.....
Sylvia Tipape	SE		.....	.....



**MINUTES OF THE MEETING FOR THE ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT FOR THE STAKEHOLDER ENGAGEMENT AND PUBLIC PARTICIPATION OF THE IN-HOUSE DESIGN FOR BIRETWO-ARROR-CHESONGOCH (B126) ROAD HELD ON 7<sup>TH</sup> FEBRUARY, 2024 AT AROR WARD ADMINISTRATOR GROUNDS.**

**Members present** (attached attendance list)

**Agenda**

1. Introductions
2. Opening remarks
3. Objective of the exercise –

Team Leader- Senior Environmentalist

Senior Sociologist

Engineer - HDS

4. Preliminary Session
5. AOB
6. Closing remarks

Min	Description
1.0	<p><b>Introductions</b></p> <p>The meeting was called to order at 10.30am by a word of prayer. The area MCA -Aror Ward welcomed everyone present and gave everyone an opportunity to introduce themselves.</p>
2.0	<p><b>Opening Remarks</b></p> <p>The MCA extended a warm welcome to all attendees, acknowledging the presence of the Senator Elgeyo Marakwet Hon. William K. Kisang, the Ward, DCC Marakwet West, Sub County Administration and the OCS Aror.</p> <p>He stated that what was going to be discussed is of immense significance and urged the Locals and her team to listen attentively, because the meeting and the agendas is all about them as the residents.</p> <p>KeNHA team was given an opportunity to explain in detail the objective of the exercise</p>
3.0	<p><b>Objective of the Exercise</b></p> <p>The KeNHA team leader began by acknowledging the DCC for efforts in mobilizing key stakeholders present and the local community from all corners of Aror, ensuring everything was set for the day.</p> <p>The KeNHA team leader informed the public that KeNHA is a Government of Kenya implementing agency entitled to manage, develop, maintain, and rehabilitate all International trunk roads (Class A), National trunk roads (Class B), and Superhighways (Class S). The current road is a Class B road starting from Biretwo to Aror before terminating at Chesongoch.</p> <p>The Government of Kenya, through KeNHA, is in the preliminary stage for the development of the Final Report for the In-House Design for the Biretwo-Arro-Chesongoch road. KeNHA saw a need to conduct stakeholder engagement and public participation forums to inform and share the project with the locals, seeking views from the community around the project area. This input will enable appropriate decision-making in the final detailed designs.</p>

	<p>The KeNHA team leader emphasized that stakeholder engagement is a statutory requirement by the Constitution of Kenya. After the team's presentation, the locals will be given a golden opportunity with adequate time to air their concerns.</p> <p>The locals were reminded that upon completion of the project, they will be the primary beneficiaries of the Project Road. Improved access to the region, enhanced connectivity to other market centers, easy transportation of agricultural produce from farms to the market without delays, and improved drainage systems through the construction of modern culverts were highlighted. These measures aim to accommodate large volumes of drainage capacity, reducing flooding and diverting water in the people's land.</p> <p><b>Engineer Presentation</b></p> <p>The team leader invited the Engineer from the Authority to delve into the Project Description and Project Scope, shedding light on both the Preliminary Design and the Detailed Engineering Design of the proposed project.</p> <p>The assembled group learned that the entire project road spans approximately 75 km, featuring an average right-of-way width of 40m and is classified as a (B123) road. The Engineer clarified that the road sections are situated in Elgeyo Marakwet County, commencing at Biretwo center and following a general northerly route through Rimoi Reserve, Tourist Attraction Centre Kabulwa, Aror, Mogil, and concluding at Chesongoch.</p> <p>The Engineer provided insight into the preliminary design, which entailed:</p> <ul style="list-style-type: none"> <li>- A thorough review of existing data related to the proposed road project.</li> <li>- Collection of socio-economic, biophysical, and cultural data to inform the design.</li> </ul> <p>The Engineer assured the local community that, in areas where the road intersects market centers or small towns, the designs will incorporate service roads and footpaths (sidewalks). Furthermore, proper junctions will be integrated to ensure a clear line of sight for road users, promoting safety. The designs will also identify strategic locations requiring zebra crossing sections to enhance overall safety measures.</p> <p><b>Social Impacts</b></p> <p>The Senior Sociologist detailed adverse effects during discussions, covering health risks, social disintegration and cultural shifts. To tackle these issues, she underscored the imperative implementation of social safeguards components. These include stakeholder engagement, grievance redress mechanisms, gender mainstreaming, child protection, labor management and awareness programs on HIV/AIDS and substance abuse.</p> <p>Emphasizing a holistic approach, she stressed the significance of community engagement and active participation. This approach aims to maximize positive impacts and mitigate negative consequences, fostering the overall well-being and harmony of the community throughout and after the construction process.</p>		
4.0	<b>Preliminary Session</b>		
	<table border="1"> <thead> <tr> <th>View/Concern/Question</th> <th>Remarks</th> </tr> </thead> </table>	View/Concern/Question	Remarks
View/Concern/Question	Remarks		



	<p><b>Michael Yego</b> Will the KeNHA consider reinstating the original route from Kinyech Junction to Biretwo Health Center, which was initially disrupted due to the collapse of a bridge? Additionally, is there a plan to upgrade the Aror Center, which will serve as a loop road, in conjunction with using the original route?</p> <p>In areas where the road is moves in to someone's property. In this case what will be done</p>	<p><b>Senior Environmentalist</b> The proposed alternative route, which diverges away Aror Centre, will undergo thorough examination. Every aspect of the design will be carefully considered before reconvening to discuss the final layout.</p> <p>When the road encroaches into someone's property, we would initiate a thorough assessment to evaluate the impact. This process would involve engaging with the property owner and ensuring fair compensation or mitigation measures in compliance with legal and ethical standards. Transparent communication and collaboration with the affected parties would be prioritized throughout the resolution process.</p>
	<p><b>Assistant Chief</b> Some of the projects as part of the CSR such as upgrading of Chemula Health center, Kapchemuta Dispensary, development of an Agricultural research institution, Water springs development, upgrading of existing libraries, should be considered by KeNHA</p>	<p><b>Senior Sociologist</b> While every aspect discussed has been carefully considered, not all suggestions can be implemented immediately. The inputs provided will undergo a prioritization process, and future discussions will focus on the selected priorities to ensure effective and meaningful progress in the road construction project</p>
	<p><b>Ruben Kisang</b> Road safety should be considered along the project route such as establishment of speed bumps near public institutions i.e. school and hospitals</p>	<p>The implementation of speed management measures, including strategically placed speed bumps, will be a priority in our road design. Additionally, we are committed to incorporating dedicated pedestrian footpaths and street lights along the project route. Our team will work closely with relevant authorities to implement and adhere to the highest safety standards throughout the project to create a safer and more accessible road infrastructure for the community.</p>
	<p><b>Geofry</b> The existing furrows and streams should be preserved and as the area is agricultural area.</p>	<p>Sufficient sleeve ducts will be set up to enable the smooth flow of water into the farms. This guarantees an orderly and regulated distribution of water, addressing issues associated with water furrows and improving the irrigation process for agricultural purposes.</p>
	<p><b>Cherono</b></p>	<p>Yes, as a part of our road construction plan,</p>

	Is there a plan to extend the road to include proximity to nearby public institutions?	provisions have been specifically incorporated to extend the road, ensuring it reaches and serves the public institutions situated along the project route. This strategic expansion aims to optimize accessibility and connectivity, catering to the needs of the community and enhancing overall infrastructure utility."
	<b>John Seroney- Former Area MCA</b> Consider minimizing tree cutting along the project route	We are committed to minimizing tree cutting along the project route. Efforts will be made to avoid tree removal wherever possible. In cases where it becomes necessary, a thoughtful and inclusive dialogue will be initiated with the respective landowners to discuss the best way forward, ensuring a balanced approach that respects both the project's requirements and environmental considerations.
	<b>Justin Mutwol</b> Is there a focus on prioritizing local employment opportunities within the project?	Yes, prioritizing local employment is a key focus within the project. We aim to actively engage and contribute to the local community by creating job opportunities and fostering economic growth in the region.
	Will there be streetlights installed along the centers and public institutions to enhance security?	Yes, streetlights will be installed along the centers and public institutions to enhance security, ensuring a well-lit environment for the safety and well-being of the community.

#### a. Closing Remarks

KeNHA team leader appreciated the stakeholders and the locals for giving their views/concerns, he assured that their views will be put in consideration. He acknowledged the County Government for her overwhelming support by making the day success.

The DCC thanked the authority for remembering the locals by being on the process to initiate a major project

The Senator thanked the public for the participation and urged them to offer any kind of support to KeNHA and the Contractor of the proposed project for smooth implementation of the project, he asserted that the residents should provide conducive environment to the contractor by not involving themselves in any form of sabotage for the project.

The meeting ended with a word of prayer.

#### Minutes prepared by:

Name	Designation	Signature	Date
Brian Aila	IE	.....	.....
June Koros	IS	.....	.....

#### Minutes signed by:

Name	Designation	Signature	Date
Sylvia Tipape	SE	.....	.....
Patricia Agula	SS	.....	.....


**Kenya National Highways Authority**
**Quality Highways, Better Connections**

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 P.O Box 49712 - 00100 Nairobi, Tel 020 - 4954000 / 0700 423 606 Email dg@kenha.co.ke / Website www.kenha.co.ke

# **MINUTES OF THE MEETING FOR THE ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT FOR THE STAKEHOLDER ENGAGEMENT AND PUBLIC PARTICIPATION OF THE IN-HOUSE DESIGN FOR BIRETWO- ARROR-CHESONGOCH (B126) ROAD HELD ON 7<sup>TH</sup> FEBRURARY, 2024 AT CHESONGOCH CENTER.**

**Members present** (attached attendance list)

**Agenda**

1. Introductions
2. Opening remarks
3. Objective of the exercise –

Team Leader- Senior Environmentalist

Senior Sociologist

Engineer - HDS

4. Preliminary Session
5. AOB
6. Closing remarks

Min	Description
1.0	<b>Introductions</b> The meeting was called to order at 2.00pm by the DCC Marakwet West followed by a word of prayer, the DCC appreciated participants for keeping time and availing themselves, a brief self-introduction of the DCC's team and KeNHA team was done.
2.0	<b>Opening Remarks</b> The meeting proceeded with the warm welcome extended by the DCC. He welcomed the senator who briefly informed the locals in brief the purpose of the visit from the Kenya National Highways Authority (KeNHA) team. He also told the locals to actively participate in the meeting by sharing the views and question concerning the road project. The KeNHA team, led by their team leader gave a detailed description of the exercise to the stakeholders and the local community present, ensuring that everyone gained a full insight of the activity.
3.0	<b>Objectives of the exercise</b> The KeNHA team leader began by expressing appreciation to the DCC for effectively mobilizing key stakeholders and the local community from all corners of Marakwet East, ensuring everything was prepared for the day. He informed the public that KeNHA, as a Government of Kenya implementing agency, is mandated to manage, develop, maintain, and rehabilitate all International trunk roads (Class A), National trunk roads (Class B), and Superhighways (Class S). The current road is a Class B road starting from Biretwo to Arror before terminating at Chesongoch. The Government of Kenya, through KeNHA, is currently in the preliminary stage of developing the Final Report for the In-House Design for the Biretwo-Arror-Chesongoch road. Recognizing the importance of stakeholder input, KeNHA deemed it necessary to conduct engagement forums to share project details and gather feedback from the local community, shaping the final detailed designs. The KeNHA team leader emphasized that stakeholder engagement is a statutory requirement according to the Constitution of Kenya. Following the team's presentation, the locals will be provided

	<p>with ample time to express their concerns.</p> <p>Residents were reminded that upon project completion, they will be the primary beneficiaries of the Project Road. The improvements include enhanced access to the region, better connectivity to market centers, efficient transportation of agricultural produce from farms to the market, and the implementation of modern culverts to improve drainage systems. These measures aim to handle large volumes of drainage capacity, reducing flooding and diverting water in the community's land.</p>	
4.0	<b>Preliminary Sessions</b>	
	<b>View/Concern</b>	<b>Remarks</b>
	<b>Cheriot</b> Will the local residents be fully involved in the construction activities by providing both skilled and unskilled labour? and will KeNHA ensure that people from outside are not employed before the locals does	<b>Senior Sociologist</b> KeNHA will enhance full participation of the locals in the construction activities, the DCC and the Chiefs will help in identification of locals for any job opportunity advertised by the Contractor.
	<b>John Chemtai &amp; William Kiptuto</b> Will water farrows be established	<b>Engineer-HDS</b> Sufficient water furrows will be designated for continuous use by the community.
	<b>Joshwa Kiprop</b> In the event that the road encroaches on my land, leading to the necessity of cutting down my mango tree or house, will I be eligible for compensation?	<b>Senior Sociologist</b> If the authority is encroaching on your land, no property or tree will be cut down until compensation is carried out
	<b>Ziporah</b> My son's grave is located along the road reserve what shall be done?	<b>Senior Sociologist</b> The relocation of the grave site will be undertaken by the appropriate authority to a place of your choosing, and adequate facilitation will be provided for the family. We will appreciate the understanding and support of all involved parties during the process, as the authority strives to handle this matter with care and sensitivity
	<b>Kimtai</b> Is it possible to have the road leading up to public institutions along the route also paved or tarmacked?	<b>Engineer-HDS</b> All public institutions situated along the project route will be tarmacked for improved infrastructure.
	<b>Keptoo</b> Will there be establishment of bore holes and water pans by the contractor? and will materials sourced from private land be compensated	<b>Senior Environmentalist</b> The construction process will involve the use of boreholes and water pans in the area. It is recommended that upon completion, the contractor will transfer ownership of the boreholes and water pans to the community for their ongoing use. If materials are sourced from private land, the affected landowners will receive fair compensation. This ensures that the use of materials from private properties is conducted with proper acknowledgment and remuneration to the landowners involved

### Closing Remarks

One of the locals expressed deep gratitude to the Government of Kenya through KeNHA for bringing a bitumen road to their area. He emphasized that the project would become a lasting memory for the community, immortal and timeless.

The Senator expressed his immense joy, commending the public for their active participation and for raising specific views and concerns. He urged the locals to wholeheartedly support the project, emphasizing its potential to bring greater prosperity to the people in the area and the nation at large.

The meeting ended with a word of prayer.

**Minutes prepared by:**

<b>Name</b>	<b>Designation</b>	<b>Signature</b>	<b>Date</b>
June Koros	IS	.....	.....
Brian Aila	IE	.....	.....

**Minutes signed by:**

<b>Name</b>	<b>Designation</b>	<b>Signature</b>	<b>Date</b>
Sylvia Tipape	SE	.....	.....
Patricia Agula	SS	.....	.....

## 16 ANNEX 4: PHOTOGRAPHS

### Elgeyo Marakwet County Government Stakeholder Engagement



*Plate 5- 1: Governor Elgeyo Marakwet H.E. Wisley Rotich giving his remarks at the meeting held with the Governors' boardroom*



*Plate 5- 2: Elgeyo Marakwet Deputy Governor H.E. Prof. Grace Cheserek and Senator Hon William Kisang giving their remarks at the meeting held with the Governors' boardroom*



*Plate 5- 3: Deputy Speaker H.E Paul Kipyaticit giving his remarks at the meeting held with the Governors' boardroom*



*Plate 5- 4: CECM Roads, Public Works and Transport Emmy Kosgey giving her remarks at the meeting held with the Governors' boardroom*



*Plate 5- 5: KeNHA North Regional Director Eng. P. Kipkoech and Senior Environmentalist Sylvia Tipape addressing the meeting held with the Governors' boardroom*



*Plate 5- 6: Eng Ken Kamangu addressing the meeting held with the Governors' boardroom*





*Plate 5- 7: View of all Stakeholders Engaged in the Governor's Boardroom Meeting*

**Biretwo Public Baraza**



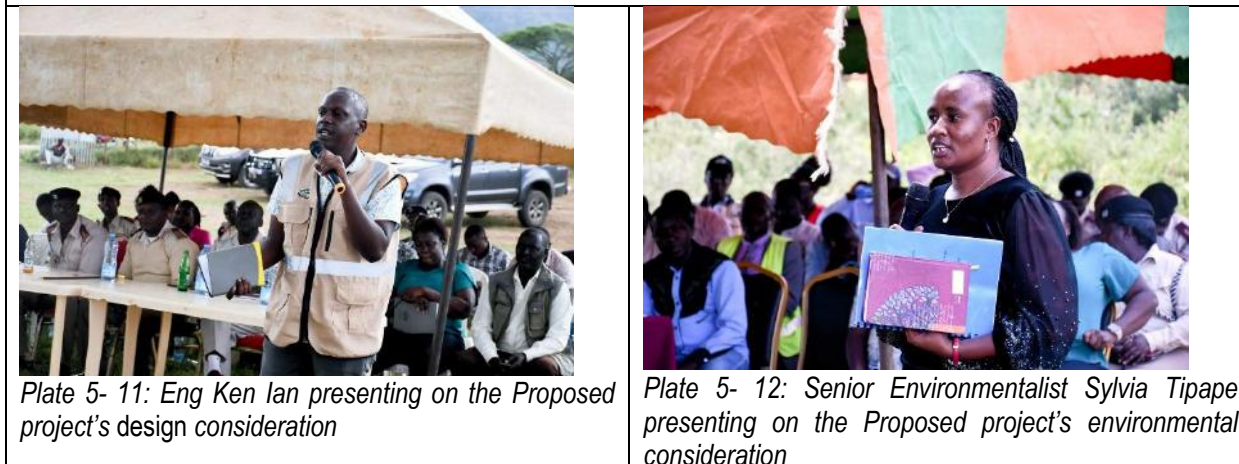
*Plate 5- 8: Elgeyo Marakwer Senator Hon William Kisang giving his remarks at Biretwo*



*Plate 5- 9: Keyo North DCC Kisang giving her remarks at Biretwo*



**Plate 5- 10: KeNHA official presenting on the Proposed project's design, environmental and social consideration  
Kabulwo Public Baraza**



**Plate 5- 11: Eng Ken Ian presenting on the Proposed project's design consideration**

**Plate 5- 12: Senior Environmentalist Sylvia Tipape presenting on the Proposed project's environmental consideration**





*Plate 5- 13: Elgeyo Marakwer Senator Hon William Kisang giving his remarks at Kabulwo*



*Plate 5- 14: Keyo South DCC giving his remarks at Kabulwo*



*Plate 5- 15: General overview of the public baraza held at Kabulwo*

#### **Error Public Baraza**



*Plate 5- 16: General overview of public baraza held at Arror County Chief Grounds*



*Plate 5- 17: Senior Sociologist Patricia Agula presenting on the Proposed project's social consideration*



*Plate 5- 18: Senior Environmentalist Sylvia Tipape presenting on the Proposed project's environmental consideration*



*Plate 5- 19: Eng Ken Ian presenting on the Proposed project's design consideration*



*Plate 5- 20: Elgeyo Marakwer Senator Hon William Kisang giving his remarks at Aror*



*Plate 5- 22: Error area MCA giving his remarks*



*Plate 5- 21: DCC Marakwet West giving his remarks within Aror chief boardroom*

### **Chesongosh Public Bazara**





Plate 5- 23: Elgeyo Marakwet Senator Hon William Kisang giving his remarks at Chesongoch



Plate 5- 24: CECM Roads, Public Works and Transport Emmy Kosgey giving her remarks at Chesongoch



Plate 5- 25: Senior Environmentalist Sylvia Tipape presenting on the Proposed project's environmental consideration



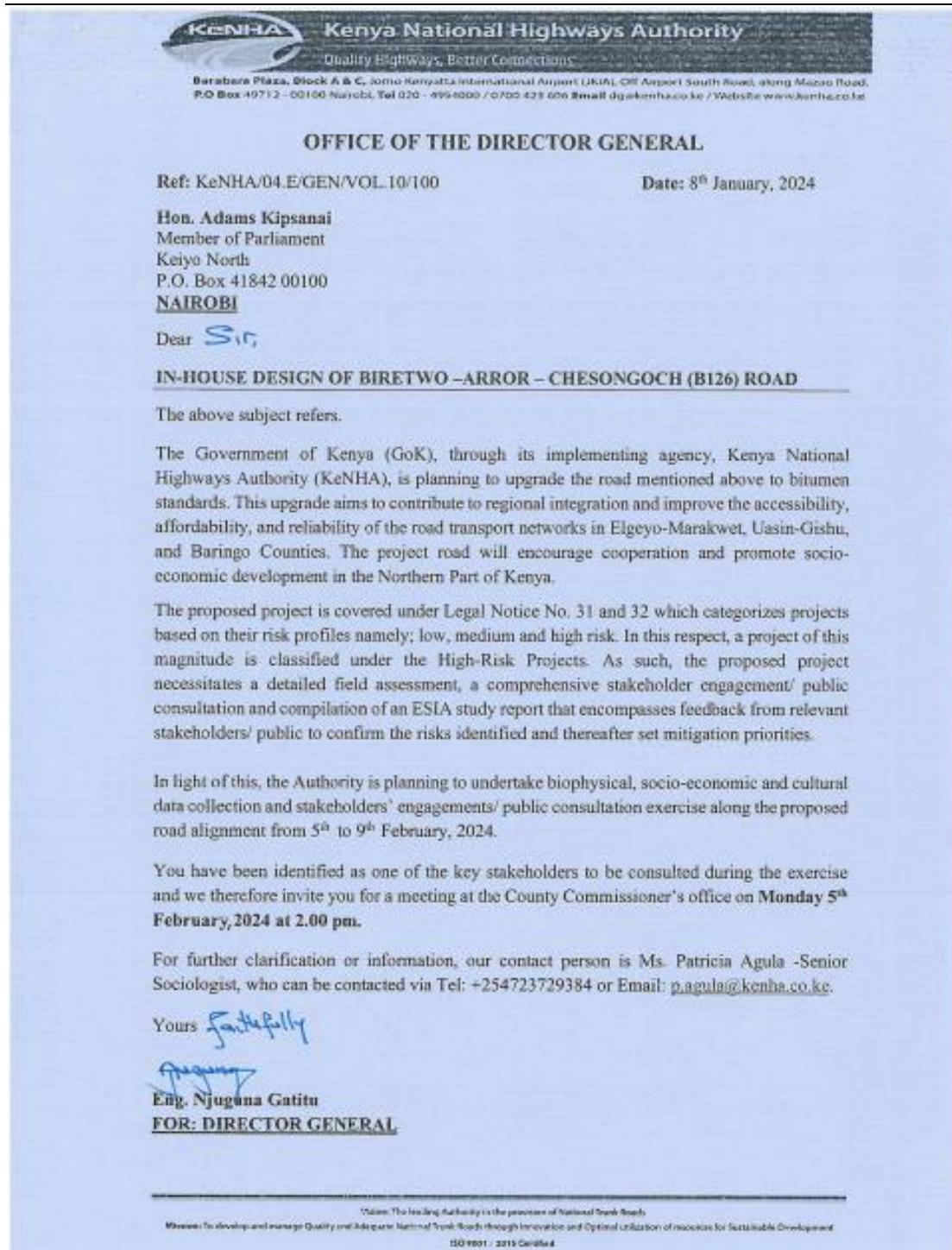
Plate 5- 26: Senior Sociologist Patricia Agula presenting on the Proposed project's social consideration



Plate 5- 27: General overview of public baraza held at Chesongoch



## 17 ANNEX 5: INVITATION LETTERS





**Kenya National Highways Authority**

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Ref: KeNHA/04.E/GEN/VOL.10/98

Date: 8<sup>th</sup> January, 2024**Hon. David Kangongo Bowen**

Member of Parliament

Marakwet East

P.O. Box 41842 00100

**NAIROBI**

Dear Sir,

**IN-HOUSE DESIGN OF BIRETWO -ARROR - CHESONGOCH (B126) ROAD**

The above subject refers.

The Government of Kenya (GoK), through its implementing agency, Kenya National Highways Authority (KeNHA), is planning to upgrade the road mentioned above to bitumen standards. This upgrade aims to contribute to regional integration and improve the accessibility, affordability, and reliability of the road transport networks in Elgeyo-Marakwet, Uasin-Gishu, and Baringo Counties. The project road will encourage cooperation and promote socio-economic development in the Northern Part of Kenya.

The proposed project is covered under Legal Notice No. 31 and 32 which categorizes projects based on their risk profiles namely; low, medium and high risk. In this respect, a project of this magnitude is classified under the High-Risk Projects. As such, the proposed project necessitates a detailed field assessment, a comprehensive stakeholder engagement/ public consultation and compilation of an ESIA study report that encompasses feedback from relevant stakeholders/ public to confirm the risks identified and thereafter set mitigation priorities.

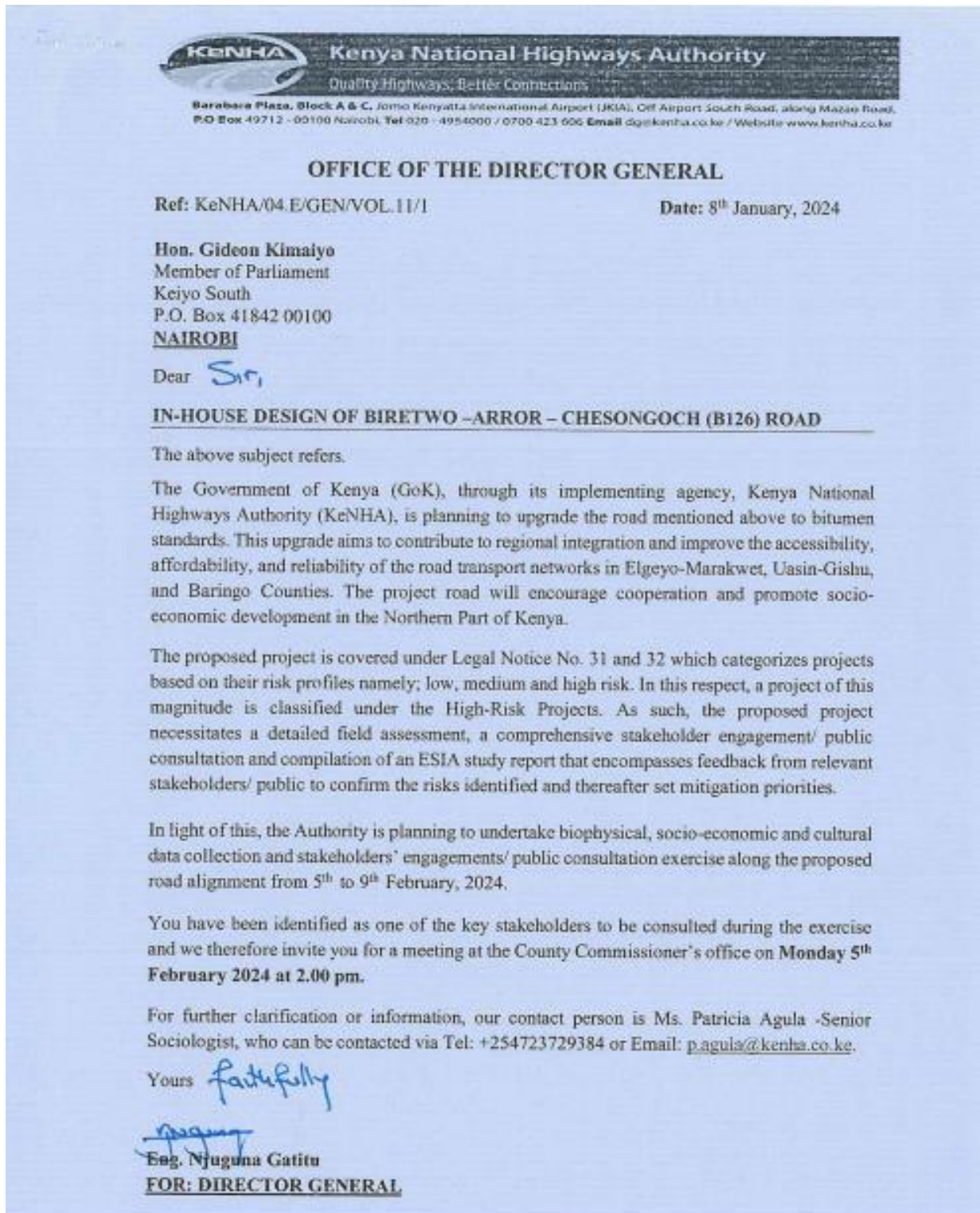
In light of this, the Authority is planning to undertake biophysical, socio-economic and cultural data collection and stakeholders' engagements/ public consultation exercise along the proposed road alignment from 5<sup>th</sup> to 9<sup>th</sup> February, 2024.

You have been identified as one of the key stakeholders to be consulted during the exercise and we therefore invite you for a meeting at the County Commissioner's office on **Monday 5<sup>th</sup> February 2024 at 2.00 pm.**

For further clarification or information, our contact person is Ms. Patricia Agula -Senior Sociologist, who can be contacted via Tel: +254723729384 or Email: [p.agula@kenha.co.ke](mailto:p.agula@kenha.co.ke).

Yours

*Faithfully***Eng. Njuguna Gatitu****FOR: DIRECTOR GENERAL**







Kenya National Highways Authority

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P.O. Box 49712 - 00100 Nairobi, Tel 020 - 4954000 / 0700 423 606 Email [dg@kenha.co.ke](mailto:dg@kenha.co.ke) / Website [www.kenha.co.ke](http://www.kenha.co.ke)

## OFFICE OF THE DIRECTOR GENERAL

Ref: KeNHA/04.E/GEN/VOL.11/2

Date: 8<sup>th</sup> January, 2024

Mr. John Korir  
County Commissioner  
Elgeyo Marakwet County  
P.O. Box 220-30700

ITEN

Dear Sir,

IN-HOUSE DESIGN OF BIRETWO -ARROR - CHESONGOCH (B126) ROAD

The above subject refers.

The Government of Kenya (GoK), through its implementing agency, Kenya National Highways Authority (KeNHA), is planning to upgrade the road mentioned above to bitumen standards. This upgrade aims to contribute to regional integration and improve the accessibility, affordability, and reliability of the road transport networks in Elgeyo-Marakwet, Uasin-Gishu, and Baringo Counties. The project road will encourage cooperation and promote socio-economic development in the Northern Part of Kenya.

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In light of this, the Authority is planning to undertake biophysical, socio-economic and cultural data collection and stakeholders' engagements/ public consultation exercise along the proposed road alignment from 5<sup>th</sup> to 9<sup>th</sup> February, 2024.

You have been identified as one of the key stakeholders to be consulted during the exercise and we therefore invite you and request you for a meeting with other key stakeholders including area Members of Parliament at your office on **Monday 5<sup>th</sup> February 2024 at 2.00 pm**. The public consultation will be carried out in the various sub-counties along the proposed project area under the guidance of the respective Deputy County Commissioners.

For further clarification or information, our contact person is Ms. Patricia Agula -Senior Sociologist, who can be contacted via Tel: +254723729384 or Email: [p.agula@kenha.co.ke](mailto:p.agula@kenha.co.ke).

Yours faithfully,

  
Eng. Njuguna Gatitu  
FOR: DIRECTOR GENERAL



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Ref: KeNHA/04.E/GEN/VOL.10/99

Date: 8<sup>th</sup> January, 2024**Hon. Timothy Kipchumba Toroitich**

Member of Parliament

Marakwet West

P.O. Box 41842 00100

**NAIROBI**Dear *Tim*,**IN-HOUSE DESIGN OF BIRETWO -ARROR - CHESONGOCH (B126) ROAD**

The above subject refers.

The Government of Kenya (GoK), through its implementing agency, Kenya National Highways Authority (KeNHA), is planning to upgrade the road mentioned above to bitumen standards. This upgrade aims to contribute to regional integration and improve the accessibility, affordability, and reliability of the road transport networks in Elgeyo-Marakwet, Uasin-Gishu, and Baringo Counties. The project road will encourage cooperation and promote socio-economic development in the Northern Part of Kenya.

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In light of this, the Authority is planning to undertake biophysical, socio-economic and cultural data collection and stakeholders' engagements/ public consultation exercise along the proposed road alignment from 5<sup>th</sup> to 9<sup>th</sup> February, 2024.

You have been identified as one of the key stakeholders to be consulted during the exercise and we therefore invite you for a meeting at the County Commissioner's office on **Monday 5<sup>th</sup> February 2024 at 2.00 pm.**

For further clarification or information, our contact person is Ms. Patricia Agula -Senior Sociologist, who can be contacted via Tel: +254723729384 or Email: [p.agula@kenha.co.ke](mailto:p.agula@kenha.co.ke).

Yours

*Faithfully***Eng. Njuguna Gatitu****FOR: DIRECTOR GENERAL**

**Kenya National Highways Authority**

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Ref: KeNHA/04.E/GEN/VOL-10/97

Date: 8<sup>th</sup> January, 2024

H.E Wisley Rotich  
Governor  
Elgeyo Marakwet County  
P.O. Box 220-30700

ITEN

Dear Sir,

**IN-HOUSE DESIGN OF BIRETWO -ARROR - CHESONGOCH (B126) ROAD**

The above subject refers.

The Government of Kenya (GoK), through its implementing agency, Kenya National Highways Authority (KeNHA), is planning to upgrade the road mentioned above to bitumen standards. This upgrade aims to contribute to regional integration and improve the accessibility, affordability, and reliability of the road transport networks in Elgeyo-Marakwet, Uasin-Gishu, and Baringo Counties. The project road will encourage cooperation and promote socio-economic development in the Northern Part of Kenya.

The proposed project is covered under Legal Notice No. 31 and 32 which categorizes projects based on their risk profiles namely; low, medium and high risk. In this respect, a project of this magnitude is classified under the High-Risk Projects. As such, the proposed project necessitates a detailed field assessment, a comprehensive stakeholder engagement/ public consultation and compilation of an ESIA study report that encompasses feedback from relevant stakeholders/ public to confirm the risks identified and thereafter set mitigation priorities.

In light of this, the Authority is planning to undertake biophysical, socio-economic and cultural data collection and stakeholders' engagements/ public consultation exercise along the proposed road alignment from 5<sup>th</sup> to 9<sup>th</sup> February, 2024.

Therefore, we invite and request for a meeting with you and your Technical Officers at your office on **Monday 5<sup>th</sup> February, 2024 at 10:00 am.**

For further clarification or information, our contact person is Ms. Patricia Agula -Senior Sociologist, who can be contacted via Tel: +254723729384 or Email: [p.agula@kenha.co.ke](mailto:p.agula@kenha.co.ke).

Yours faithfully

  
Eng. Njuguna Gatitu**FOR: DIRECTOR GENERAL**

Copy to:

County Executive Committee Member  
Public Works, Transport and Energy  
Elgeyo Marakwet County  
**ITEN**

County Executive Committee Member  
Land, Physical Planning, Housing and Urban Development  
Elgeyo Marakwet County  
**ITEN**





Kenya National Highways Authority

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## OFFICE OF THE DIRECTOR GENERAL

Ref: KeNHA/04.E/GEN/VOL.10/100

Date: 8<sup>th</sup> January, 2024

Hon. Adams Kipsanai  
Member of Parliament  
Keiyo North  
P.O. Box 41842 00100  
**NAIROBI**

Dear Sir,

**IN-HOUSE DESIGN OF BIRETWO –ARROR – CHESONGOCH (B126) ROAD**

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In light of this, the Authority is planning to undertake biophysical, socio-economic and cultural data collection and stakeholders' engagements/ public consultation exercise along the proposed road alignment from 5<sup>th</sup> to 9<sup>th</sup> February, 2024.

You have been identified as one of the key stakeholders to be consulted during the exercise and we therefore invite you for a meeting at the County Commissioner's office on **Monday 5<sup>th</sup> February, 2024 at 2.00 pm.**

For further clarification or information, our contact person is Ms. Patricia Agula -Senior Sociologist, who can be contacted via Tel: +254723729384 or Email: [p.agula@kenha.co.ke](mailto:p.agula@kenha.co.ke).

Yours faithfully

Eng. Njuguna Gatitu

**FOR: DIRECTOR GENERAL**

Vision: The leading Authority in the provision of National Trunk Roads

Mission: To develop and manage Quality and Adequate National Trunk Roads through Innovation and Optimal utilization of resources for Sustainable Development

ISO 9001 : 2015 Certified

**Kenya National Highways Authority**

Quality Highways, Better Connections

Barehero Plaza, Block A & C, Jomo Kenyatta International Airport (JICA), Off Airport South Road, along Mzee Road,  
P.O. Box 49712 - 00100 Nairobi, Tel 020 - 4954000 / 0700 425 606 Email [dg@kenha.co.ke](mailto:dg@kenha.co.ke) / Website [www.kenha.co.ke](http://www.kenha.co.ke)**OFFICE OF THE DIRECTOR GENERAL**

Ref: KeNHA/04.E/GEN/VOL.10/98

Date: 8<sup>th</sup> January, 2024**Hon. David Kangongo Bowen**

Member of Parliament

Marakwet East

P.O. Box 41842 00100

**NAIROBI**Dear *Sir,***IN-HOUSE DESIGN OF BIRETWO –ARROR – CHESONGOCH (B126) ROAD**

The above subject refers.

The Government of Kenya (GoK), through its implementing agency, Kenya National Highways Authority (KeNHA), is planning to upgrade the road mentioned above to bitumen standards. This upgrade aims to contribute to regional integration and improve the accessibility, affordability, and reliability of the road transport networks in Elgeyo-Marakwet, Uasin-Gishu, and Baringo Counties. The project road will encourage cooperation and promote socio-economic development in the Northern Part of Kenya.

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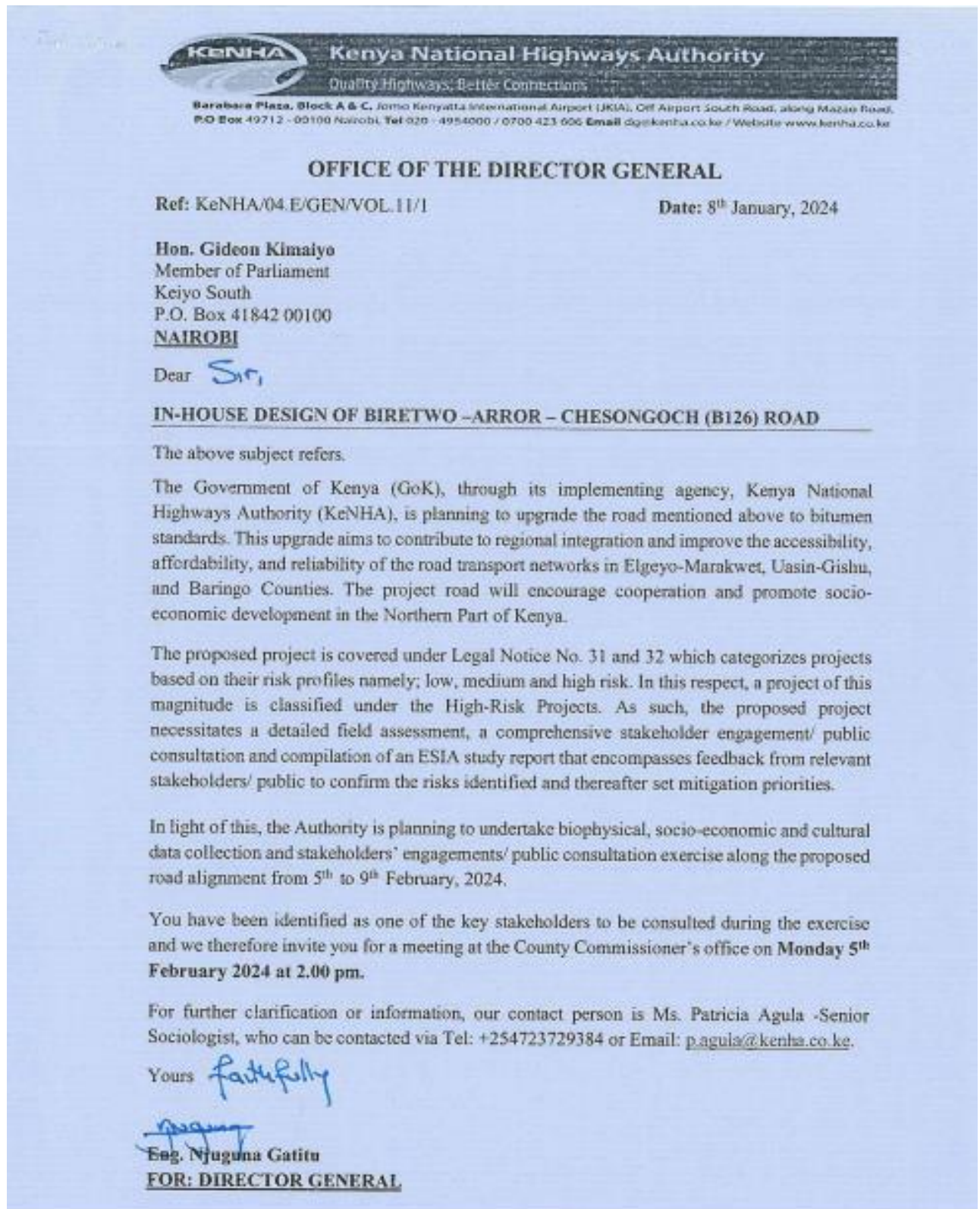
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Yours

*Faithfully***Eng. Njuguna Gatitu****FOR: DIRECTOR GENERAL**







### OFFICE OF THE DIRECTOR GENERAL

Ref: KeNHA/04.E/GEN/VOL.11/2

Date: 8<sup>th</sup> January, 2024

**Mr. John Korir**  
County Commissioner  
Elgeyo Marakwet County  
P.O. Box 220-30700

**ITEN**

Dear *Sir,*

#### **IN-HOUSE DESIGN OF BIRETWO –ARROR – CHESONGOCH (B126) ROAD**

The above subject refers.

The Government of Kenya (GoK), through its implementing agency, Kenya National Highways Authority (KeNHA), is planning to upgrade the road mentioned above to bitumen standards. This upgrade aims to contribute to regional integration and improve the accessibility, affordability, and reliability of the road transport networks in Elgeyo-Marakwet, Uasin-Gishu, and Baringo Counties. The project road will encourage cooperation and promote socio-economic development in the Northern Part of Kenya.

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In light of this, the Authority is planning to undertake biophysical, socio-economic and cultural data collection and stakeholders' engagements/ public consultation exercise along the proposed road alignment from 5<sup>th</sup> to 9<sup>th</sup> February, 2024.

You have been identified as one of the key stakeholders to be consulted during the exercise and we therefore invite you and request you for a meeting with other key stakeholders including area Members of Parliament at your office on **Monday 5<sup>th</sup> February 2024 at 2.00 pm**. The public consultation will be carried out in the various sub-counties along the proposed project area under the guidance of the respective Deputy County Commissioners.

For further clarification or information, our contact person is Ms. Patricia Agula -Senior Sociologist, who can be contacted via Tel: +254723729384 or Email: [p.agula@kenha.co.ke](mailto:p.agula@kenha.co.ke).

Yours *Faithfully*

*[Signature]*  
**Eng. Njuguna Gatitu**  
**FOR: DIRECTOR GENERAL**



**Kenya National Highways Authority**

Quality Highways, Better Connections

Barakara Plaza, Block A & C, Jomo Kenyatta International Airport (JKIA), Off Airport South Road, along Mazao Road,  
P.O. Box 49712 - 00100 Nairobi Tel: 020 - 4954000 / 0700 423 600 Email: dg@kenha.co.ke / Website: www.kenha.co.ke**OFFICE OF THE DIRECTOR GENERAL**

Ref: KeNHA/04.E/GEN/VOL.10/99

Date: 8<sup>th</sup> January, 2024**Hon. Timothy Kipehumba Toroitich**

Member of Parliament

Marakwet West

P.O. Box 41842 00100

**NAIROBI**

Dear Sir,

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The above subject refers.

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You have been identified as one of the key stakeholders to be consulted during the exercise and we therefore invite you for a meeting at the County Commissioner's office on **Monday 5<sup>th</sup> February 2024 at 2.00 pm.**

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Yours

*Faithfully***Eng. Njuguna Gatitu****FOR: DIRECTOR GENERAL**



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Ref: KeNHA/04.E/GEN/VOL.10/97

Date: 8<sup>th</sup> January, 2024

H.E Wisley Rotich  
Governor  
Elgeyo Marakwet County  
P.O. Box 220-30700

**ITEN**

Dear Sir,

**IN-HOUSE DESIGN OF BIRETWO –ARROR – CHESONGOCH (B126) ROAD**

The above subject refers.

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In light of this, the Authority is planning to undertake biophysical, socio-economic and cultural data collection and stakeholders' engagements/ public consultation exercise along the proposed road alignment from 5<sup>th</sup> to 9<sup>th</sup> February, 2024.

Therefore, we invite and request for a meeting with you and your Technical Officers at your office on **Monday 5<sup>th</sup> February, 2024 at 10:00 am.**

For further clarification or information, our contact person is Ms. Patricia Agula -Senior Sociologist, who can be contacted via Tel: +254723729384 or Email: [p.agula@kenha.co.ke](mailto:p.agula@kenha.co.ke).

Yours

Eng. Njuguna Gatitu

**FOR: DIRECTOR GENERAL**

Copy to:

County Executive Committee Member  
Public Works, Transport and Energy  
Elgeyo Marakwet County  
**ITEN**

County Executive Committee Member  
Land, Physical Planning, Housing and Urban Development  
Elgeyo Marakwet County  
**ITEN**

## **18 ANNEX 6: CSR PROPOSALS FROM THE COUNTY GOVERNMENT AND BIRETWO BUSINESS COMMUNITY**

### **1. Enhancement of Educational Institutions**

- Upgrading schools situated along the project route.
- Provision of scholarships for needy students to promote education accessibility.
- Specific support for Queen of Peace Secondary School, including:
  - Dumping material and grading of the playground.
  - Construction of a dormitory for female students.
  - Scholarships for female students.

### **2. Health Facility Improvements**

- Equipping and enhancing the Chegilet Health Center to improve healthcare access and services.

### **3. Market Development**

- Improvement of existing markets, with a specific focus on Kabulwo market, to boost local economic activity.

### **4. Community Support Initiatives**

- Emphasis on projects that promote holistic community development, reflecting the community's priorities and commitment to peace and progress.
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## **19 ANNEX 7: ATTENDANCE SHEET**

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## **20 ANNEX 7: EXPERT LICENSE**

## **21 ANNEX 8: SAMPLE QUESTIONNAIRE**