REPUBLIC OF SOUTH SUDAN
MINISTRY OF ROADS AND BRIDGES

Environmental and Social Impact Assessment (ESIA) for the Upgrading of Juba - Torit - Kapoeta - Nadapal Road (354.05Km) to Paved (Asphalt) Standard

ESIA REPORT

November 2024

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	REVISION RECORD SHEET						
	This page is a record of all revisions, if any, made to the attached document. The revisions are listed under "Revisions/Changes". The revisions are part of the document and override the corresponding parts of the original document.						
	Revisions/Changes:						
	Original Issue **Remarks:** ESIA Report. Revised-Incorporating World Bank Review Comments.						
Client:	Ministry of Roads and Bridges						
Project:	South Sudan Connectivity for Growth Project (SS-CFGP) Consulting Services for the Environmental and Social Impact Assessment (ESIA) for the Upgrading of Juba - Torit - Kapoeta – Nadapal Road (354.05Km) to Paved (Asphalt) Standard.						
Document Title:	ESIA Report						
Doc. No.	6000057-H-EIA-002		**Date**	**Originated**	**Checked**	**Reviewed**	**Approved**
Revisions	Entire Document	000	14.10.2024	TOO/RNN	TOO	LKN	MKG
	Client Comments	001	25.10.2024	TOO/RNN	TOO	LKN	MKG
	WB Comments	002	02.12.2024	TOO	LKN	MKG	MKG

Note: This page and all its contents are NOT part of the document.

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List of Abbreviations

AC	Asphalt Concrete
AIDS	Acquired immune deficiency syndrome
BBJL	Boma Badingilo Jonglei Landscape
CFGP	Connectivity for Growth Project
CITES	Convention on International Trade in Endangered Species
CO	Carbon Monoxide
CPC	Concrete Pipe Culverts
CSOs	Civil Society Organizations
CSR	Corporate Social Responsibility
dB(A)	decibels measured on 'A' weighting
EES	Eastern Equatoria State
EHS	Environmental Health and safety
EHSG	Environment Health and Safety Guidelines
EIAs	Environmental Impact Assessments
EP	Emergency Plan
EP's	Emergency Plans
ESCP	Environmental and Social Commitment Plan
ESF	Environmental and Social Framework
ESHSG	World Bank Environmental Health and Safety Guidelines
ESIA	Environmental Social Impact Assessment
ESMP	Environmental and Social Management Plan
ESS	Environmental and Social Standards
FGD	Focused Group Discussions
GBV	Gender-Based Violence
GIIP	Good International Industry Practices
GM	Grievance Mechanism
GOSS	Government of South Sudan
GRC	Grievance Redress Committee
GRSS	Government of the Republic of South Sudan
Ha	hectares
HCU	health care unit
HHEA	Howard Humphreys East Africa
HIRA	Hazard Identification, Risk Assessment
HIV	Human Immunodeficiency Virus
HSP	Health and Safety Plan
IBA	Important Bird Area
IDA	International Development Association
IPF	Investment Project Financing

JSA	Job Safety Analysis
KBAs	Key Biodiversity Areas
KII	Key Informant Interviews
LAPSSET	Lamu Port South Sudan Ethiopia Transport
LHS	Left Hand Side
MRB	Ministry of Roads and Bridges
MSDS	Material Safety Data Sheets
MWCT	Ministry of Wildlife Conservation and Tourism
NDS	National Development Strategy
NGO	Non-Governmental Organization
NO	nitrogen oxides
OHS	Occupational Health and Safety
OHSMP	Occupational Health and Safety Plan
PLWD	Persons Living with Disability
PM10	Particulate Matter 10
PPA	Project Preparation Advance
PPE	Personal protective equipment
RHS	Right Hand Side
ROW	Right of Way
RTGoNU	Revitalized Transitional Government of National Unity
SE	Supervising Engineer
SEA	Strategic Environmental Assessment
SEP	Stakeholder Engagement Plan
SPLA	Sudan People's Liberation Army
SS-CFGP	South Sudan - Connectivity for Growth Project
STIs	Sexually Transmitted Infections
UNESCO	United Nations Educational, Scientific and Cultural Organization
VDGs	Vulnerable and Disadvantaged Groups
WB	World Bank
WBG	World Bank Group

Glossary of Terms

Baseline surveys	Gathering of data to describe the existing socioeconomic, health, labour, cultural heritage, or any other variable considered relevant before project development
Biodiversity	A contraction of 'biological diversity'. In general, it describes the variety of life in the region, and specifically the total sum of the genes, species, habitats and ecosystems in a given environment.
Boundary	The line or region which distinguishes what is within a system from the wider environment around it.
Carbon Footprint	The annual amount of greenhouse gas emissions, mainly carbon dioxide, that result from the activities of an individual or a group of people, especially their use of energy and transport and consumption of goods and services. It is measured as the mass, in kilogrammes or tonnes per year, either of carbon dioxide emissions alone, or of the carbon dioxide equivalent effect of other greenhouse gas emissions.
Climate Change	A variation in climate, usually for longer than a decade. Often now used to mean changes in climate attributed to human activity that alters the composition of the atmosphere (the greenhouse effect).
Compliance	Compliance compares how well the processes of a company meet the legal requirements placed on the processes of an organization. For example, if a company must recycle all paper and metal in separate containers, and this occurs, the processes are compliant with the legislation.
Conformity/ Nonconformity	Conformity is the ability of a process output to satisfy the requirements it is desired to meet. In environmental management this refers to the requirements related to the environmental aspects of a process. Conformity is when the output meets the requirements, and inversely nonconformity is when the output fails to meet one or more requirements.
Consultation	Consultation is a two-way process of dialogue between the project and its stakeholders. Stakeholder consultation is about initiating and sustaining constructive external relationships over time.
Correction	When nonconformity occurs, there are steps taken to correct the immediate problem. If a document is incorrect, an update is done on the document. If a chemical spill happens it is cleaned up. This addresses the immediate problem but not the root cause.
Corrective Action	When a nonconformity occurs that is systemic in nature, or deals with significant environmental aspects, it is important to correct not only the immediate problem, but to find what the root cause of the problem is and correct it. The actions taken to correct the root cause of a problem are called a corrective action. For more information see Corrective and Preventive Actions to Support Environmental Management.
Cultural Heritage	Defined as resources with which people identify as a reflection and expression of their constantly evolving values, beliefs, knowledge and traditions.
Cumulative Impact	Cumulative effects, also referred to as cumulative environmental effects and cumulative impacts, can be defined as changes to the environment caused by the combined impact of past, present and future human activities and natural processes.
Direct Impact	Direct impacts are those that cause immediate and noticeable short-term changes to the environment as a result of direct interaction between an activity and any environmental component. This type of impact usually forms a cause and effect relationship thus is usually easy to detect and predict.

Ecology	A term coined by Ernst Haeckel in 1866 to describe the study of the relations of organisms to each other and their surroundings, which includes population dynamics, feeding interactions, competition between species, the availability of nutrients and energy flows through ecosystems. Patterns of distribution and succession, and human impacts are also studied.
Ecosystem	A community of organisms interacting with each other, as well as the environment in which they live and with which they also interact (e.g., a pond or forest).
Effectiveness	A comparison of the actual results and the planned activities. The effectiveness is how well the activities met the plan. These activities can be for any plan but are often used in an ISO 14001 EMS for assessing corrective action or the effects of training.
Environment	The surroundings of an organizations facility, including flora, fauna, people, air, water, land and natural resources that are accessible to interact with the organization.
Environmental Sustainability	The aspect of sustainable development that focuses on the stability of biological and earth systems, and on the maintenance of a healthy natural environment.
Environmental Aspect	Any element of the organization that can interact with the environment around it, either through the organizations activities, products or services. Some examples would be if you have a vented chemical area that causes air emissions, or the waste produced by your office area; see also Catalogue of environmental aspects.
Environmental & Social Impact Assessment	An assessment of the possible positive or negative impact that a proposed project may have on the environment, together consisting of the environmental, social and economic aspects.
Environmental Impact	Any change to the environment (positive or negative) brought on by the interactions of the project's environmental aspects, either wholly or in part. Impacts can include such things as how your processes use raw materials and natural resources or how your energy consumption can lead to environmental pollution due to the original energy creation.
Environmental Management System	An Environmental Management System, often called an EMS, is a set of internal rules which are defined by a collection of policies, processes, procedures and records. This system defines how a company will identify, monitor and control the interactions that it has with the environment around it.
Environmental Objectives & Targets	Environmental objectives and targets are specific goals designed to support the overall Environmental Policy and are specified for relevant employees and departments throughout the organization. One example of an objective and target would be for an office which might have an objective to reduce the use of paper in the office environment with a target of 75% reduction (plans to reduce may include such things as printing double sided and encouraging people to read on the computer rather than printing).
Environmental Performance	Environmental performance is the measurable results of the management of the environmental aspects in the environmental management system. For example, if you are measuring your air emissions from a smokestack, with a set expected level of chemical contaminants, the measured results can be acceptable to the limits or unacceptable.
Environmental Policy	The Environmental Policy is the overall goals, intentions and direction that the management of an organization has identified for the environmental management system.
Greenhouse Gas	Gases, including carbon dioxide, water vapour, methane and nitrous oxide that interact with infrared radiation and when present in the atmosphere have the effect of warming the global climate. Without naturally occurring greenhouse gases, the Earth's

	temperature would be several tens of degrees Celsius colder than it is now (and life would not have evolved in its current form).
Grievance Redress Mechanism	Procedure provided by a project to receive and facilitate resolution of affected communities' concerns and grievances about the project's environmental and social performance
Indicator	A characteristic of a system which is used as a measure for control.
Indigenous Peoples	Defined by the World Bank ESS7 as a distinct social and cultural group possessing the following characteristics in varying degrees: (a) Self-identification as members of a distinct indigenous social and cultural group and recognition of this identity by others; (b) Collective attachment to geographically distinct habitats, ancestral territories, or areas of seasonal use or occupation, as well as to the natural resources in these areas; (c) Customary cultural, economic, social, or political institutions that are distinct or separate from those of the mainstream society or culture; and (d) A distinct language or dialect, often different from the official language or languages of the country or region in which they reside
Indirect area of Influence	Includes area which may experience project related changes in combination with activities not under the direct control of the project
Indirect Impact	Indirect impacts on the environment are those which are not a direct result of the project, often produced away from or as a result of a complex impact pathway. The indirect impacts are also known as secondary impacts.
Information Disclosure	Disclosure means making information accessible to interested and affected parties (stakeholders). Communicating information in a manner that is understandable to stakeholders is an important first and ongoing step in the process of stakeholder engagement. Information should be disclosed in advance of all other engagement activities, from consultation and informed participation to negotiation and resolution of grievances. This will make engagement more constructive.
Livelihood	Full range of means that individuals, families, and communities utilize to make a living, such as wage-based income, agriculture, fishing, foraging, other natural resource-based livelihoods, petty trade, and bartering
Model	A model (noun) is a simplified representation of reality (e.g. a map, scale model, mental concept or mathematical equation), developed in order to understand or change the real world. To model (verb) is to use such a simplified representation of reality.
Natural Resources	The Earth's natural resources include physical resources (e.g. fossil fuels, mineral deposits, land and water) and biological resources (e.g. plants and animals). Resources can be defined as what the Earth can provide that humans consider economically or otherwise useful. Resources may also include human knowledge and labour. Resources are often classified into renewable and non-renewable resources depending on the timescale that they are renewed or regenerated.
Pollution	The introduction into the environment (air, water or land) of substances or energy liable to cause harm to human health, to other animals, to plants and ecosystems, damage to structure or amenity, or interfere with legitimate uses of the environment.
Prevention of Pollution:	One of the commitments of the environmental policy; prevention of pollution is what is done by an organization to reduce or control the creation, emission and discharge of any waste or pollutant related to the environmental aspects.
Preventive Action:	A preventive action takes the same steps as a corrective action in correcting the root cause of a problem. However, it does so when the problem is identified before it has occurred as nonconformity.
Procedure	The way that is specified to perform an activity or process. A procedure is a list of steps to take to make a process work properly but need not be documented unless required.

	Some procedures that may be required for an EMS could include a procedure on how you identify and maintain access to your legal requirements or a procedure for how you will prepare for and respond to a fire emergency to avoid or reduce negative environmental impacts.
Risk	The result of uncertainty, or the chance that an event will occur. Assessing what to do with a risk involves predicting the resulting outcome of the potential event and deciding what to do about it should it occur. In terms of environmental management this could mean assessing the chance that you will have a chemical spill, assessing how environmentally damaging the spill could be (this could depend on the chemical involved), and having a plan to deal with it should it happen.
Stakeholders	Stakeholders are persons or groups who are directly or indirectly affected by a project, as well as those who may have interests in a project or the ability to influence its outcome, either positively or negatively
Urbanization	The movement of people from the countryside to the towns and cities.

Executive Summary

E.1 Study Brief

The Government of the Republic of South Sudan (GRSS) has received funding from the International Development Association (IDA) in the form of a Project Preparation Advance (PPA) and has utilized part of the funds for the Environmental and Social Impact Assessment (ESIA) study for upgrading of the Juba–Torit–Kapoeta–Nadapal road from gravel to paved (bitumen) standard.

This project, a priority in the National Development Strategy, will connect Juba with Kenya, enhancing regional connectivity and economic integration as part of the Lamu Port South Sudan Ethiopia Transport (LAPSSET) corridor. The upgrade is expected to foster sustainable growth, enhance livelihoods, and increase trade by addressing the current limitations of South Sudan's underdeveloped road infrastructure.

The road project is classified as high risk due to its magnitude, the ecosystems it crosses and the communities within which the project will be executed. The Environmental and Social Impact Assessment (ESIA) study evaluated the potential environmental and social impacts of the road project. It identified key risks related to physical, ecological, and human environments. The report is organized into sections covering project description, legal and policy framework, methodology, baseline conditions, stakeholder engagement, and description of impacts with recommendations for the project's sustainable implementation. It also presents the Environmental and Social Management Plan at a high level.

E. 2 Project Description

Project Location

The road, part of the international trunk road from Juba to the Nadapal checkpoint, extends approximately 354.05Km through Central and Eastern Equatoria states. The road connects to Kenya's ports and is a segment of the Lamu Port South Sudan Ethiopia Transport (LAPSSET) corridor. Initially, the road was to start at the old Nile Bridge but now excludes approximately 3.0km section (Rajaf to the Old Nile Bride) from the project, as it has been incorporated into the urban road network.

Project Design Considerations

The project design included a Feasibility Study and Detailed Design for upgrading the Nadapal-Juba Road. The works will be implemented in five lots.

Geometric Design

The road's geometric design follows Ministry of Transport and Roads (MTR's) Geometric Design Manual, upgrading it to paved standards with a carriageway width of 7.0m, shoulders of 1.5m, and additional design elements like footways and intermittent curbs in urban and semi-urban areas. The design requires 37 realignments along the road to meet geometric standards, with adjustments around rivers, bridges, and villages.

Pavement Design

The pavement design features asphalt concrete with a 50mm wearing course, a 200mm bituminous road base, and a 350mm natural gravel subbase. Shoulders are designed with double bituminous surface dressing, and walkways are paved with precast concrete tiles. The design also proposes various drainage structures, including twenty-three (23) bridges and numerous box and pipe culverts.

E.3 Legal, Institutional, and Policy Framework

Legal Framework

The legal framework for the ESIA is anchored in several key regulations from the Government of South Sudan:

- Transitional Constitution of the Republic of South Sudan, 2011 (Revised 2013): Ensures citizen participation in development, safeguards cultural heritage, and promotes gender equality.
- Local Government Act, 2009: Supports decentralization and local governance.
- Labour Act, 2017: Protects workers' rights and prevents discrimination.
- Child Act, 2008: Prohibits child labour.
- Draft South Sudan Environmental Protection Bill, 2023: Requires EIAs for projects impacting the environment.
- Draft South Sudan Forest Protection Bill, 2023: Regulates sustainable forest management and requires EIAs for extractive activities.

- Draft South Sudan Wildlife and Protected Areas Bill, 2023: Controls development in protected areas and mandates EIAs.

South Sudan National Biodiversity Strategy and Action Plan (2018-2027): advocates for a reduction in negative impacts while enhancing the positive impacts on biodiversity through facilitation, design and capacity enhancement for enforcement and compliance, for biodiversity regulations and incentive mechanisms.

- South Sudan Land Act, 2009: Requires EIAs for development affecting the environment.
- Penal Code Act, 2008: Includes penalties for environmental violations.
- Agreement on the Resolution of the Conflict in the Republic of South Sudan (ARCSS) deliberated on measures to restore permanent ceasefire towards democratic elections at the end of the Transitional Period.

Institutional Framework

The ESIA process was guided by:

- Ministry of Roads and Bridges (MRB): Oversees ESIA implementation and report approval.
- Ministry of Environment and Forestry (MoEF): Develops environmental policies and ensures regulatory compliance.
- Ministry of Gender, Child and Social Welfare: promotes gender equality and women's empowerment, social justice, and safe the rights and welfare of women, children, persons with disabilities and other vulnerable groups.
- Ministry of Land, Housing and Urban Development: responsible for land management and administration.
- Ministry of Labour, Public Service and Human Resource Development: responsible for labour laws, standards, and regulations.
- Ministry of Water Resources and Irrigation: responsible for water resources management and development.
- National Commission for Culture, Youth and Sport: responsible for promoting and preserving South Sudan's cultural heritage.
- State Ministries of Physical Infrastructure: Coordinate Road management and address local issues.

Policy Framework

Relevant policies include:

- World Bank's Environmental and Social Framework (ESF): the triggered and reviewed ESS Includes standards such as ESS1: Assessment and Management of Environmental and Social Risks and Impacts, ESS2: Labour and Working Conditions; ESS3: Resource Efficiency and Pollution Prevention and Management; ESS4: Community Health and Safety; ESS5: Land Acquisition, Restrictions on Land Use and Involuntary Resettlement; ESS6: Biodiversity Conservation and Sustainable Management of Living Natural Resources; ESS7: Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities; ESS8: Cultural Heritage and ESS10: Stakeholder Engagement and Information.
- World Bank Group Gender Strategy 2024-2030: Promotes gender equality and inclusion.
- World Bank Good Practice Note on Addressing Sexual Exploitation and Abuse and Sexual Harassment in Investment Project Finance involving Major Civil Works.
- World Bank group Environmental Health and Safety Guidelines.
- South Sudan National Environment Policy 2015–2025: Guides environmental management and upholds community rights.
- South Sudan National Land Policy 2023: Promotes land access equity and participation.
- South Sudan Forest Policy: Provides for forest conservation and management.
- Wildlife Conservation Policy, 2012: provides for sustainable management and utilization of natural resources, through protection, conservation and propagation of wildlife species and their habitats.

E.4 Approach and Methodology

The ESIA process integrated field-based baseline surveys, stakeholder engagements, and data analysis. This was achieved through a series of structured tasks aimed at gathering comprehensive data, engaging stakeholders, and identifying potential environmental and social risks and impacts.

A multidisciplinary team of experts was mobilized and briefed on project objectives. A preliminary desk study reviewed existing information, including literature and policies, while a reconnaissance site visit from 29 July

2024 to 2 August 2024, allowed for direct observation of the project area and refinement of the assessment scope. A detailed field assessment was undertaken between 2nd and 13th September 2024.

E.5 Baseline Conditions

Physical Environment

The project area physical environment is summarised below.

- Climate: The project area in Eastern Equatoria State features a tropical wet and dry climate, with 400mm of annual rainfall, ranging from 300mm in the east to 1000mm in the west. The dry season is from January to April, with temperatures averaging 23°C to 27°C.
- Topography: The terrain varies from undulating in Nadapal to flat plains around Torit, with volcanic outcrops and elevation ranging from 460 to 741 meters. The road intersects several streams and rivers.
- Geology and Soils: Geology includes a mix of metamorphic, igneous, and sedimentary rocks, with gold-bearing and limestone formations. The area features both ancient and newer geological formations.
- Water and Hydrology: Numerous seasonal streams and rivers flow north-eastward towards the Nile. Wetlands are crucial for dry-season agriculture, and water bodies support local communities.
- Landscape and Visual: The area lacks significant tourist activity but has potential, particularly with the road's completion. Scenic views are provided by the hilly Imatong Ranges and Lopit Hills.
- Noise and Vibration: Rural areas experience low noise levels, with higher noise near Juba, Torit, and Kapoeta. Sensitive receptors include schools and health facilities.
- Air Quality: Generally high due to rural conditions, with occasional impacts from traffic and dust. Sensitive receptors are located near the road.
- Environmental Sensitive Areas: Wetlands and the Kidepo and Badingilo game parks are critical for agriculture, grazing, and wildlife conservation.

Biological Environment

South Sudan has a rich biodiversity, supported by its diverse ecosystems. Biological baseline data was obtained through desk study and field ecological survey. Flora: the most dominant species with a wide distribution all along the road include: *Sclerocarya birrea, Tamarindus indica, Kigelia africana, Harissonia abyssinica, Flueggea virosa, Dichrostachys cinerea, Combretum collinum, Balanites pedicillaris, Piliostigma* thonningii, Grewia villosa and Ziziphus abyssinica. In all these zones, grasses were found including Panicum, Digitaria, Hyparrhenia, etc. Two invasive species were noted: water hyacinth (*Eicchonia crassipes*) in the wetland at Torit and mesquite (*Prosopis juliflora*) along the road reserve from Nadapal to Kapoeta.

Fauna: the project area is likely rich in wildlife considering that the road crosses Kidepo Game Reserve to the east and the migration corridor of a range of ungulates that move between Badingilo National Reserve towards the River Nile to the west. Very few were observed along the road corridor, even at the famous Kidepo Valley Game Reserve. Only at the Lowoyakali stream baboons were seen (but they took off for fear). Along the way from Rajaf east in Juba County, squirrels and snakes were observed, and Rajaf east mountain is known to have hosted significant population of monkeys and baboons.

Socio-Economic Environment

The overall general socio-economic baseline environment is summarized below.

- Water Use/Sources: Water sources include rivers and boreholes, often inadequate and unsafe, with limited infrastructure investment.
- Land Use and Land Cover: Land use includes light industry near Juba, small-scale farming near Torit, and pastoralism near Kapoeta and Nadapal. The Toposa community predominantly occupies the area between Kapoeta and Nadapal.
- Land Tenure: Land tenure systems include customary, freehold, and leasehold. Communal ownership is common in rural areas.
- Demography and Ethnicity: The area is diverse, with Nilotic and Nilo-Hamite ethnic groups. Arabic is widely spoken, and ethnic tensions are present.
- Livelihood Activities: Agro-pastoral activities dominate, with crop farming, livestock rearing, and supplementary activities like charcoal burning and firewood collection.
- Education Sector: The sector is underdeveloped with low enrolment, poor school conditions, low completion rate and instability due to conflict.
- Community Health: Health facilities are scarce, with reliance on traditional medicine and poor sanitation leading to health issues.

- Settlement Pattern: Settlements are communal, often near army camps due to insecurity. There are 30 settlements along the road.
- Housing: Traditional grass-thatched mud huts are common. Improved roads could facilitate access to larger markets for housing materials.
- Vulnerable and Disadvantaged Groups: VDGs include the elderly, widows, orphans, and people with disabilities, with increased begging among children in towns.
- Road Traffic and Safety: The existing road has issues such as narrow widths, poor drainage, and dilapidated bridges, posing safety risks, especially during river crossings.

E.6 Stakeholder Engagement Plan

The Stakeholder Engagement Plan (SEP) for the ESIA study was designed to ensure the inclusion, consultation, and active participation of all relevant and affected groups, particularly vulnerable populations, throughout the project's lifecycle. The plan aimed to foster informed decision-making, build support, manage risks, and ensure project sustainability by adhering to principles such as inclusivity, cultural appropriateness, and continuous engagement. Key components include:

- Purpose: Obtain and incorporate the views of stakeholders, fostering a sense of ownership and ensuring that concerns are addressed during the project design and implementation.
- Principles: The engagement will be exhaustive, culturally appropriate, inclusive, continuous, just, and well-documented.
- Objectives: The SEP outlines how stakeholders will interact during the project's design phase, identifying key stakeholders, effective communication methods, and grievance mechanisms.
- Stakeholder Identification and Mapping: Stakeholders are categorized as project-affected parties (the affected or likely to be affected by the project) and other interested parties (those who may have an interest in the project).
- Consultation Methods: Various methods such as Key Informant Interviews, Focused Group Discussions, Public Meetings, and Socio-Economic Surveys will be employed to gather stakeholder input.
- Grievance Mechanism: A structured grievance mechanism is provided to ensure that stakeholders have channels to express concerns and receive timely responses.

The SEP's ultimate goal was to facilitate a transparent, inclusive, and responsive process that supports the project's success and minimizes potential conflicts or issues.

E.7 Potential Positive Impacts

Several benefits are envisaged to accrue from the road project. The most important being spurring socio – economic development hence improved livelihoods within the region. The project will also enhance the regional economy and the national economy in general through increased flow of goods and services, especially exports to major markets like Juba. Other benefits include improvement of access to social transport facilities with significant gains on road safety, improved drainage, enabling better interventions during food shortages and conflicts, rapid security response in the event of inter-ethnic hostilities, employment creation among others. Ultimately such gains would contribute to poverty alleviation.

Another significant positive environmental impact is the opportunity to design a climate resilient infrastructure that retains the integrity of the numerous wetlands in the project area. Furthermore, climate resilient design should provide for drainage structures that factors future changes in hydrology to improve the drainage across the project road and integration of soil erosion control structures in erosion prone areas.

E.8 Potential Negative Impacts

There are potentially negative impacts of different magnitudes anticipated on the biophysical environment and social conditions. The most notable is the potential impacts on wildlife movements especially the well-established wildlife migration corridors intersecting the project road. It is also estimated that the realignments and the new bypasses, totaling some 68km could take up some 100Ha of woodlands. Although, the loss may not significantly affect ecosystem services being offered by the woodlands since the woodlands are vast, it can, however have significant localized impact. It is proposed that the vegetation loss should be mitigated by compensatory tree planting in an area three times the loss, equivalent to 300Ha. preferably in community land within a highly degraded area of the woodlands.

The most important potential social impacts relate to land acquisition with attendant compensation issues, temporary disruption and displacement of small-scale informal traders along sections of the corridor through markets and urban centres; temporary and permanent take of agricultural land and livestock grazing areas;

disruption and inconveniences to people occasioned by construction traffic and use of diversions. Others are labour issues occasioned by historical hostilities between communities, public safety and communicable diseases. All these social impacts can be effectively avoided or mitigated effectively through social tools that have been developed for the project including GRM, SEP and proactive planning including prompt compensation of the project affected persons (PAPs). The main anticipated impacts from project implementation are presented in Table E-1.

Table E - 1: Key Anticipated Adverse Impacts

Impact Rating	Aspect	Impact
MAJOR (HIGH)	Biodiversity	▪ Uptake of about 100Ha of woodlands to enable road re-alignments and bypasses (*See Section 7.4.8 explanatory notes on the basis for hectarage*). ▪ Construction activities and the road itself can be a barrier to wildlife movements / migration points along the road. ▪ Road kills (terrestrial fauna) attributable to increased/high speeds on improved road. ▪ The road will accord better access to markets for charcoal and firewood thereby enhancing over-exploitation of vegetation resources and possibly hunting for game meat that are already being sold in the local markets. ▪ Potential increase in risk of wildlife poaching and trade in game meat (reported incidents in the project area). ▪ Potential loss of avifauna habitats leading to displacement/ forcing birds to relocate and disruption in usual stopover sites for migratory species.
MAJOR (HIGH)	Social conflicts	▪ Conflicts related to employment of workers from migrant communities ▪ Possible new conflicts around water resource sharing with the Contractor. ▪ Improved public transport system can potentially increase child abductions especially of girls for early marriage from Kakuma camp in Kenya. The road will lead to faster and more movement of people in the project area. Although the formal border crossing is manned the greater part of the border will remain unmanned and porous. ▪ Increased population concentration along the road corridor as well as increased inter-ethnic movement along the road which could potentially result in inter-ethnic conflicts. ▪ Influx of migrant workers into the different road sections has potential for conflict with the host communities and increasing incidence of GBV/SEA/SH. ▪ Scope of gold mining is likely to increase between Kapoeta and Nadapal with the greatest concentration being within the vicinity of Napotpot settlement (presence of foreigners), with more people likely to enter the trade, and this is likely to create conflict as some people may lay claim to certain areas.
MODERATE (MEDIUM)	Soil Degradation	▪ Loss of topsoil associated with earthworks hence localized and gradual alterations of soil profile ▪ Land clearance leading to exposure to agents of erosion thus enhancing both sheet and gully erosion and eventual sedimentation of some river bodies
MODERATE (MEDIUM)	Water Resources	▪ Increased surface runoff and resulting soil erosion from channeled water ▪ Contamination of downstream surface water ▪ Water abstraction from communal water sources for construction could bring conflicts in the water scarce area
MODERATE (MEDIUM)	Land Use, Land Use Compatibility and Aesthetics	▪ Change of visual quality from enhanced use of the existing borrow pits and quarries and opening of new ones. ▪ Enhanced privatization of land and acquisition by immigrants seeking opportunities, in the long term may breed resentments from members of the wider communities.

		▪ Possible changes in land ownership from communal to private as well as enhanced propensity for land speculation. ▪ Spurred growth leading to new settlements as workers and businesses seek opportunities. This could result in increased land pressure and unsustainable development along the road corridor. ▪ Establishment of borrow pits for sourcing construction materials may result in further land loss.
MODERATE (MEDIUM)	Air Pollution	▪ Increased CO_2 emission from increased/ heavy use of fossil fuel along the road, compared to the current emission levels. ▪ Dust and/or smoke generation during works can directly affect workers and those living in the vicinity of such works (nuisance and health). ▪ Dust and exhaust emissions from construction activities may lead to stunted growth of crops along the road and natural vegetation from dust deposition. However, this could be insignificant in comparison to current condition and use of road and after upgrading.
MODERATE (MEDIUM)	Waste Management	▪ Reduction in aesthetics. ▪ Potential health risks due to improper disposal of waste and attract vermin and pests. ▪ Potential for contamination of water bodies.
MODERATE (MEDIUM)	Social Disturbance	▪ Impacts on commercial activities at local centres and pedestrian movements. ▪ Temporary disruptions to accesses and possible traffic congestion within centres.
MODERATE (MEDIUM)	Resettlement/ Disruption of Livelihoods	▪ The project intends to restrict the footprint to the current road corridor, however some realignments and/or borrow pits may be necessary which may require some private properties and businesses especially in urban centres to be acquired. ▪ Family disruptions and loss of livelihoods affected especially those in road wayleave or where road construction materials will be procured. Pasture may be destroyed affecting/ leading to loss of livelihood.
MINOR (LOW)	Noise and/or Excessive Vibration Above Ambient	▪ This is transient and highly localized to sites of active works. The project area is sparsely populated with settlements found in hamlets that are far from each other and towns and shopping centres. ▪ Use of plant and equipment, construction traffic, blasting at quarries and long-term vehicular noise near settlements and close to sensitive receptors could impact those within such areas or facilities.

Most of the environmental and social management measures proposed are generally straight forward and clearly outlined. Most of the measures relate directly to sound operating practices both during the construction phase and subsequently over the operational life of the road project. The Management Plans that have been developed can guide implementation of sound environmental and social practices to maximize the benefits of the project with minimal or no residual impacts on the project environment. A monitoring plan has also been provided in the ESMP to enable assessment of the environmental and social performance of the project. Therefore, if the project is implemented with due regard to the proposed mitigation measures it is anticipated that the project will have minimal residual negative impacts on both the socio-economic and biophysical project environment.

E.9 Recommendations

In order to assist both the engineering design team and MRB to develop a sustainable road, the following recommendations are proposed:

- The MRB should undertake a comprehensive assessment of properties to be acquired and livelihoods that may be affected and prepare a Resettlement Action Plan (RAP).
- Before any works begin and labour recruited, the MRB should establish a strong, inclusive and well facilitated worker's GRM to help with labour issues and a separate community GRM for other community concerns that may arise during construction.
- Adjust road drainage and pavement design to accommodate the expected > 10% increase in precipitation and run-off and 2°C temperature as predicted in the short-term climate change scenario.
- Review the high fills and deep cuts through settlements that serves as barriers to free movement of people e.g. Section through Nadapal has a fill of up to 3m while part of the road though Torit has a cut of up to 2m.
- Other high fills in fairly flat areas should be provided with relieve culverts even if there are no channels to avoid water ponding (flooding on one side of the road) Further such high fills should be provided with guardrails for safety of the road users, alternatively mild embankment slopes should be considered to allow for errant vehicles to recover and return to the roadway.
- The designs should include signage at the locations likely to be frequented by both domestic and wild animals crossing especially near known water points and other identified animal migratory corridors. Enforcement of this provision during construction is emphasised.
- The materials investigations have identified existing rock outcrops to be used as sources of aggregates. We suggest that this should be preserved, and alternative sources be identified.
- Establish speed humbling features that may include rumble strips at all wildlife crossing areas. These should be complemented by clear wildlife crossing signs.
- Maintain sufficient clearance at the wildlife crossing areas to improve driver visibility in order to reduce collisions with wildlife.
- Consider compensatory tree planting on some 300Ha of land within the project area. This could also act as carbon sink for emissions that will be associated with the operation phase.
- The truck rest stops should have basic facilities such as ablution, eateries and accommodation so as to avoid conflicts with the local communities.
- It is strongly recommended that the project considers social infrastructure components such as construction of schools, health facilities and markets. These social infrastructures will create the framework within which residents can enhance the locality-based community structure with opportunities for social and economic well-being. This in turn creates the foundation for a sustainable community.

It is also recommended that the proposed mitigation measures be implemented as far as practically possible and where necessary qualified personnel be contracted to offer specialized services including HIV and AIDS, GBV/SEAH awareness campaigns and Health and Safety training.

Additionally, the ESMP should be provided to personnel in charge of implementation for reference throughout the project life cycle.

1 Introduction

1.1 Project Background

The South Sudan National Development Strategy (NDS) acknowledges the role of the development of transport infrastructure and services as a paramount factor to stimulate sustainable growth and improve the livelihood of people. The Juba-Nadapal Road has been identified by the Government of the Republic of South Sudan (GOSS) since 2003 as one of the priority roads for investment to speed up post-war reconstruction, add support to development and reduce the cost of transit goods transport into the country coming from Kenya.

The Juba – Torit – Kapoeta – Nadapal road upgrading has been identified as one of the priority road links requiring upgrading from gravel to paved (bitumen) standard. The road is a regional road that connects South Sudan to neighbouring Kenya and potentially to Ethiopia. Nationally, the Juba - Nadapal Road section is an interstate road that links Juba, the Capital City with the Central and Eastern Equatoria states with a total length of approximately 354.05km of unpaved road.

The proposed Juba – Nadapal road upgrade is part of the major international trunk road starting from the Capital Juba to Nadapal checkpoint providing linkage to the Kenya's Ports of Mombasa and Lamu. The project is an extension of the 1,355 km long Mombasa-Nairobi-Lokichogio-Nadapal road and it is also part of the highway corridor of the Lamu Port South Sudan Ethiopia Transport (LAPSSET) corridor being part of the Lamu – Garissa – Isiolo - Lokichar – Nadapal - Torit - Juba (1,230km) Highway.

The GOSS has received funding from the International Development Association (IDA) in the form of a Project Preparation Advance (PPA) for the proposed South Sudan Connectivity for Growth Project (SS-CFGP) to expedite the project preparation process and support the initial capacity strengthening of the implementing agencies. The Government is applying part of the proceeds towards undertaking the Environmental and Social Assessment (ESIA) of the Juba-Torit-Kapoeta-Nadapal road upgrading to paved (Asphalt) standards.

1.2 Project Justification

The Republic of South Sudan was created on July 9, 2011, after a prolonged civil war. However, more conflicts persisted post-independence with renewed conflicts witnessed in December 2013 and July 2016. The transport sector has remained underdeveloped since independence where the national road networks are either gravel surface or earth roads with only about 1% of the countryside roads are paved. The roads are dilapidated and remain impassable particularly during the rainy season. The undeveloped roads are limiting economic growth and development in the country. They deprive the residents from enjoying social benefits as they have limited access to social, health and education services. The poor roads hinder an efficient connection of supply chains and movement of goods and services across borders.

Virtual connectivity is increasingly important today with the emergence of new communication avenues, but a good and a reliable transport network remains vital as it positively contributes to a country's economic development. The upgrading of the Juba-Torit-Kapoeta-Nadapal road is critical as it will make travelling easy, enhance trade and commerce in the region and promote development in South Sudan. However, as the road is improved, it needs to be done in an environmentally and socially sustainable manner to enhance the outcomes associated with its development. Since sustainability is an important consideration, there is need to undertake an ESIA Study during the planning phase to identify potential environmental and social impacts and risks and propose mitigation measures that will be adopted during the construction and operation phases.

1.3 ESIA Objectives

The **World Bank** classifies projects into one of the four categories. High Risk, Substantial Risk, Moderate Risk, or Low Risk. This classification is based on several factors, including the type, location, sensitivity and scale of the project, the nature and magnitude of potential environmental and social risks and impacts.

Given the scope and characteristics, the road upgrade project has been classified as **High Risk.** This classification is informed by the following considerations.

- The project involves the upgrade of a significant road corridor, which is a major infrastructure development with potentially extensive environmental and social impacts.

- The road alignment traverses environmentally sensitive areas, including the Kidepo Game Reserve and several permanent and seasonal rivers. These are critical environmental receptors that are vulnerable to degradation from construction and operational activities
- The project poses significant risks to biodiversity, water resources and local communities. Potential impacts include habitat loss, water contamination and socio-economic disruption.

This Environmental and Social Impact Assessment (ESIA) report has been prepared to identify significant linkages of the road to the environmental and social settings of the project area. This ESIA report will be used as a tool to enumerate the anticipated environmental & social risks and impacts and to evaluate their magnitudes. The report will also suggest mitigation measures for the identified negative impacts as well as generate an environmental management and monitoring plan which will inform the process of decision making on the project.

1.3.1 Specific Objectives

The specific objectives of the ESIA are.

- Describe the existing biophysical and socio – economic environment of the project.
- Identify anticipated impacts on the biological, physical and socio-economic project environments.
- Provide efficient and cost-effective measures to mitigate the anticipated impacts.
- Provide an analysis of project alternatives.
- Review the legislative, policy and administrative framework of the project and document a structured gap analysis to facilitate compliance to World Bank ESF and South Sudan Environmental Management Bill.
- Prepare an Environmental and Social Management Plan for the project to enable compliance with international standards including providing guidance for preparation of management plans.
- Develop an environmental and social monitoring plan that is compliant with international standards and clearly outlines the parameters to be monitored, key performance indicators and frequency of monitoring.

1.4 Scope of ESIA Study

The study covers the 354.05Km road pavement, drainage structures, soil erosion protection structures; and auxiliary road works including Weighbridge station, Truck and Rest Stops near the towns of Nadapal, Kapoeta and Torit, and Bus/Truck Bays.

The study has identified ES measures for other auxiliary works such as borrow pits, contractor's camps, material storage areas, spoil sites etc. to guide the preparation of site specific ESMP's. These shall be prepared by the selected contractor(s).

1.5 Approach and Methodology

The ESIA study adopted a collaborative approach between the consultant's team and client's team. The study entails the following home and field tasks:

- Preliminary desk study: initial review of relevant project documents to appreciate scope and key delivery approach.
- Recconnaisance visit: the consultant undertook the visit to the study area between 29 July 2024 to 2 August 2024. The objective was to engage with the client's project team, appreciate the project area, identify and conduct initial engagement with key potential stakeholders. The visit was attended by all the consultant's experts and the project manager. The client's representatives (Director Generals Offices, Procurement) and the Project Implementation Unit members participated in the visit. An opening meeting between consultant and client at the ministry offices preceded field visits along the road (Juba to Nadapal).
- Initial analysis and inception report: consultant undertook initial analysis of data and information from desk study and reconnaissance visit. This informed revised approach/ methodology, programme and initial findings. These were presented in the Inception Report.
- Scoping: the consultant undertook a scoping exercise to identify all key issues of concern to be addressed (extent of the environmental and socio-economic impact assessment to be carried out) in the study. This culminated in the preparation of the Scoping Report.

- Field Studies: the team undertake field studies from 2 to 13 September 2024 to complete detailed assessment entailing collection of environmental and socio-economic baseline data, stakeholder's consultation, measurements (noise & air quality) and collection of water samples.
- Analysis and Reporting: this entailed identification/prediction and analysis of potential environmental and social risks and impact, development of management and monitoring measures, preparation of ESIA Report including the ESMP and sub-plans.
- Brief Summary Dissemination and Workshop Presentations: presentation of study findings to client and key stakeholders and selected community meetings.

1.6 Study Team

The staff involved in undertaking the ESIA studies and their respective roles are provided in Table 1-1 below.

Table 1-1: ESIA Team

No.	Name of Staff	Position - Study Role
K-1	Tom Omenda	Team Leader
K-2	Prof. Jenesio Kinyamario	Environmental Specialist
K-3	Prof. Beneah Mutsotso	Social Specialist
K-4	Eng. Geoffrey Mwangi	Highway Engineer
S-1	Anne Rita Koki	Social Officer
S-2	Robert Ngunjiri	Environmental Officer
M-1	Lawrence Njue	Project Manager/ EHS Expert

The tasks for the above study team are presented in Appendix A-ToR.

1.7 Structure of ESIA Report

The structure of this ESIA Report is as follows:

E Executive Summary

1 Introduction

2 Project Description

3 Project Alternatives

4 Legal, Institutional and Policy Framework

5 Baseline Conditions

6 Stakeholders Engagement

7 Environmental & Social Impact Assessment

8 Climate Resilience

9 Environmental & Social Management Plan

10 Conclusion and Recommendations

References

Appendices

Appendix A – Terms of Reference for the ESIA Study

Appendix B – Consultation Records (*B.1: Key Informant Questionnaires; B.2: Socio-economic Survey Questionnaires; B.3: Minutes of Meetings*

Appendix C – Selected Field Photographs
Appendix D – Baseline Noise Report
Appendix E – Baseline Air Quality Report
Appendix F – Baseline Water Quality Report
Appendix G – Project Maps
Appendix H – Occupational Safety and Health Management Plan
Appendix I – Community Health and Safety Management Plan
Appendix J – Biodiversity Management Plan
Appendix K – Traffic Management Plan
Appendix L – Chance Find Procedures
Appendix N – Grievance Redress Mechanism

2 Project Description

2.1 Project Location

The proposed Juba – Nadapal road is part of the major international trunk road starting from the Capital Juba to the Nadapal checkpoint providing linkage to the Kenya's Ports of Mombasa and Lamu. The project is an extension of the 1,355 km long Mombasa-Nairobi-Lokichogio-Nadapal road and it is also part of the highway corridor of the Lamu Port South Sudan Ethiopia Transport (LAPSSET) corridor being part of the Lamu – Garissa- Isiolo- Lokichar – Nadapal -Torit- Juba (1,230Km) Highway.

The total length of the road is approximately 358.2 km of unpaved road and traverses through Central and Eastern Equatoria states as well as through several counties including Juba, Torit, Budi, Kapoeta South and Kapoeta East Counties.

The project starts at Rajaf at the junction of the Juba - Nimule Road and the road to Bor and it takes a South Easterly direction to Nesitu at the Junction with the road to Nimule - Border of South Sudan and Uganda, from Nesitu, the road takes an easterly/south easterly direction through several villages to Torit, from Torit the road takes a north easterly direction to Kapoeta before taking a South Easterly direction to end at the Nadapal checkpoint. Figure 2-1 shows the project location.

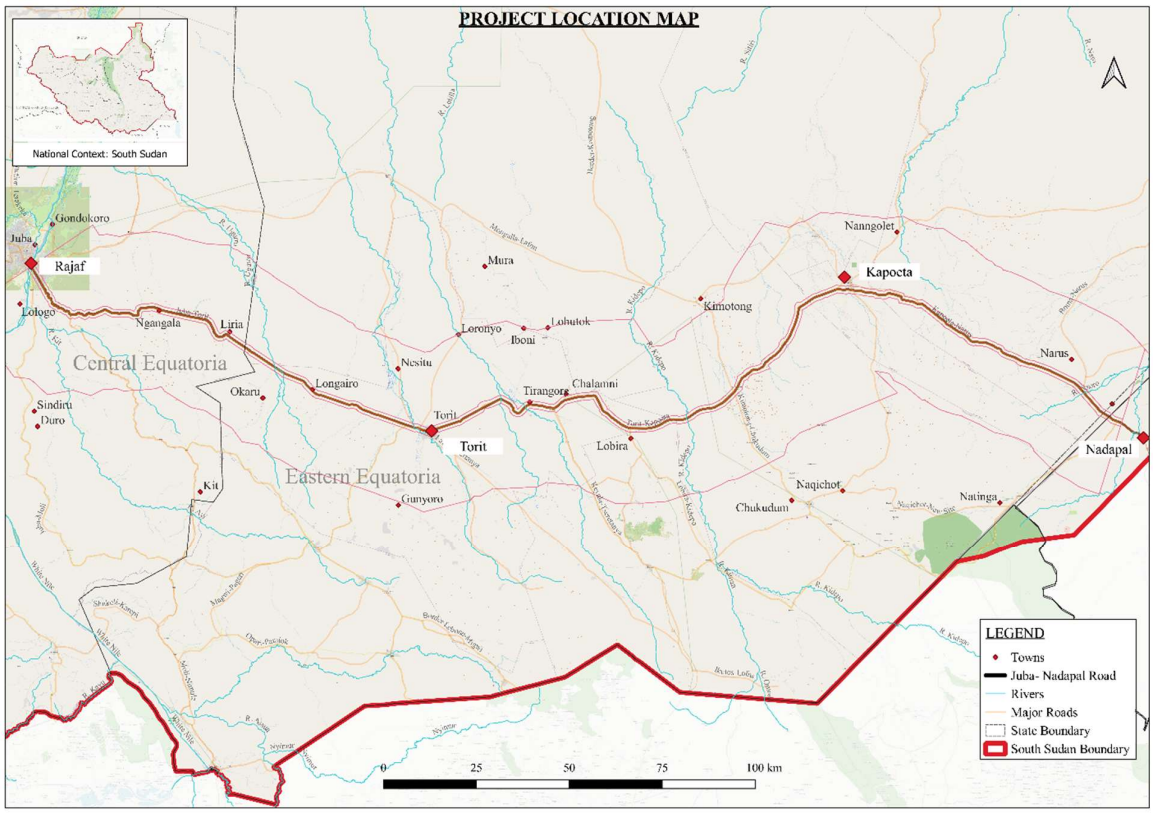


Figure 2-1: Project location map

2.2 Existing Road Condition

2.2.1 Geometry

The existing road geometry consists mainly of long straight sections only being interrupted by the occasional curves as the road changes direction and the occasional stream/ River crossing. There are however some sections that consists short and sharp curves especially where the road traverses through the hilly sections. The existing carriageway width ranges from as Narrow as 5.0m to as wide as 25m, the latter being where works to upgrade the road had started.

2.2.2 Pavement

The existing road consists of unpaved surface ranging from earth to gravelled surface, The section between Rajaf and Nesitu has gravel surfaced as well as a section that had been upgraded to bitumen standards as part of the Juba Nimule Road but is in a deteriorated state.

The section between Nesitu to Torit is gravel surfaced, the surface is understood to have been the subgrade layer of the works that had commenced to upgrade the road to bitumen standards that later stalled. Some of the sections are experiencing water ponding, formation of potholes as well as erosion of the edges.

The section between Torit to Nadapal consists of varying road conditions with some sections being gravel standards that is in fair conditions while others have poor conditions where the gravel has been worn out and stripped back to earth condition.

Some sections of the road have water ponding while others are in very poor state making them impassable during the rainy seasons.

2.2.3 Traffic and Road Safety

Traffic

The traffic along the road is currently very low, with only occasional vehicles along the road. The urban areas and their outskirts however have relatively higher traffic. The section near Juba specifically between Rajaf and Nesitu has moderate traffic, this can be attributed to the traffic along the busier route of Juba to Nimule with moderate volume of heavy goods vehicles.

River crossing along the road that consist of drifts poses a risk especially to heavy goods vehicles that occasionally get stuck in the sand in the riverbanks. The low volume along the better length of the project road means that vehicle related accidents are also minimum.

The construction of the project road will result in introduction of additional traffic both construction related as well as traffic that will be attracted to the route upon its improvement as well as traffic that will be generated by economic activities along the road corridor. This increased traffic will result in more interactions between the vehicles as well as between the vehicles and construction equipment and the communities across the settlements as well animal across the migratory corridors.

Road Safety

During the construction phase appropriate traffic management measures will be required to manage traffic through the works. Traffic safety awareness campaigns will require to be carried out for the local communities to sensitize then on the dangers and road use requirements both during construction and post construction.

The design should also ensure that appropriate traffic calming measures as well as signage are incorporated to improve on safety of all road users especially through the urban areas, the settlements and animal migratory corridors.

2.3 Project Design Considerations

The project design documentation consist of Feasibility study and Detailed Design for upgrading the Juba - Nadapal Road to bitumen standard. The length of the road is a total of 408.55km comprising of 354.05km of main road and 54.5km of town roads (34km in Torit and 20.5km in Kapoeta).

2.3.1 Geometric Design

Geometric Design Standards used for design were those given in MTR's Geometric Design Manual. The designs proposed for the road envisions the road being upgraded to bitumen standard. The road design components are envisioned to include the following

Cross sections:

Nadapal - Juba road is DS3. Being upgraded to paved standards, the following requirements on road cross sections were selected:

- Carriageway: 7.0m i.e. 3.5m each lane
- Shoulders:
    - 1.5m (Flat to Rolling Terrain in Rural areas).
    - 2.0m (through semi towns and villages)
- Parking Lane: 3.5m (Town Sections)
- Footway: 2.5m (Town Sections)

- Normal Crossfall 2.5%

Additional elements have been introduced to cater for other needs encountered during the design. These are:

- Additional Un-surfaced Shoulders: 0.5m (each side).
- Footway: 2.0m (each side). This is designed to serve pedestrians in the outskirts of town. (semi town)
- Intermittent Kerb: 0.2m (each side). This is designed to serve the purpose of separating pedestrian from traffic in Urban& Semi-Urban areas.

Figure 2-2 shows typical cross sections for the proposed road.

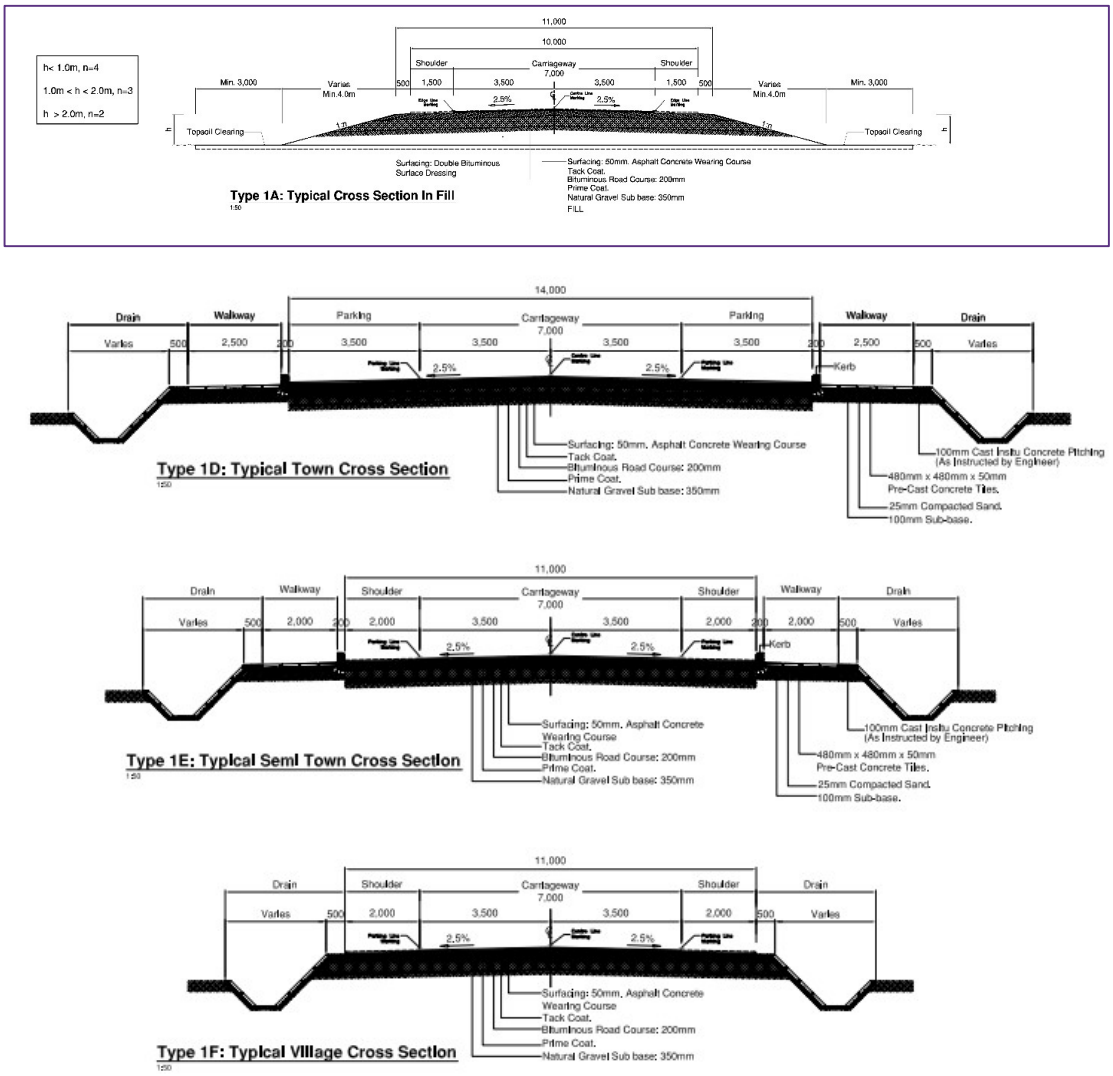


Figure 2-2: Typical cross sections proposed for the road

Horizonal Alignment:

The geometric design standards adopted produced approximately thirty-seven (37) locations where the new road centreline realigns the existing road alignment in order to achieve the geometric standards.

To meet the specified geometric standards, the re-alignments detailed in Table 2-1 overleaf are necessary. These re-alignments cover a variety of places near existing rivers, bridge sites, existing villages and some other areas where present alignments are unsatisfactory.

Table 2-1: Proposed Realignments along the Road

Item No.	Location	Description
1	Km 37+000 to 37+950	This approximately 950m long re-alignment with a maximum offset of about 160 m from centreline of the existing road.
2	KM 41+000 to 44+000	This is approximately 3000m long re- alignment forming a bypass around Ngangala with an offset of about 400m form the centreline of the exiting road.
3	Km 53+200 to 55+000	This approximately 1,800m long re-alignment with a maximum offset of about 75 m from centreline of the existing road.
4	Km 70+200 to 71+300	This approximately 1,500m long re-alignment with a maximum offset of about 115 m from centreline of the existing road.
5	Km 121+850 to 129+750	This a proposed bypass around Torit town
6	Km 123+200 to 126+850 (Torit)	Torit is the largest town in this project. Being urban design, three roundabouts have been proposed at the following locations: ▪ Km 125+600 ▪ Km 126+000 ▪ Km 126+850 The road passes through Torit where the existing road corridor is currently insufficient. MTR requirements is for a minimum Road corridor width of 50m, to achieve this and minimise the impact on the existing buildings and facilities, the design consultant made the following considerations. **Km 123+200 to Km 125+600 -** Road centreline shifted to the RHS to save properties on the LHS. Fewer properties are on the RHS compared to the LHS, which will be compensated. Among the affected properties on the RHS are prison, Catholic Church Torit Diocese, Church, a Memorial (gravestone) of a prominent personality is located on the LHS (Km 123+250) which was always going to be impossible to relocate. The provision of a standard roundabout will require the Police Station to be relocated. ***Km 125+600 to Km 126+000*** - Road centreline shifted to the LHS to save properties on the RHS. No properties are on the LHS except a basketball ground and viva cell telephone tower, which can be relocated. Note that Torit Hospital is on the RHS. The new alignment is designed to avoid the Hospital. However, few buildings for Hospital ie workshop & mortuary are affected due to the introduction of roundabout. ***Km 126+000 to Km 126+8500*** - Road centreline shifted to the LHS to save properties on the RHS. Few properties are on the LHS, which will be compensated.
7	Km 141+050 to 145+000	This approximately3,950m long re-alignment with a maximum offset of about 650m from centreline of the existing road. The new proposed alignment follows an old existing road (track), which is understood to have been abandoned due to mines. The realignment back to this track is envisaged to serve two purposes namely; it is an opportunity to de-mine the area and achieve a good alignment.
8	Km 152+900 to 154+100	This approximately 700m long re-alignment with a maximum offset of about 50 m from centreline of the existing road.

Item No.	Location	Description
9	Km 163+950 to 190+050	This approximately 700m long re-alignment with a maximum offset of about 75 m from centreline of the existing road. A bigger radius is also required to provide an acceptable junction design with the road going to Keyala Village.
10	Km 166+800 to 167+650	This approximately 850 m long re-alignment with a maximum offset of about 95 m from centreline of the existing road. A bigger radius is also required to provide an acceptable junction at a side road going to a village.
11	Km 171+050 to 171+500	This approximately 450m long re-alignment with a maximum offset of about 45 m from centreline of the existing road. The new design alignment will involve some rock excavation.
12	Km 175+550 to 176+200	This approximately 650m long re-alignment with a maximum offset of about 115 m from centreline of the existing road.
13	Km 178+350 to 181+000	This approximately 2,650m long re-alignment with a maximum offset of about 350 m from centreline of the existing road. The existing road passes very close to Rocky Mountains on the RHS. This creates very serious drainage problems along the road as water gushes down from hills. There is an existing rocky hill between the existing road and the proposed alignment. The new alignment is designed so that it just avoids this hill.
14	Km 217+400 to 218+500	This approximately 1,100m long re-alignment with a maximum offset of about 70m from centreline of the existing road. The realignment also allows the construction of anew bridge on the downstream side of the existing bridge needing replacement.
15	Km 218+950 to 219+800	This approximately 850m long re-alignment with a maximum offset of about 55 m from centreline of the existing road.
16	Km 221+100 to 222+100 (Camp 15)	This approximately 1,000m long re-alignment with a maximum offset of about 420 m from centreline of the existing road. It should be noted that this is a by-pass to Camp 15 village. Most of the existing houses in the village lie within the RoW and needed compensation to re-locate them away from an already poor alignment.
17	Km 222+550 to 224+100	This approximately 1,550m long re-alignment with a maximum offset of about 190 m from centreline of the existing road. The existing road zigzags around the new design alignment. There will be Rock excavation in this area in order to achieve good alignment.
18	Km 225+500 to 227+250	This approximately 1,750m long re-alignment with a maximum offset of about 330 m from centreline of the existing road.
19	Km 230+600 to 231+600	This approximately 1,000m long re-alignment with a maximum offset of about 220 m from centreline of the existing road.
20	Km 234+550 to 236+100	This approximately 1,550m long re-alignment with a maximum offset of about 130 m from centreline of the existing road.
21	Km 238+100 to 240+000	This approximately 1,900m long re-alignment with a maximum offset of about 405 m from centreline of the existing road.
22	Km 248+600 to 250+750	This approximately 2,150m long re-alignment with a maximum offset of about 390 m from centreline of the existing road.

Item No.	Location	Description
23	Km 251+950 to 253+100	This approximately 1,050m long re-alignment with a maximum offset of about 65 m from centreline of the existing road.
24	Km 255+600 to 259+000	This approximately 3,400m long re-alignment with a maximum offset of about 105 m from centreline of the existing road was recommended to comply with geometric design standard requirements. The existing road zigzags around the new design alignment.
25	Km 263+050 to 264+400	This approximately 1,350m long re-alignment with a maximum offset of about 200m from centreline of the existing road. A new very long bridge is required at Sighatta River. The alignment selected provides necessary stopping sight distance at the approach to the bridge.
26	Km 274+100 to 274+850	This approximately 750m long re-alignment with a maximum offset of about 55 m from centreline of the existing road.
27	Km 277+140 to 277+500	This approximately 360m long re-alignment with a maximum offset of about 70 m from centreline of the existing road.
28	Km 283+450 to 284+500	This approximately 1,050m long re-alignment with a maximum offset of about 135 m from centreline of the existing road.
29	Km 285+100 to 286+000	This approximately 900m long re-alignment with a maximum offset of about 60 m from centreline of the existing road.
30	Km 291+700 to 292+500	This approximately 1,600m long re-alignment with a maximum offset of about 90 m from centreline of the existing road. A new skewed structure will be required at Km 292+500
31	Km 293+350 to 294+100	This approximately 750m long re-alignment with a maximum offset of about 170 m from centreline of the existing road. River training works will be required at 293+900 where a new structure is proposed.
32	Km 297+200 to 298+800	This approximately 1,600m long re-alignment with a maximum offset of about 225 m from centreline of the existing road. The existing road zigzags around the new design alignment. River training works will be required at 297+000 where a new structure is proposed.
33	Km 301+250 to 302+850	This approximately 1,600m long re-alignment with a maximum offset of about 85 m from centreline of the existing road. The existing road zigzags around the new design alignment.
34	Km 305+500 to 306+150	This approximately 650m long re-alignment with a maximum offset of about 160 m from centreline of the existing road.
35	Km 308+600 to 309+650	This approximately 1,050m long re-alignment with a maximum offset of about 70 m from centreline of the existing road.
36	Km 313+400 to 314+000	This approximately 600m long re-alignment with a maximum offset of about 85 m from centreline of the existing road.
37	Km 316+000 to 317+800	This approximately 1,800m long re-alignment with a maximum offset of about 265 m from centreline of the existing road.

Item No.	Location	Description
		Realignment passes through a small hill which will be cut to provide much needed fill material for embankment instead of opening up new borrow pits.
38	Km 319+200 to 320+500	This approximately 1,250m long re-alignment with a maximum offset of about 65 m from centreline of the existing road.
39	Km 342+200 to 343+200	This approximately 1,000m long re-alignment with a maximum offset of about 220 m from centreline of the existing road.

2.3.2 Pavement Design

The pavement design for the project is proposed to consist of the following

Carriageway:

- Asphalt concrete Wearing - 50mm
- Bituminous Road Base - 200mm
- Natural gravel Subbase - 350mm

Shoulder:

- Double bituminous surface dressing - 19.0mm and 9.5mm chippings
- Bituminous Road Base - 200mm extended from carriageway
- Natural gravel Subbase - 350mm extended from carriageway

Walkway Pavement:

- Precast Concrete Tiles - 50mm on 25mm Sand bedding
- Natural Gravel Subbase - 100mm

The typical pavement cross section in fill and cut are illustrated in Figure 2-3 below

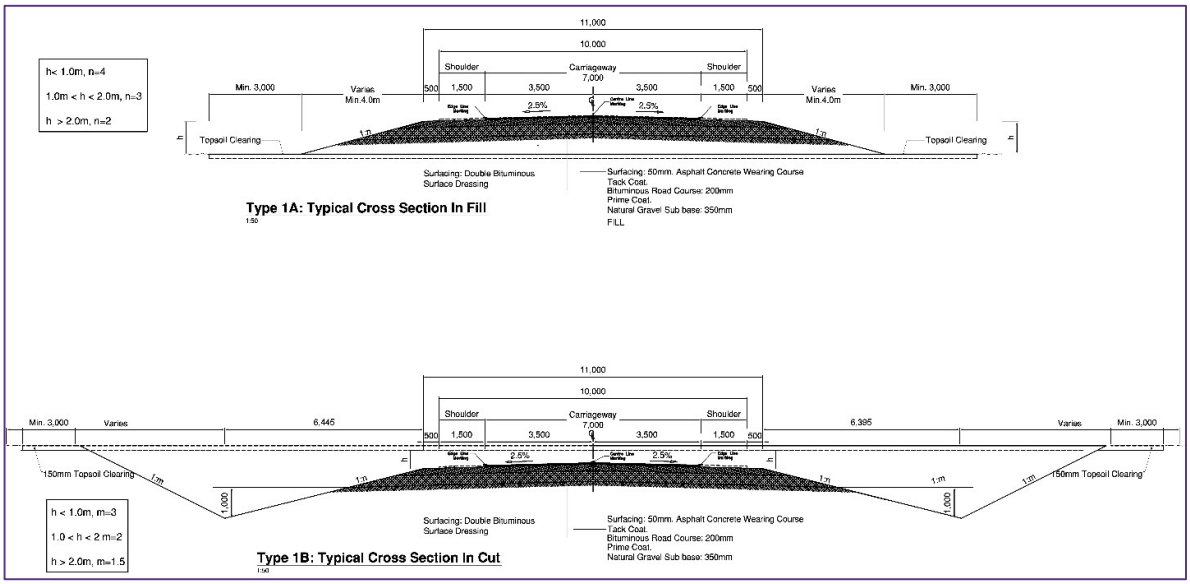


Figure 2-3: Typical pavement cross section in fill and cut section Proposed structures

2.3.3 Materials sources

The design process established numerous sources of the various construction material for the project. This includes quarries/outcrops, borrowpits, sand pits and water sources. The various sources are summarised in the following sections.

A total of forty two (42) borrow pits have been identified along the road at various locations, the borrow areas are quite expansive totalling approximately 400 Ha but shallow in depth.

Table 2-2: Proposed borrow pits

S/No	Chainage		Area (ha)	Depth (m)	Volume (m^3)	S/No	Chainage		Area (ha)	Depth (m)	Volume (m^3)
1	21+90	HS	9.00	0.70	52500	22	177+90	LHS	40.00	0.80	64000
2	30+83	LHS	9.00	0.60	64000	23	189+40	RHS	9.00	0.80	76800
3	36+83	RHS	9.00	0.60	106400	24	189+60	LHS	9.00		64000
4	43+83	LHS	9.00	0.80	48000	25	206+40	RHS	8.40	0.70	80000
5	45+83	LHS	8.00	0.80	52500	26	217+20	LHS	8.00	0.60	64000

S/No	Chainage		Area (ha)	Depth (m)	Volume (m^3)	S/No	Chainage		Area (ha)	Depth (m)	Volume (m^3)
6	50+83	LHS	8.00	0.70	70000	27	240+77	LHS	6.16	0.80	72000
7	66+83	RHS	8.00	0.70	80000	28	250+10	LHS	12.00	0.80	64000
8	74+83	LHS	9.00	0.70	63000	29	265+60	LHS	11.40	0.60	72000
9	93+50	RHS	8.37	0.60	60000	30	273+30	LHS	8.00	0.60	63000
10	93+50	LHS	9.00	0.80	48000	31	278+90	LHS	5.88	0.80	56000
11	97+83	LHS	8.00	0.80	54000	32	285+60	RHS	9.00	0.60	64000
12	104+83	RHS	8.00	0.70	47040	33	298+60	RHS	8.00	0.60	72000
13	104+83	LHS	9.00	0.70	48000	34	298+60	LHS	10.00	0.60	50220
14	105+83	RHS	9.00	0.80	68400	35	303+60	RHS	9.00	0.70	63000
15	105+83	LHS	8.00	0.80	96000	36	309+60	LHS	10.00	0.80	56000
16	118+83	LHS	9.00	0.80	49280	37	315+70	RHS	10.00	0.70	56000
17	127+60	RHS	8.00	0.80	48000	38	319+70	LHS	7.50	0.70	64000
18	137+60	RHS	10.0	0.80	58800	39	323+70	LHS	8.00	0.60	72000
19	137+60	LHS	8.00	0.80	72000	40	329+00	LHS	13.30	0.80	54000
20	148+50	RHS	9.60	0.80	72000	41	331+70	LHS	8.00	0.80	54000
21	160+40	RHS	8.00	0.80	320000	42	348+00	RHS	8+75	0+60	63000

Quarries/ Outcrops:

Nine (9) potential sources of aggregates for construction were identified along the road. These are mainly rock outcrops which were sampled to establish the suitability of rock as a source of aggregates for both pavement and concrete works for the road. The sources identified are summarised in Table 2-3.

Table 2-3: Proposed Quarries

S/No.	Chainage (Km)		Description of the findings
1	49+70		Outcrop, but mine danger.
2	69+10	LHS	Outcrop, 272m off-road. Large and wide Potential quarry site.
3	85+20	RHS	Outcrop, but mine danger.
4	166+75		outcrop, 60m off-road. Large & wide potential quarry Site.
5	177+80		outcrops, 50m off-road. Large and wide potential, quarry site.
6	221+66	RHS	outcrop at 1 km off-road. A Potential quarry site.
7	227+80	LHS	Outcrop at 100m off-road
8	285+60	RHS	Outcrop; 50m off-road,
9	330+40	LHS	Outcrop; 60m off-road

Sand Pits:

The design investigations identified eleven (11) possible sources of sand (fine aggregates) along the road. All the sources are at the numerous rivers traversed by the road, The sources are summarised in Table 2-4.

Table 2-4: Proposed Sources of Sand

Chainage (Km)	Description of the findings
46+400	Sand pit
105+604	Sand pit 02 at a Iyedo bridge
111+300	Sandpit 01, at both sides of road.
201+754	Kidepo bridge potential sand pit
218+300	Irish crossing; Sand pit 01 Available at Loriyok.
263+800	Irish crossing; at Singatta
284+200	Irish crossing; at Naronyi

302+500	Irish crossing; at Napotpot
316+500	Irish crossing; at Loyoro
335+900	River crossing; at Narus
342+600	Irish crossing; at Nakodok

Water for Construction:

The designs identifed a total of sixteen possible sources of water for construction. The sources comprises of both the rivers and streams traversed by the road as well as boreholes located at the various settlements along the road. Table 2-5 provides a summary of the proposed construction water sources.

Table 2-5: Proposed Sources of Water

Chainage (Km)	Description of the findings	
46+3		Borehole about 50m off-road
89+4		Borehole at the settlement about 50m off-road.
97+2		Borehole at the settlement.
117+13		Kineti river (Torit bridge)
162+4		Borehole, 10 m off-road
165+3		Borehole, 10m off-road
201+754		Water available - Kidepo
218+1		Borehole
218+3		Stream water at Irish crossing at Kugulu
255+8	RHS	Borehole at 35m off-road
303	LHS	Borehole at 100m off-road
316+5		Stream at Irish crossing at Anakanata
325	LHS	Borehole at 100m off-road
343+4		Water pan constructed by GTZ at 121m off-road
353+8		Borehole at 50m off-road Nadapal settlement; LabelL1BH 02
354		Borehole at 70m off-road Nadapal settlement; LabelL1BH01

NB: At all Irish crossing when sand is excavated, there is water below.

2.3.4 Proposed Drainage Structures

The design has proposed various drainage structures ranging from bridges to pipe culverts of varying sizes. A summary of the proposed structures are included here below:

Bridge

A total of twenty-three (23) bridges have been proposed of varying length and spans over the various major rivers. The bridges configurations vary from simple single span bridges to multiple spans bridges.

Table 2-6: Summary of the proposed Bridges

S/No.	Reference	Chainage (Km)	Spans
1	Kudo	78+5	2 x 18m
2	Iyedo	110+95	2 x 18m
3	Kineti	117+13	1 x 24m
4	Idolu	143+504	1 x 18m
5	Koss River	152+696	1 x 24m
6	Kidepo	201+754	2 x 18m
7	Khor Lomongoli	205+607	1 x 18m
8	Kolinimum	215+169	2 x 18m
9	Kugulu	218+266	2 x 18m
10	Locheriatum	229+207	1 x 24m

S/No.	Reference	Chainage (Km)	Spans
11	Lokadoka	237+564	2 x 18m
12	Atiro	248+315	1 x 12m
13	Khor Marchi	254+961	4 x 18m
14	Singalta	263+105	8 x 18m
15	Naronyi	283+92	3 x 18m
16	Khorjip Lobuyo	291+803	2 x 18m
17	Napotpot	302+449	2 x 18m
18	Anakanata	316+422	4 x 18m
19	Lomayen2	335+834	2 x 18m
20	Lomayen 1	342+203	2 x 18m
21	Nakodok	342+583	3 x 18m
22	Kabekangang	353+809	1 x 18m
23	*details not provided.		

Box Culverts

A total of 208 box culverts of varying sizes ranging from 2.5 x 1.2 to 5.0 x 2.5 either as single cells or multiple cells configuration have been proposed. Details are presented in Table 2-7.

Table 2-7: Summary of proposed Box Culverts

Type No	Type CBX	Dimensions No. x L x W	Type Totals
1	CBX	1 x 2.5 x 1.2	42
2	CBX	1 x 2.0 x 2.0	4
3	CBX	1 x 2.5 x 2.0	60
4	CBX	1 x 4.0 x 2.0	40
5	CBX	1 x 5.0 x 2.0	6
6	CBX	1 x 5.0 x 2.5	8
7	CBX	2 x 4.0 x 2.0	21
8	CBX	2 x 5.0 x 1.2	4
9	CBX	2 x 5.0 x 2.0	1
10	CBX	3 x 4.0 x 2.0	3
11	CBX	3 x 5.0 x 2.0	2
12	CBX	2 x 5.0 x 2.5	15
13	CBX	3 x 5.0 x 2.5	1
14	CBX	4 x 4.0 x 2.0	1
	Total		208

Pipe Culverts

A total of 306 pipe culverts have been proposed ranging from 900mm to 1200mm either as single or multiples cells, as shown in Table 2-8.

Table 2-8: Summary of proposed pipe culverts

Type No	Type	Dimensions Diameter (mm)	Type Totals
1	CPC	900	206
2	CPC	2x900	56
3	CPC	1200	44
	Total		308

2.3.5 Ancillary Roadworks

Ancillary Roadworks include the following:

- Major Town Roads at Torit (34km) & Kapoeta (20.5Km)
- Weighbridge Station at Narus
- Truck and Rest Stops near the towns of Nadapal, Kapoeta and Torit
- Bus/Truck Bays at various locations
- At-Grade Junctions at various locations
- Road Safety Items such as Safety Barriers
- Speed Management Items such as Gates, Speed Control Zones
- Road Furniture & Markings such as Traffic Signs, Road Markings, Marker Posts

Weigh Bridge

A weigh bridge is proposed near Narus to control loading along the road, this is proposed to be built at around Km 337+000, just before the township of Narus.

The weighbridge is proposed to include the following facilities;

- Office Building
- Weighing Machine on Separate Lanes
- Generator House
- Parking Area for Overloaded Trucks
- public toilet
- Accommodation Houses for Weighbridge Operators

It is proposed that, one of the Engineer's Facilities required during construction to be built at this location, which later will be used by Weighbridge Operators and MTR Offices.

It is proposed to include fencing of the whole area to enhance security.

Truck and Rest Stops

Truck and Rest Stops have been included in the design near the towns of Torit, Kapoeta and Nadapal to discourage parking of heavy truck in these towns. The following facilities are suggested as being desirable at a truck and rest stop:

- A secure paved parking area designed for long, heavy vehicles;
- A separate parking area for cars;
- A diesel pump;
- Basic overnight accommodation;
- A restaurant;
- Ablutions/ toilets; and
- A workshop.

Preliminary and General Items

Preliminary and General Items has been prepared to include or modify the following items in each construction LOT:

- Engineer's Camps, ownership to revert to the Client
- Provision Sum for providing Security by SPLA during construction.

Speed management

The designs have included elaborate speed management measures especially in the urban areas including but not limited to;

- Separate vulnerable road users from the motor traffic by providing footways and cycleways; and,
- Separate the local traffic from the through traffic by providing service roads.

Speed Management Principle

Through roads in trading centres and towns speed has been limited to 50 km/h or less. On the busier sections these speed limits must be reinforced by speed control measures. The speed management principles for main roads through built-up areas are summarised in Figure 2-4.

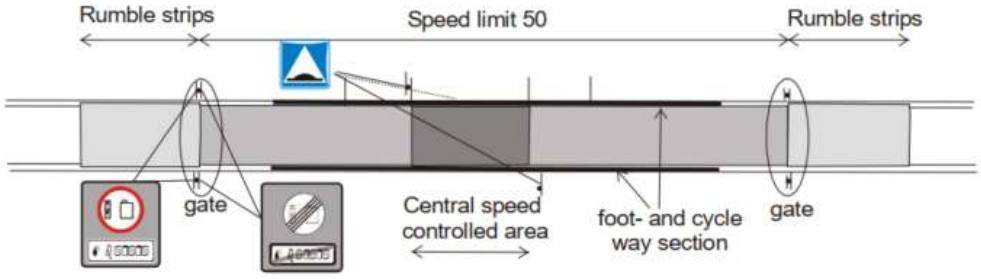


Figure 2-4: Speed management principles on 50km/h through road

The standard sequence is:

- rumble strips;
- gateway sign and gate;
- start of footways; and,
- speed controlled area – normally speed humps.

The gateway sign is double-sided and combines the speed limit sign with a panel showing the placename.

2.4 Auxiliary Facilities

Other project auxiliary facilities to be established during construction phase include: construction camps, temporary material storage areas, asphalt/concrete/other plants, spoil disposal sites, waste disposal sites, hazardous materials storage area, explosives storage area, access roads, detours among others. These shall be established by contractor(s) and the number, location/ citing etc will depend on factors such as project requirements, availability of space/ land suitable for such facilities etc.

The contractor will ensure citing and operation of these auxiliary facilities do not have adverse ES risks and impacts to the environment/ communities. The contractor shall ensure relevant and applicable approval by national authorities are obtained including preparation of site specific ESMP's based on guidelines in this ESIA study.

2.5 Construction Waste

The project implementation (construction & operation phases) will generate some solid and liquid waste comprising of general and hazardous categories.

- Liquid waste will be realized from camp sites (mainly accommodation and office facilities), road construction sites etc.
- Solid waste – from material/ equipment wrappings, food remains (organic) at camps, spoil, excess and/or damaged materials etc.
- Hazardous waste – from use, remain, spillage of hazardous substances such as cement including concrete washout, bitumen, silica etc.

Quantities generated will vary depending on material requirements (purchase), workers establishment, construction/ work methodologies among others. This study has identified measures to reduce ES risks and impacts including minimizing generation/ spillage, re-use, management & disposal measures etc.

2.6 Construction Machinery and Equipment

The expected machinery and equipment requirement to accomplish the construction works is presented in Table 2-9.

Table 2-9: Construction Machinery and Equipment

No.	Description	No. Required
1	Aggregate Crushing Plant min. 150t/h	1
2	Air Compressor and Rock Drill	5
3	Asphalt plant min. 100t/h	1
4	Asphalt paver, 2.5 to 4.5m paving width	1
5	Bitumen Distributor 4,000 litre	2
6	Bitumen Heating and Storage Tank	2
7	Self Propelled Chip Spreader	2
8	Pneumatic Tyred Roller 15 ton	4
9	Steel Wheel Roller 12 ton	4
10	Mechanical Broom	4
11	Bulldozer min. 150kW capacity with ripper	4
12	Motor Grader min. 150kW capacity	4
13	Excavator min. 130kW capacity	3
14	Front End Loader min 2.0m^3 capacity	4
15	Tipper Trucks min. 10t	20
16	Vibrating Roller 25t	4
17	Tandem Roller	1
18	Grid Roller/ Sheepsfoot roller min. 10ton, with tractor	2
19	Water Bowser Min. 12,000 litre	6
20	Concrete Batching Plant Min. 45m^3/h	1
21	Concrete Truck Mixer Min. 6m^3	2
22	Concrete Mixer 0.5 – 0.75 m^3	1
23	Truck Mounted Crane 30 ton	2
24	Flatbed Truck Min. 10ton	2
25	Diesel Generators 15 – 20 KVA	6

Source: Bidding Documents-Request for Bids Works, Nov 2024

2.7 Manpower Requirements

The project's man power requirement will depend on a number of factors including construction programme and modalities. The construction phase is planned in lots (section 2.9) and labour requirements will include skilled and non-skilled (Project manager (Site Agent); Deputy site Agent; Site Engineers; Office Administrators and assistants; Senior Foreman; Site Supervisors Earthworks; Site Supervisors Concrete works; Equipment Operators; Surveyors; Survey Assistants; Skilled labour; Casual Labourers etc.)

The contractor(s) will establish specific requirements. We estimate that each project lot will require a work force of 400 – 600 during the peak construction period.

2.8 Energy Use

The project will require energy for construction activities (powering machinery/ vehicles/ equipment) and establishments such as site offices, camps/ storage areas (lighting and powering appliances). Electricity will mainly be from fossil fuel (diesel) run generators as most sections of the road corridor is not connected to grid energy. Equipment and machinery will be from fossil fuel (petrol and diesel).

2.9 Construction Contract Modalities

The construction works will be executed on a slice and parcel basis in 5 lots as shown in Table 2-10. Each Lot is expected to be completed in 36 calendar months plus 12 months of defects liability.

Table 2-10: Project Lots

Lot No.	Distance (km)	Start (km)	End (km)	Remarks
1	82.00	0+000	82+000	Project starts in Juba
2	82.00	82+000	130+000	In addition are 34km of town roads in Torit
3	82.00	130+000	212+000	
4	82.50	212+000	274+000	In addition are 20.5km of town roads in Kapoeta
5	80.05	274+000	354+050	Project ends in Nadapal on the border with Kenya.
Total	**408.55**[1]			

Source: Bidding Documents-Request for Bids Works, Nov 2024

The above will be implemented through an admeasured contract based on the FIDIC Conditions of Contract for Construction, Red Book 2017. Ideally, a separate supervision Engineer shall be appointed for each Lot but similar to the construction contracts, a single provider may be awarded multiple Lots based on their demonstrated capacity.

[1] Total length of 408.55km comprises of road length of 354.05km and town roads in Torit and Kapoeta

3 Project Alternatives Analysis

The study considered the following alternatives for the project road:

3.1 The 'NO Action' Alternative

The "No Action" in respect to the proposed upgrading of the Juba-Nadapal Road implies that the status quo is maintained i.e. project will not be implemented. From an environmental and social perspective, the 'No Action' option would have the advantage of not interfering/disturbing any land or habitats, land acquisition among others. Other adverse impacts identified in this report would also be avoided.

On the flip-side, the project objectives and expected socio-economic benefits would not be realised. The all gravel road will persist to hamper trade, movement and access to services, particularly during the rainy season, when many sections of the road become impassable. This would continue to hinder economic growth, limit access to healthcare and education for local communities, and reduce regional trade opportunities. Moreover, deteriorating road conditions would result in higher vehicle emissions, increasing local air pollution, and exacerbating environmental degradation in the region. In light of these potential outcomes, the "No Project" alternative is not considered a viable option for the development and progress of South Sudan.

3.2 Upgrading of the Road

The Juba–Torit–Kapoeta–Nadapal road project is a critical infrastructure initiative aimed at improving transportation, facilitating trade, and promoting socio-economic development in South Sudan and the wider Eastern Africa region. Without this project, there would be no improvement in the current road conditions, which are severely underdeveloped and prone to damage, significantly limiting accessibility and regional connectivity. Currently, South Sudan's road infrastructure hampers trade, movement, and access to essential services, with poor road conditions leading to extended travel times, increased vehicle maintenance costs, and dangerous driving conditions.

Since road transport is the major form of transport in the region, upgrading the road to bitumen standards will enhance movement of goods and people. The project is largely on an existing alignment implying lower construction costs and lower environmental and social impacts compared to developing a new alignment. Upgrading of the road has the following potential implications:

- Relocation of people and demolition of structures; especially business premises on the proposed construction corridor.
- Increased traffic that will impact on the fauna, schools and residential dwellings
- The improvement will affect environmental features i.e. biological and physical features.

Upgrading of the road will enhance traffic flow, save travel time, reduce travel costs thus improving accessibility, enhance mobility and improve welfare. This is the most preferred option. To optimize this alternative clear traffic control sections will be established especially where the road passes through urban areas and other settlements. Animal caution signs will be erected at regular intervals all along the road where there are no specific crossing corridors across the road.

3.2.1 Geometric Design Alternative

New Alignment

One of the alternatives for the geometric design is establishing a complete new alignment on a green field corridor. This alternative would have no constrains in achieving the required geometry, impact on existing infrastructure and biodiversity sensitive areas as the route would be identifed in a manner that avoid all these constrains. However establish a new alignmnet would have major environmnetal and social impacts on the existing environment including major clearing of the vegatation, land acquisition and ressettlement of affected communities and disruption of the already established busisnesses and settlements along the existing road corridor. The impacts that would accompany this alternative makes it less attractive for consinderation as compared to utilising the existing route with improvements as required.

The feasibility/ engineering design reports have not presented alternative route/ alignment to the exixting road alignments. ……." *there are no alignment alternatives along the length of the road " No changes to the alignment either to reduce the road distance or bypass physical barriers, environmentally sensitive areas religious/cultural /natural heritage sites or human settlement have been deemed necessary*"……

This would havew provided basis for comparison on ES risks and impacts.

Existing Alignment

The geometric design of the road using the existing road without any realignments. However this would result in road sections that would not meet the design requirements of the envisaged road. This would in turn result in unsafe road sections with the attendant accidents and loss of lives. Further maintaining the existing road would result in some major existing infrastructure along the road being affected by the road works especially where the road passeses through urban centres. To minimise these impacts, there is need to realign the road to improve on geometry and safety as well as avoid major impacts on existing infrstraucture. This report has identified meassures towards minimizing land requirements and disruption to livelihoods to affected persons. The specific impacts and measures heve been assessed in the Resettlerment Action Plan carried out seperately.

Proposed Geometric Alignment

The geometric design for the Juba–Torit–Kapoeta–Nadapal road project considers the alignment of the existing road and proposes various realignments to meet specified geometric standards. The design incorporates a 7.0-meter-wide carriageway, with additional shoulders, footways, and intermittent kerbs in urban and semi-urban areas. Realignment is necessary to improve road safety, drainage, and avoid existing structures such as religious sites and hospitals. It also includes provisions for bypasses in areas with limited road corridor width to minimize the impact on local infrastructure and properties. The proposed bypass at Torit is presented in Figure 3-1. This is the best alternative as it minimises impacts and improves on geometry and road safety.

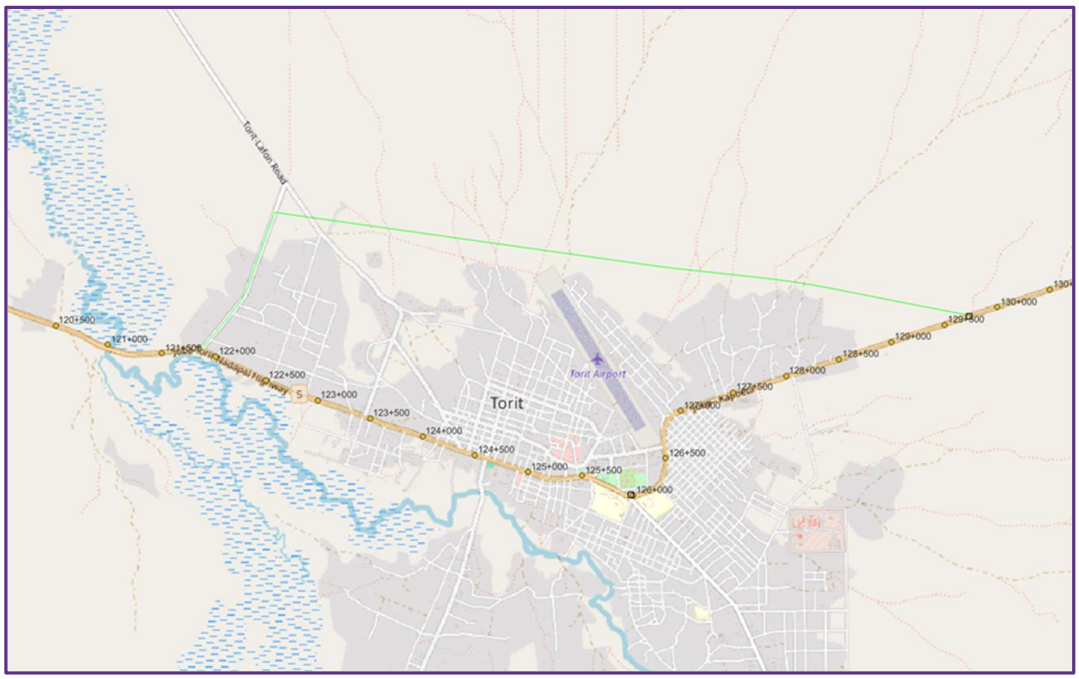


Figure 3 - 1: Proposed Bypass at Torit Town

3.2.2 Pavement Design Alternative

The design of the pavement is a fucntion of the projected traffic along the road, native subgrade material, availability of construction materials in the project area. Based on these factors,an economic comparison is required to arrive at the most viable option for the project.

Based on the native subgrade with a CBR range of 8-14 correponding to subgrade class S4 and projected traffic loading of 24 million ESAL for a 20 year design period, several alternative pavement structures are available from the Ministry of Transport and Roads (MTR) pavement design manual and Transport Research Laboratory(TRL) Overseas Road Note No. 31 (ORN 31).

The alternative pavement varies in type and materials

Unpaved Road Pavement - Gravel Road

The unpaved alternative would involve upgrading the road to gravel surfaced status. This alternative would require much less capital investment as well as less utilization of construction material and equipment

especially aggregates, bitumen and cement for the pavement layer. However, based on the projected traffic, this option would not be a feasible options as the required level of services would not be achieved. It is noted that even if this was to be considered as a stage constructions option the wearing course would fast wear off, and the road would require frequent regravelleing to maintain a regular riding surface. The frequent regravelleing would negate the saving in material and capital investment and require frequent opening up of more borrow areas with its associated environmnetal impacts.

Paved Road

The paved road alternative has two options namely Flexible pavement and Rigid pavement.

- Rigid pavement: The rigid pavement will require the use of mass or reinfornced concrete as the surfacing layer. This utilises more cement and reinforcement steel in the place of bitumen in the case of the flexible road. The rigid pavement is however mostly used for very heavy traffic and is also more costly than the flexible pavement.

- Flexible pavement: The flexible pavement is surfaced with bituminous materials in form of a surface treatment (surface dreassing) or surface course (Asphalt). The former is generally used on lower volume roads while the later is used on Hiigher volume traffic road. The flexible pavement consists of several alternative layers of materials making up the pavement. The alternatives materials for the different pavement layers include the following; -

Table 3-1: Pavement Materials

Pavement Layer	Alternative 1	Alternative 2	Alternative 3
Surfacing	Asphalt concrete	Asphalt concrete	Double surfacing dressing
Base	Crushed stone	Bituminous road base	Mechanically Stabilized Base
Sub base	Cement stabilized Road base	Natural gravel	Mechanically Stabilized Subbase

  - Surfacing Layer: all three alternatives have bitumen material. Bitumen is hazardous especially occupational exposure during application. Appropriate PPE including respirators and heat resistant boots and gloves must be provided.
  - Base Layer: alternative 1 is natural material offering the best from an environmental perspective (associated risks). Alternative 2 has bituminous (hazardous material) same as alternative 3 with cement.
  - Sub-base Layer: alternative 1 and 3 materialals have cement while alternative uses natural material, offering best alternative from an enviromental risk perspective.

The final pavement design consists of an asphalt concrete wearing course with a bituminous road base and natural gravel subbase. Shoulders will also be treated with double bituminous surface dressing, ensuring durability and ease of maintenance. The asphalt concrete option was chosen for its economic viability and ability to handle the expected traffic load. The pavement cross section is illustrated in Figure 3-2.

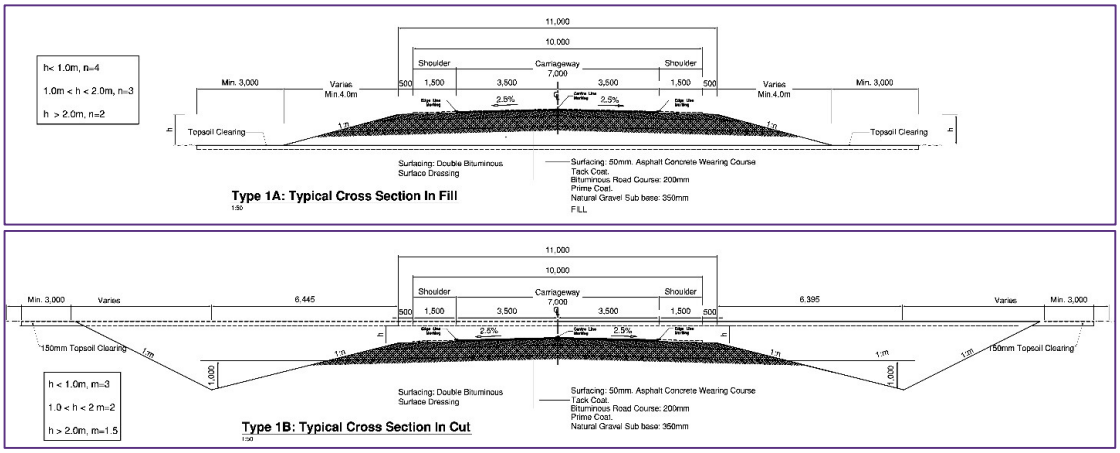


Figure 3 - 2: Considered typical pavement cross section

3.3 Construction Technology and Materials

The proposed road project will be constructed using modern, locally and internationally accepted materials to achieve, safety, security and environmental aesthetic requirements. Equipment that saves energy and water should be given priority without compromising on cost or availability factors. The road surfaces sub-structure and road infrastructure will be made using locally sourced materials that meet the international best practice.

On the alternative construction materials and technology; rainwater should be harvested and be used in construction activities and supply to labour camps for flushing toilets and other non-domestic activities. Community members should also be encouraged to harvest rain water not only to supplement the water supplied but also to help reduce pressure on the drainage structures. Heavy use of timber and wood during construction should be discouraged to minimize destruction of natural resources. The exotic tree species should be preferred to indigenous species in the construction of the project components where need will arise as they can be replanted with ease.

The pavement materials have bee discussed in section 3.2.2. The construction materials will be sourced from quarries and borrowpits in the project area. The specific locations and numbers will be determined during construction stage by the selected contractor. This study has identified key requirements to manage risks related to land take, environemntal degradation, sociual setup among others to be observed by the contactor in developing site specific ESMP's for these material sources.

Asphalt mixers, crushers and other construction equipment and machinery should be incorporated with pollution control devices like dust arrestors/precipitators, emission control, noise abatement devices and desulfurization devices. The equipment and vehicles should have highest levels of combustion efficiency, capability to use cleaner fuels like biofuels and should have enhanced safety features. The project should prioritise use of existing material source that are sutiable to minimize foot print and associated impacts such as land acquisition and disruption of livelihoods for new sites.

3.4 Mode of Transport

There are no viable alternative mode of transport to this road that would fulfill the functions of providing a relatively fast and affordable land transportation. Water air and rail transport are unlikely to substitute for road in this region. There is no rail network nor a water body that would provide alternative mode of transport in the project area. There are airstrips at Torit and Kapoeta, however air as a mode of transport is rather expensive and cannot provide the same level of mobility and accessibility as the road.

4 Legal, Institutional and Policy Framework

This section outlines the relevant legal, institutional and policy framework that has guided the environmental and social impact assessment study for the road project. There are no specific regulations to facilitate the process of Environmental and Social Impact Assessment. Nevertheless, the Consultant has adhered to the World Bank's Environmental and Social Framework that outlines various standards to achieve good international practice that promotes sustainability.

4.1 Bills and Legal Framework

The Government of the Republic of South Sudan has established regulations to facilitate the Environmental and Social Management activities in the country that are summarised in Table 4-1 below:

Table 4-1: Relevant laws applicable to the road project

Applicable Law	Relevance
The Transitional Constitution of Republic of South Sudan, 2011 (rev.2013)	The Constitution states that every person has a right to have the environment protected for the benefit of present and future generations. This involves implementation of measures that prevent pollution and ecological degradation, promote conservation and secure ecologically sustainable development, and use of natural resources while promoting rational economic and social development to protect genetic stability and biodiversity. Everyone has a right to protect the environment and conserve natural resources. It provides for the right of every citizen to participate in the development of South Sudan. It allows women to participate equally with men in public life. It also safeguards cultural heritage, monuments of national, historic or religious importance.
Local Government Act, 2009	The Act outlines the principles of local governance which is the basis for decentralization and democratization of the Local Government Authority System in South Sudan, It allows participation of all citizens in the exercise of their rights to express their opinions in the process of decision making in public affairs. It also requires the Local Government to promote environmental preservation by adhering to the processes and procedures established by the National and State governments.
Labour Act, 2017	It provides for the working conditions of workers where no person should be discriminated, directly or indirectly or sexually harassed at the workplace.
Child Act, 2008	It outlines the rights of children where they should be protected from child labour and other abuses.
Draft South Sudan Environmental Protection Bill, 2023	The Draft Bill stipulates the need to undertake an Environmental Impact Assessment where and when the Lead Agency deems the project may have varying levels of impact in the Environment. The bill prohibits the commissioning of any developmental activity, which is anticipated to negatively change the environmental baseline condition, or which the law requires an ESIA. The bill requires a valid ESIA certificate [which is only issued by the National Ministry of Environment] to be presented to the authorities prior to commissioning of the intended developmental activity/project. The bill, however, has not been enacted into law so it remains just a guide.
Draft South Sudan Forest Protection Bill, 2023	The Bill provides for the sustainable management and utilization of extracts. It prohibits extractive activities within or adjacent to forest ecosystems unless an Environmental and Social Impact is conducted.
Draft South Sudan Wildlife and Protected Areas Bill, 2023	The Bill prohibits activities within protected areas, and it conditions any physical development within Protected Areas shall be subject to Environmental and Social Impact Assessment.
South Sudan National Biodiversity Strategy and Action Plan (2018-2027)	The Plan integrates biodiversity concerns into public projects to promote biodiversity conservation for sustainable use of biodiversity, fair and equitable sharing of the benefits arising from their utilisation. The Action

	Plan advocates for a reduction in negative impacts while enhancing the positive impacts on biodiversity through facilitation, design and capacity enhancement for enforcement and compliance, for biodiversity regulations and incentive mechanisms.
South Sudan Land Act 2009	The land act provides for the protection of the country's natural resources for both surface and sub-surface resources. For protecting the environment and the country's natural resources, chapter XI, article 70 of the Act provides for the conduct of a social and environmental impact assessment for any developmental activity, which has the potential to affect the environment. The assessment is to ensure that the social, Economic and Environmental implications of the activities on the land are taken into consideration before any decisions is made thereon. The act provided for the restoration of degraded environment due to developmental or any other activity.
Penal Code Act, 2008	The Act defines and punishes the criminal offences in a country. Section 6 of the Act states that every person, who either by an act or omission, acts contrary to the provisions of this Act, commits an offence, and upon conviction, shall be sentenced in accordance with the provisions of this Act or other applicable law.
Agreement on the Resolution of the Conflict in the Republic of South Sudan (ARCSS)	The ARCC resolved to: ▪ establish a Revitalised Transitional Government of National Unity (RTGoNU) in the Republic of South Sudan entrusted with the task of implementing the ARCSS. ▪ Permanent Ceasefire shall be observed meticulously n to ensure sustainable peace and facilitate the operationalization of the Transitional Security Arrangements and the voluntary repatriation, resettlement, rehabilitation and reintegration of returnees and Internally Displaced Persons. ▪ All parties shall create an enabling political, administrative, operational and legal environment for the delivery of humanitarian assistance and protection. ▪ established principles and reforms for resource, economic and financial management. Specifically, RTGoNU shall develop comprehensive policies and legal and institutional frameworks for the preservation, conservation and sustainable use of the environment. Feasibility study of any project of South Sudan must include an environmental impact certificate from the Ministry of Environment and Forestry. ▪ agreement on principles for Transitional Justice, accountability, reconciliation and healing. ▪ RTGoNU shall initiate and oversee a permanent constitution-making process, during the transitional period. ▪ Reconstitution of the Joint Monitoring and Evaluation Commission responsible for monitoring and overseeing the implementation of the Agreement and the mandate and tasks of the RTGoNU and recommend appropriate corrective action.

4.2 Institutional Framework

4.2.1 The Ministry of Roads and Bridges (MRB)

The Ministry of Roads and Bridges is the most important player in this project, as it is the project proponent. Furthermore, it is the entity that ensures that all safeguards documentation such as the ESIA, RAP are completed and approved by the Ministry of Environment and Forestry. Together with the Ministry of Environment and Forestry, the MRB does the supervision and monitoring of the safeguards implementation.

4.2.2 The Ministry of Environment and Forestry

The Ministry of Environment and Forestry (MoEF) is responsible for the development and implementation of environmental policies, legislation, and strategic environmental management plans. It is the entity responsible for approving the ESIA Report, ensuring that environmental management guidelines and regulations are observed in this ESIA, undertakes implementation and monitoring of safeguards and

advisory services to government agencies and the private sector in implementing environmentally sustainable projects, including road projects. For effective coordination, the Ministry can request a designated coordinator, or it can establish a communication platform with the relevant institution. There is also regular communication with other institutions. Formal agreements like MoUs are one of the coordination mechanisms the ministry is using.

4.2.3 The Ministry of Wildlife Conservation and Tourism

The Ministry is responsible for the development of the policy and legal frameworks for the management, conservation and protection of the country's wildlife resources. It prepares and executes the policies, strategic plans and management plans for the required for the management of the country's protected areas and the wildlife resources. It advices and represents the Country on international and multilateral wildlife protection treaties and conventions and support the states and the local governments on their responsibilities and functions in wildlife management in South Sudan.

4.2.4 Ministry of Gender, Child and Social Welfare

Pursuant to Transitional Constitution of the Republic of South Sudan 2011, as ammended, one of the primary responsibilities of the National Government is promotion of good governance and wel fare of teh people. The mandate of the Ministry is to promote gender equality and women's empowerment, social justice, and safe the rights and welfare of women, children, persons with disabilities and other vulnerable groups. It ensures that gender responsive programs for promotion of gender equality, women's empowerment, child protection and the protection of other vulnerable groups are mainstreamed in the national policies and development programs. Improvement of the working environment by strenthening the structures, systems and procedures to ensure that humn and child rights taken into consideration is one of the functions of the Ministry. The ministry takes the responsibility of monitoring and evaluation of national developmental programs.

4.2.5 Ministry of Land, Housing and Urban Development

The Ministry of Land, Housing and Urban Development is the primary government body responsible for land management and administration in South Sudan. Its role in an ESIA for the Juba-Nadapa Road project would involve assessing potential land acquisition impacts, land use conflicts, and the need for land compensation and resettlement. The ministry would need to ensure that land acquisition procedures comply with national and international standards, and that affected communities are adequately compensated and resettled.

4.2.6 Ministry of Labour, Public Service and Human Resource Development

The Ministry of Labour is responsible for labour laws, standards, and regulations in South Sudan. In the context of the ESIA for the Juba-Nadapa Road project, the ministry would be involved in assessing potential impacts on employment opportunities, working conditions, and occupational health and safety. It would need to ensure that labour rights are protected, and that appropriate measures are taken to mitigate any negative impacts on workers.

4.2.7 National Commission for Culture, Youth and Sport

The National Commission for Culture, Youth and Sport is responsible for promoting and preserving South Sudan's cultural heritage. In the context of the ESIA for the Juba-Nadapa Road project, the commission would be involved in assessing potential impacts on cultural heritage sites, archaeological sites, and traditional knowledge. It would need to ensure that appropriate measures are taken to protect and preserve cultural heritage, and to mitigate any adverse impacts.

4.2.8 Ministry of Water Resources and Irrigation

The Ministry of Water Resources and Irrigation is responsible for water resources management and development in South Sudan. In the context of the ESIA for the Juba-Nadapa Road project, the ministry would be involved in assessing potential impacts on water resources, including surface water and groundwater. It would need to ensure that the project is designed and implemented in a way that minimizes water pollution, conserves water resources, and avoids negative impacts on water-dependent ecosystems and communities.

The **Directorate of Urban Water** is responsible for managing urban water supply and sanitation services in South Sudan. It could be involved in the ESIA for the Juba-Nadapa Road project by assessing potential impacts on water infrastructure and services, including water supply, water quality, water demand, and wastewater management.

4.2.9 State Ministry of Physical Infrastructure

The state ministries in central and easter equatoria states are a key player in the coordination of the inter-state road management. The ministries are very important stakeholder in providing guidance critical areas

of the road that need special attention. Juba county department of roads and physical infrastructure coordinates all the activities in the roads development sector with the state ministry. The county department of roads is the institution dealing with the development of the roads. This department works directly with the beneficiaries at the county level.

State Ministry of Housing and Physical Infrastructure is responsible for land issues, including land allocation for specific purpose.

The County Engineering Department is mandated to coordinate project implement at the county level. The least tier, which is the Boma is under the administration of a paramount chief. It is this administration which allocates and manages land issues at this level. The Boma coordinates with the County Engineering Department, which reports to the State Ministry of Housing and Physical Infrastructure for decision making.

4.2.10 Ministry of Culture, Youth and Sport

The National Commission for Culture, Youth and Sport is responsible for promoting and preserving South Sudan's cultural heritage. In the context of the ESIA for the Juba-Nadapa Road project, the commission would be involved in assessing potential impacts on cultural heritage sites, archaeological sites, and traditional knowledge. It would need to ensure that appropriate measures are taken to protect and preserve cultural heritage, and to mitigate any adverse impacts.

4.3 Policy Framework

4.3.1 World Bank's Environmental and Social Framework

The Bank has developed Environmental and Social Standards to identify and assess environmental and social risks and impacts associated with projects it is financing. The application of these standards not only reduce poverty and increase prosperity in a sustainable manner but also promote environmental and social sustainability. The relevant standards to the road project are summarised in Table 4-2.

Table 4-2: Relevant ESS Standards

ESS	Relevance
ESS1: Assessment and Management of Environmental and Social Risks and Impacts	The standard guides on procedures for assessing, managing and monitoring environmental and social risks and impacts. It guides on a mitigation hierarchy approach and differentiates measures that ensure adverse impacts do not disproportionately fall on the disadvantaged or vulnerable people. The standard encourages the utilization of national environmental and social institutions, systems, laws, regulations and procedures in the ESIA assessment.
ESS2: Labor and Working Conditions	Implementation of the project will create employment opportunities. The standard seeks to promote a safe and healthy work environment for all project workers by promoting fair treatment, ensuring there is no discrimination, and equal opportunities are offered to all project workers. The standard prevents the use of all forms of forced labour and child labour and supports the principles of freedom of association and collective bargaining of project workers in a manner consistent with national law. It also provides workers with accessible means to raise workplace concerns.
ESS3: Resource Efficiency and Pollution Prevention and Management	The standard promotes sustainable use of resources especially those associated with urbanization and economic activities such as road construction. It provides framework for avoiding or minimizing impacts on human health and environment, avoiding or minimising project-related emissions of short and long-lived climate pollutants, and avoiding or minimizing generation of hazardous and non-hazardous waste.
ESS4: Community Health and Safety	ESS4 addresses the health, safety and security risks and impacts on project-affected communities. Implementation of the road project will expose the local community to risks and impacts and it is important that the anticipated ones are identified and avoided/mitigated.
ESS5: Land Acquisition, Restrictions on Land Use and Involuntary Resettlement	Implementation of the project might result in loss of land, assets, access to property and loss of income or other sources of livelihood. The standard guides on how resettlement is to be undertaken if there are people or communities who are likely to suffer from physical or/and economic displacement because of implementing the road project.
ESS6: Biodiversity Conservation and Sustainable	The standard focuses on protection and conservation of biodiversity and habitats. It allows a mitigation hierarchy to be developed as a precautionary approach for projects that could have an impact on biodiversity. The standards

Management of Living Natural Resources	guide on ways of promoting sustainable management of living natural resources. It supports livelihoods of local communities including Indigenous Peoples and inclusive economic development through the adoption of practices that integrate conservation needs and development priorities.
ESS8: Cultural Heritage	The standard sets out measures for protecting cultural heritage within the Area of Influence throughout the project life cycle. It seeks to protect cultural heritage from the adverse impacts, address cultural heritage as an integral part of aspect of sustainable development, promote meaningful consultation with stakeholders regarding cultural heritage and promoting the equitable sharing of benefits from the use of cultural heritage
ESS10: Stakeholder Engagement and Information Disclosure	To ensure successful management of the environmental and social risks, all the relevant stakeholders need to be engaged from the early stages of the road project. The standard guides on the engagement process to ensure meaningful consultation, information disclosure, and grievance management.
OP 7.60: Projects in Disputed Areas	OP 7.60 is designed to address projects that may be located in or affect areas where there are territorial disputes or conflicts. The objective of this policy is to ensure that the Bank's activities do not exacerbate tensions or contribute to conflict.

4.3.2 World Bank Group Environmental, Health, and Safety Guidelines

The World Bank Group Environmental, Health, and Safety (EHS) Guidelines serve as a global reference for managing environmental and social risks and impacts during development projects, particularly those funded by the World Bank. For this road project, adherence to these guidelines is critical to ensuring sustainable development, minimizing environmental degradation, and safeguarding both community and occupational health and safety. The following sections highlight key standards relevant to air quality, noise, water conservation, waste management, hazardous materials, and construction practices, which will form the foundation for policy compliance and impact mitigation during the project's lifecycle.

Table 4-3: Relevant WB – EHS Guidelines

Section	Relevance
Air Emissions and Ambient Air Quality (Section 1.1):	This section is relevant for controlling air quality during both construction and operational phases of the road project. The guidelines highlight emissions management from point, fugitive, and mobile sources. Ensuring emissions do not exceed the World Health Organization (WHO) air quality guidelines or local standards is critical, especially near sensitive areas.
Energy Conservation (Section 1.2)	Guideline on energy conservation focuses on energy sources and their sustainability. Large infrastructure projects use large amounts of energy, mainly finite fossil fuel, that are also great contributors to greenhouse gases that have implications on climate change.
Water Conservation and Wastewater Management (Sections 1.3 and 1.4):	These sections outline best practices for managing wastewater and conserving water resources, which is critical for maintaining water quality at river crossings and during construction activities that might generate wastewater or impact hydrological systems.
Hazardous Materials Management (Section 1.5):	Since construction may involve hazardous materials (e.g., fuel, lubricants), this section provides guidelines on proper handling, storage, and disposal of hazardous substances to prevent contamination.
Noise Management (Section 1.7):	The noise control guidelines are essential for minimizing the impact of construction and operational noise, particularly near residential and sensitive receptors like schools and hospitals. These guidelines set permissible noise levels for different zones, which should be adhered to throughout the project.
Contaminated Land (Section 1.8)	This guideline addresses possible sources of contaminants, risks associated with . contaminated land and mesures necessary to avoid land contamination and remediation actions should contamination occur
Occupational Health and Safety (Section 2):	This section addresses the safety of workers involved in road construction. Key areas such as facility design, training, physical and chemical hazards, and the

Section	Relevance
	use of Personal Protective Equipment (PPE) are crucial to ensure worker safety during the project.
Community Health and Safety (Section 3):	Guidelines here focus on reducing the risks to surrounding communities, including traffic safety and managing the transport of hazardous materials. As the road traverses populated areas, minimizing risks to local communities is paramount.
Construction and Decommissioning (Section 4):	This section emphasizes environmental and social considerations during the construction phase, such as waste management, pollution prevention, and site rehabilitation, ensuring that the project has minimal negative impact on the environment and local communities.

4.3.3 World Bank Environmental, Health and Safety Guidelines for Toll Roads

Whereas this is not a Toll Road, the guidelines present detailed industry specific Environmental issues, Occupational Health and Safety, Public Health and Safety and their performance indicators. These are specific to construction and operation of roads and are all applicable to this project. The key environmental aspects are: Habitat alteration and fragmentation; Stormwater Management; Waste; Noise; Air emissions and Wastewater. Occupational risks cover the entire array of potential risks at construction sites while ublic risks cover aspects while those of public risks cover traffic safety management, pedestrian safety and emergency preparedness.

4.3.4 World Bank Group Gender Strategy 2024-2030

The Gender Strategy expresses the bold ambition to accelerate gender equality to end poverty on a liveable planet. The strategy acknowledges the centrality of investing in women and girls while recognizing the disadvantages facing men and boys and the vulnerabilities arising from the intersection of gender with poverty, ethnicity, disability, and other characteristics. It reaffirms the World Bank Group's commitment to non-discrimination, inclusion and equality of opportunity.

The Strategy is relevant to the road project as it will help in determining how it may contribute to provision of economic opportunities, elevation of human capital and women's participation in decision making.

4.3.5 GPN-Addressing SEA/SH in IPF Involving Major Civil Works

The Good Practice Note (GPN) - environmental & social Framework for Investment Project Financing (IPF) operations for addressing Sexual Exploitation and Abuse (SEA/SH) in Investment Project Financing Involving Major Civil Works defines sexual exploitation as any actual or attempted abuse of a position of vulnerability, differential power or trust for sexual purposes including but not limited to profiting monetarily, socially or politically from the sexual exploitation of another. The policy defines sexual abuse as the actual or threatened physical intrusion of a sexual nature whether by force or under pressure or unequal or coercive conditions. Sexual harassment is defined as any unwelcome sexual advances, requests for sexual favour, verbal or physical conduct or gesture of a sexual nature or any other behaviour of a sexual nature that might reasonably be expected or be perceived to cause offence or humiliation to another, when such conduct interferes with work is made a condition of employment or creates an intimidating , hostile or offensive work environment. Sexual Exploitation and Harassment are manifestations of Gender Based Violence (GBV).

There are four broad categories of GBV that may be relevant to World Bank financed IPF involving major civil works. Since SEA and workplace sexual harassment are the types of GBV most relevant to IPF, the risk identification and mitigation of these forms of GBV are the primary focus of the GPN. World Bank GPN recommends a survivor-centered approach, protecting the confidentiality of survivors, practicing non-discrimination, centering their safety and treating them with agency, dignity, and respect for their needs. For adults it means following the survivors wishes and recognizing the survivor as the principal decision maker in their own care. For children it means ensuring that the best interests of the child is always the primary consideration in all actions. In relation with incidents of SEA/SH involving children, the child's wishes and opinions on their situation should be considered in determining the best interests of the child. When referencing SEA/SH in Bank financed projects, SEA involves incidents perpetrated by any staff or contractors associated with the implementation of a project that the Bank is a lender to, against any project beneficiaries or members of project affected communities.

4.3.6 African Union Convention for the protection and Assistance of Internally Displaced Persons in Africa (Kampala Convention), 2009

The Kampala Convention is a treaty of the African Union that addresses internal displacement caused by armed conflict, natural disasters, and large-scale development projects in Africa. South Sudan is among the countries that signed the Convention which requires the State Party to prevent displacement caused by projects carried out by public or private actors as much as possible.

This convention is relevant to the road project as it will guide on developing mitigation measures for any loss of land, asset, or livelihoods that may be affected as a result of implementation of the road project.

4.3.7 South Sudan National Environment Policy 2015 – 2025

The policy document is based on the Rio principles of 1992, ***The Rio Declaration on the Environment and Development***. The policy is guided by several principles that uphold human rights to a healthy and safe environment and affirm states' sovereign rights to exploit their natural resources for sustainable development without adversely affecting other states. The document emphasizes the collective responsibility in addressing environmental challenges and recognizes the right of local communities to participate in decision-making on issues that impact their lives, regardless of gender, ethnicity, religion, or other demographic factors. The objective of this policy document is to provide guidance and direction for the effective management of the environment to all stakeholders. The policy also promotes the use of Environmental and Social Impact Assessments (ESIA) for environmental management and sustainability.

4.3.8 South Sudan National Land Policy, 2023

The policy is built on the principle that all citizens are entitled to tenure over their communal land, equitable access to land, gender equity and issuance of land and property title deeds, land leases and lease certificate as proof of nature of ownership, to promote, transparency in land dealings and participation in decision that affect land rights. The policy applies to land acquisition along the roads while ensuring consideration of the concerns of the citizens.

4.3.9 South Sudan Forest Policy, 2015

The policy document recognizes the importance of forests for commerce, livelihoods, communities, and its conservation. It introduces strict measures to protect the country’s forest resources as an important asset, and measures to prevent changes in forest boundaries without legislative approval. The policy provides clarity on ownership and management responsibilities for forest reserves throughout South Sudan.

The document sets clarities in roles and responsibilities of the relevant institutions, and it establishes the institutional mechanism for the protection and conservation of the country’s forest resources.

4.3.10 Wildlife Conservation and Protected Area Policy, 2012

Policy provides for sustainable management and utilization of natural resources, through protection, conservation and propagation of wildlife species and their habitats in a manner that supports the development needs of South Sudan and the cultural, economic, and social wellbeing of its people.

The policy provides tools such as Environmental Impact Assessment (EIA) to be used in mitigating adverse effects of development projects on wildlife both in and outside of protected areas. The study will identify the project’s potential adverse impacts on wildlife and propose appropriate mitigation measures.

4.3.11 National Health Policy, 2016-2026

The policy is aimed at strengthening the national health system and partnerships that overcome barriers to effective delivery of the Basic Package Health and Nutrition Services (BPHNS), and efficiently responds to quality and safety concerns of communities while protecting the people from impoverishment and social risk. This policy is relevant to the project because it supports promotion of healthy lifestyles and controls risk factors for prevention of non-communicable and communicable diseases.

4.4 Gaps between the National Legislation and World Bank ESF

Upon review of the relevant legal and institutional framework, there are gaps relating to the environmental and social issues. Table 4-4 summarizes the comparative analysis between the national and World Bank ESF and recommends measures to close the key gaps.

Table 4-4: Comparative analysis of WB ESF and SS National Legislation

World Bank ESF	National Legislation	Identified GAP	Recommended Measures
ESS1: Assessment and Management of Environmental and Social Risks and Impacts The standard is specific on the assessment, management and monitoring of environmental and social risks and impacts. It goes further to categorize projects as high risk, substantial risk, moderate risk and low risk and requires the projects to be implemented in accordance with the national law.	The Draft Environmental Protection Bill 2023 and Draft Forest Protection Bill 2023 provide for need to undertake EIA. The two Bills are not explicit on categorization of projects into levels of risk.	The proposed Bills are yet to be enacted into law to guide project categorization and implementation.	Adopt ESS1
ESS2: Labour and Working conditions The standard provides for employment of a child at 14years. It still provides restrictions on the employment of a child up to 18 years and gives clarity on the type of job a child up to 18 years can do or not. Jobs classified as hazardous are not allowed and it provides for a procedure for removal of a child employed in hazardous tasks or one employed illegally. It provides that all employment contracts must be in writing.	Labour Act 2017 provides for employment of a child 14 years and above. It is not clear on the type of tasks children can be employed in. It does not specify the procedure to remove a child from employment. The Act provides that an employment contract can be oral or in writing.	National law stops at 14 years and no restrictions thereafter. It does not provide for a procedure for removal of a child from hazardous work or one employed illegally.	Adopt ESS2
ESS3: Resource Efficiency and Pollution Prevention and Management The standard promotes sustainable use of resources especially those associated with urbanization and economic activities such as road construction. It provides framework for avoiding or minimizing impacts on human health and environment, avoiding or minimising project-related emissions of short and long-lived climate pollutants, and avoiding or minimizing generation of hazardous and non-hazardous waste.	The South Sudan Environment Bill 2023 states that resource efficiency shall be enhance by promoting sustainable production and consumption patterns, including the adoption of circular economy and polluter pays principles. It states that the Authority shall ensure prevention and control of pollution. The Bill does not addressed management of pollution directly, but it considers it under waste management. Pollution is an offence and the polluter pays the cost of clean-up and restoration of the degraded environmental media.	The South Sudan Environment Bill 2023 is not yet enacted into law. The powers of the Ministry guiding ESIA and Natural Resources Management and Pollution prevention, are derived from the laws inherited from Sudan before South Sudan separated from Sudan. There is no stand-alone management plan developed for sustainable use of natural resources. The ministry does not have reference contaminant limit, but it uses WHO and USAID standards/contaminant limits.	Proponent adheres to best practices, adopt international standards and best practices in Environmental management
ESS4: Community Health and Safety Addresses the health, safety and security risks and impacts on project - affected communities.	There is no stand-alone law which carters for community health and safety. However, the South Sudan Labour Act 20217 establishes a legal framework for the minimum conditions of employment and provision for health and safety at	There is no stand-alone Act which protects the health and safety of the community during commissioning and implementation of a project. Health and safety standards are not yet developed.	Adopt and use international standards and apply best practices

World Bank ESF	National Legislation	Identified GAP	Recommended Measures
	the workplace. This Act provides for the establishment of non-discriminatory standards for labour relations and occupational safety and health at all levels of government in South Sudan. It states that an employer shall ensure safety, health and welfare at work-place for all the employees, and it obliges the employer to use remote surveillance facilities at the workplace for the protection and safety of persons and property. One of the objectives of the Draft Water Bill 2013 is promotion of public health and sanitation. It gives the Local Government the responsibility of ensuring that sewage water does not pollute community water sources and cause harm to human health.	The MoEF ensures that all information that would enable the public to take measures to prevent harm to human health or the environment is disseminated immediately in the event of an imminent threat. Always international standards are considered.	
ESS5 Land Acquisition, Restrictions on Land Use and Involuntary Resettlement Restriction on Land Use and Involuntary Resettlement. It is categorical that all compensation shall be paid before commencement of project work. It is explicit to receive compensation based on replacement cost. It is clear on Livelihood restoration as the primary objective	Land Act, 2009 states that compensation shall be just, equitable and shall consider the land market value and the value of the assets and investment. However, market value alone can be subjective depending on who is defining the value.	A just, fair and equitable compensation is not clear. There is risk of being imposed on one party by another one that has power to define just, fair and equitable. Land matters (including allocation for public utilities) are currently handled by the Ministry of Housing and Physical Infrastructure.	Implement ESS5 and assist the displaced persons in improving their livelihood to pre-project status. The Ministry of Land, Housing and Urban Development will implement
ESS6: Biodiversity Conservation and Sustainable Management of Living Natural Resources The standard focuses on protection and conservation of biodiversity and habitats. It allows a mitigation hierarchy to be developed as a precautionary approach for projects that could have an impact on biodiversity. The standards guide on ways of promoting sustainable management of living natural resources. It supports livelihoods of local	The draft bills, namely, the Draft South Sudan Environmental Protection Bill 2023, the Draft South Sudan Forest Protection Bill 2023 and the Draft South Sudan Wildlife and Protected Areas Bill 2023 will plug the existing legal gap in biodiversity conservation in South Sudan. This will complete the objectives	The proposed Bills are yet to be enacted into law to guide project categorization and implementation. No framework for classification of habitats.	Adopt WB ESS6 for this project.

World Bank ESF	National Legislation	Identified GAP	Recommended Measures
communities including Indigenous Peoples and inclusive economic development through the adoption of practices that integrate conservation needs and development priorities	outlined in the South Sudan National Biodiversity Strategy and Action Plan (2018-2027).		
ESS7: Indigenous People/Sub-Saharan African Historically Underserved Traditional Local Communities Requires that projects that affect indigenous peoples and their cultural identities, practices, customary lands take necessary measures to address them. They should be involved in planning for projects, do not suffer adverse impacts, ensure Free Prior Informed Consent on their culture be addressed.	The Transitional Constitution of South Sudan Section 33 provides for rights of ethnic and cultural communities to freely enjoy and develop their cultures, practices, beliefs, language, and religion. Section 167 provides the role of traditional authority. The constitution does not mention indigenous peoples.	National law does not mention/recognize indigenous Peoples.	Adopt ESS 7 because it is more explicit.
ESS8: Cultural Heritage Applies to all projects that are likely to have adverse impact on cultural heritage and projects that have significant earthworks. Requires the project to develop a Chance Finds Procedure and other internationally recognized procedures for protection of cultural heritage. All relevant stakeholders are identified and consulted. Provides for benefit sharing. The focus is on tangible cultural heritage.	The Transitional Constitution 2011 (rev. 2013) section 33 provides for rights of ethnic and cultural communities. To develop and enjoy their cultures. It does not provide for their protection of cultural heritage. It does not mention the economic benefits that may accrue from cultural heritage. The focus is on intangible cultural heritage.	National law is about its use but not protection, it does not provide the procedure to be used nor benefit sharing. It is less elaborate.	Adopt ESS 8. It is more elaborate.
ESS10: Stakeholder Engagement and Information Disclosure It sets the modalities for project information to be disclosed to the stakeholders including full disclosure. Disclosure information can be translated into local languages for widest reach. It sets a high bar for evidence of disclosure. It provides for a GRM for resolution of grievances between the project and stakeholders. It provides an informal, easy to access, community based, cost free mechanism to report grievances. It provides for court of law as the last option.	The Transitional Constitution of Republic of South Sudan, 2011 (rev.2013) provides that disputes are resolved through Court of Law. It does not mention information disclosure.	The national law only provides for one option/medium that is urban-based, costly and hard to reach therefore inaccessible to the majority.	Adopt ESS10 for its accessibility, cost free and community based.

5 Baseline Conditions

The chapter provides an overview of the existing environmental and social conditions in the project area. Data was obtained through desk studies and field studies (stakeholder engagement, environmental measurements and surveys. Field studies were accomplished through observations, photography, and the use of checklists.

5.1 Baseline Physical Environment

The physical environment survey included assessments of climate, topography, geology, soil, water and hydrology, noise levels, air quality, and waste management (both solid and liquid). Environmentally sensitive areas were identified and documented. Observations also focused on the proximity of existing impacts to the project footprint, noting road-related issues such as siltation and pollution/contamination.

5.1.1 Climate

The project area is located at an average elevation of about 550 meters above sea level. The project area has a tropical wet and dry or savanna climate. Eastern Equatoria typically receives about 400 millimeters of precipitation and has about 240 rainy days (64% of the time) annually. Generally, rainfall is higher to the west of the project area, averaging around 1000mm progressively decreasing to around 700 mm in Torit county and moving eastwards to the most arid parts of the project area at Nadapal where rainfall may not exceed 300 mm. The heaviest rainfall occurs in the southern upland areas. Rainfall is seasonal across the project area, with a pronounced dry season lasting from January to April, coinciding with the hot season. In general, Precipitation in South Sudan is impacted by the movement of the Inter-Tropical Convergence Zone (ITCZ). The trend in rainfall and temperature appears to be in an increasing trajectory as demonstrated in Figure 5-1. This can be attributed to climate change.

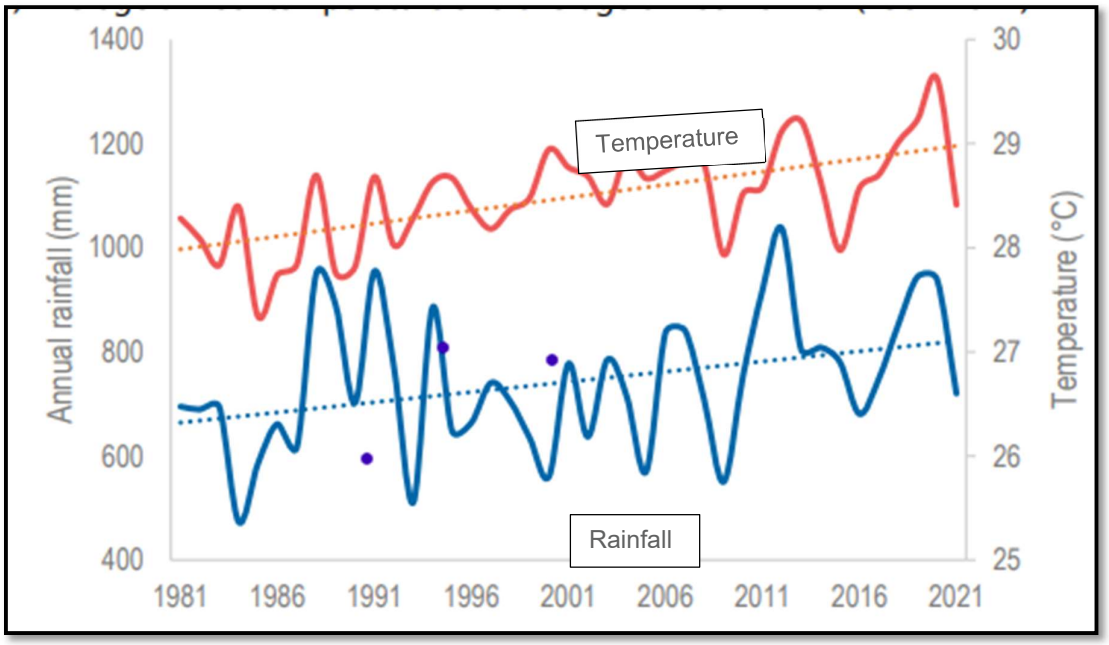


Figure 5-1: Average Temperature and Rainfall in Torit between 1981 and 2021

Temperature averages are normally above 25°C, with highs exceeding 35°C, particularly during the dry season (January to April). Juba, the capital city and start of the road, has an average annual high temperature of 34.5°C and an average annual low of 21.6°C. Average temperature increases from the west to the east averaging 23°C in Juba increasing progressively to about 27°C in Nadapal where mean high temperature is about 38°C. In general, maximum temperatures are experienced during the months of January to March and minimum temperature during April to July.

Wind speed and direction

For Juba to around Nangala, the dominant wind direction is South South-West towards the North North-East with top speeds of between 20-30 km/h. Wind speeds between 10-20km/h blow for 189 days being experienced for 150.2 hours/year. The dominant wind speeds experienced in the town range between 5-10 Km/h and blows for 174 days in a year for a period of 535.9hours/year. Strong winds are experienced between November and April each year. The wind direction in Juba is illustrated in Figure 5-2.

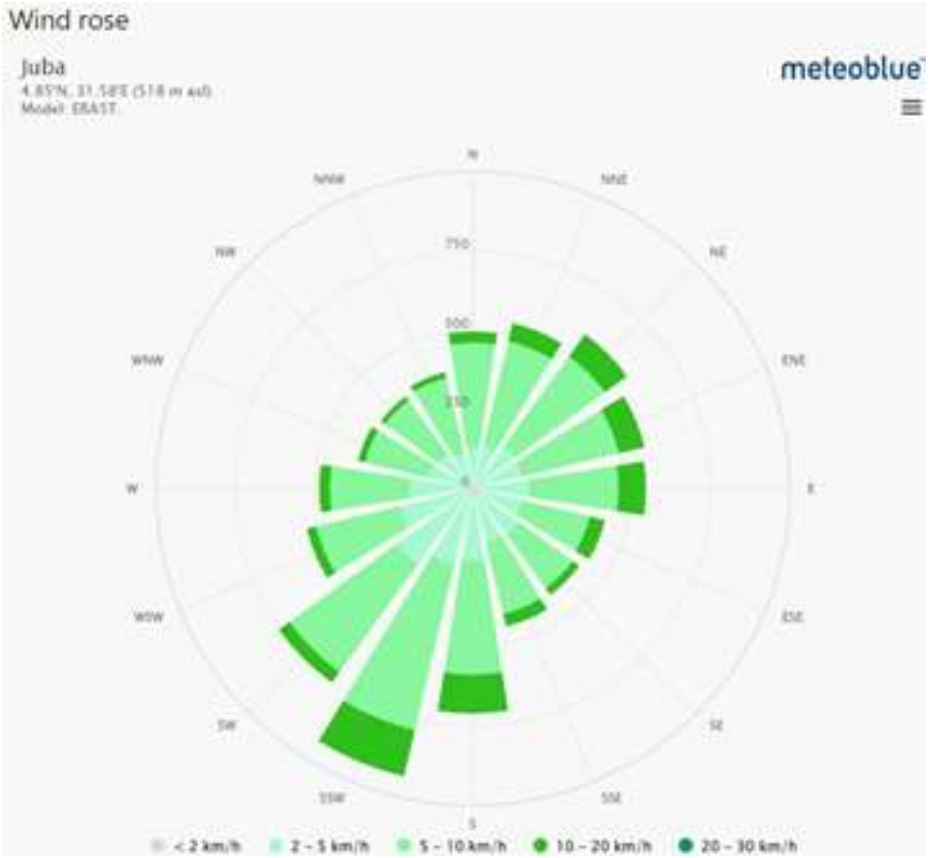


Figure 5-2: The dominant wind direction for Juba [2]

Between Nangala to around km 250 the dominant wind direction is from the East towards the West with top speeds of between 10-20 Km/h. Wind speeds between 5-10 km/h is experienced for 249 days blowing for 409.6 hours/year while wind speeds between 10-20 km/h is experienced for 112 days blowing for 191.7 hours/year. The area generally experiences moderate wind speeds for a long period of the year.

The dominant wind direction in Torit and Kapoeta is illustrated in Figure 5-3.

[2] https://www.meteoblue.com/en/weather/historyclimate/climatemodelled/juba_south-sudan_373303

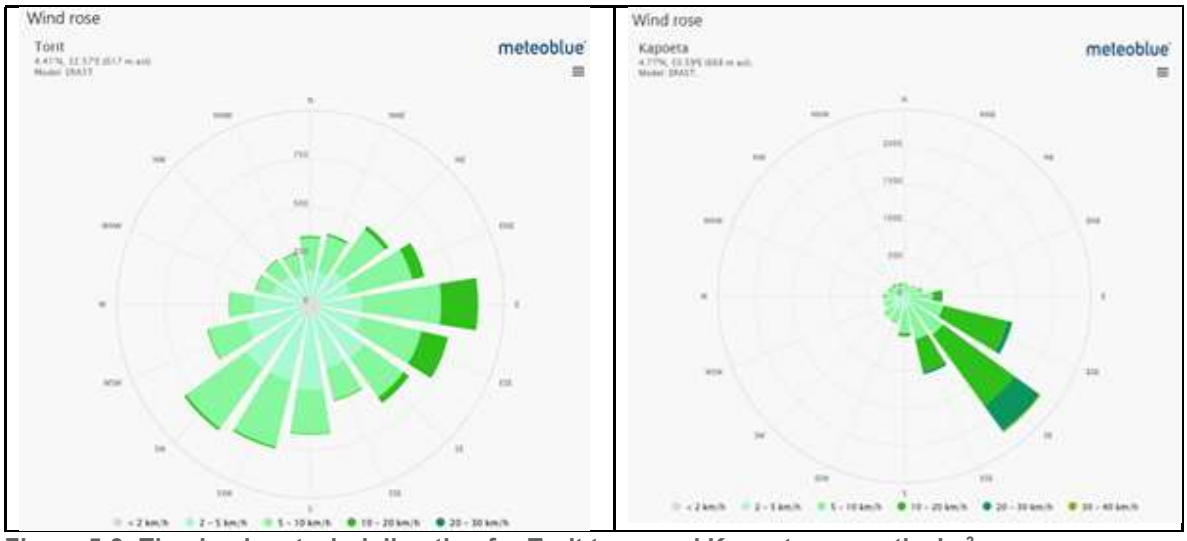


Figure 5-3: The dominant wind direction for Torit town and Kapoeta respectively [3]

The windspeeds increase between Kapoeta and Nadapal with top speeds of between 30-40 km/h predominantly blowing from South-East towards North-West. Wind speeds between 10-20 km/h is experienced for 197 days blowing for 1,180.7 hours/year while speeds between 20-30 km/h is experienced for 97 days blowing for 420.2 hours/year increasing to 658.6 hours/year in Nadapal.

5.1.2 Topography

The project area can generally be described as lowlands but gently undulating along the entire road. There are prominent hilly ranges that influence drainage. These ranges are most prominent to the east of Torit where the road drainage is influenced by the Imatong ranges. Other prominent hills and ranges are Isohe, Lobira and Diddinga mountains In addition there are Lopits, illieu and Tubarak which, though some distance from the road, do still influence drainage across the road. The general topography of the project area is illustrated in Figure 5-4.

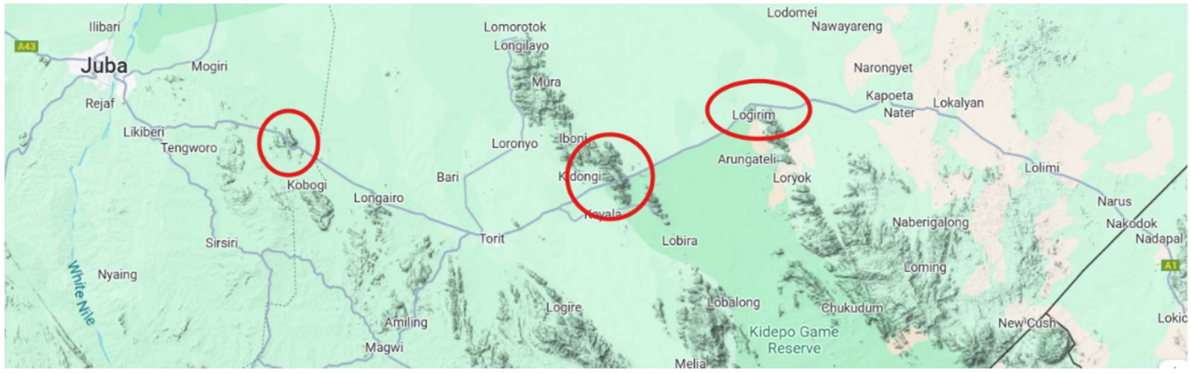


Figure 5-4: Google Maps image of the topography of the area, red circles denote hilly areas

From Juba to Torit, elevation rises gently following a gently rising ridge but undulating giving rise to numerous streams and rivers as shown in Figure 5-5.

[3] https://www.meteoblue.com/en/weather/historyclimate/climatemodelled/torit_south-sudan_365742

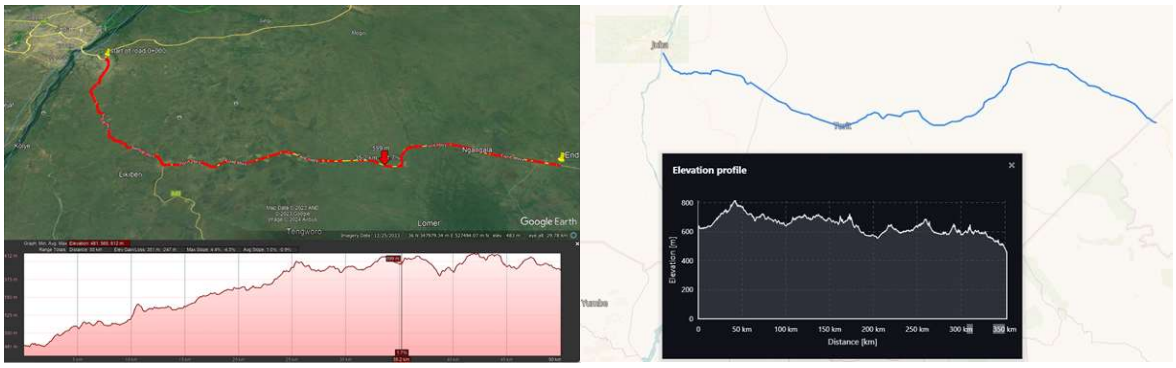


Figure 5-5: Google earth presentation of project elevation

The altitudes vary from an elevation of 741m at the Nadapal checkpoint to 800m at Ewatong ranges, 620m at Torit and with gentle variations in slope down to an elevation of 460m near Juba.

From the eastern end of the project, topography of the project area is undulating at Nadapal up to around Torit. The next section east of Torit is mainly flat plain. From Longario, there are high volcanic outcrops up to Liria and Luluba. The altitudes vary from an elevation of 741m at Nadapal checkpoint to 800 m at Imaatong ranges, 620m at Torit and with gentle variations in slope down to an elevation of 460 m near Juba.

5.1.3 Geology and Soils

The geology of the South Sudan is extremely diverse with a variety of metamorphic, igneous and sedimentary rocks. The intensity of deformation and metamorphism varies from place to place. Extensive studies carried out by several workers in Sudan proved that the central Sudan and Nile Valley metamorphic belt include relic structures of ancient basement which date back to Lower Proterozoic or even Archaean. The gravity, seismic and drilling data acquired in interior Mesozoic basins in the central and South Sudan indicated that more than 30, 000 feet of clastic sediments occur within the deepest central trough of the three major rift basins. The project will traverse different sections with diverse geologic characteristics that include gold bearing rocks and limestone in Kapoeta county.

5.1.4 Water and Hydrology

Water samples were collected from various rivers and key water sources along the project corridor. The sampling focused on rivers at critical crossing points, schools, and boreholes, reflecting both surface and groundwater resources in the region. The specific sampling locations included Huwaru Stream, Lofiri Primary School, River Idolo, River Hoss, River Khorjip, River Kineti, Kineti River Swamp, River Imoli (Kudo), and River Kidepo.

Water samples were collected following standard environmental protocols to ensure the integrity of the samples. This included the use of sterilized containers to avoid contamination, and samples were taken directly from the main water flow at river crossing points.

The samples were stored in cool, dark conditions and transported to Spectralab Analytical Services Ltd Laboratory in Nairobi, Kenya for analysis. The laboratory is equipped to perform detailed chemical and microbiological testing in compliance with WHO and EAS 12 standards. The lab has been accredited by Kenya Accreditation Service KENAS as a Testing Laboratory and has been designated by National Environment Management Authority (NEMA), Kenya to undertake laboratory tests and analysis. Copies of accreditation and designation are included in the Water Analysis Report - Appendix F.

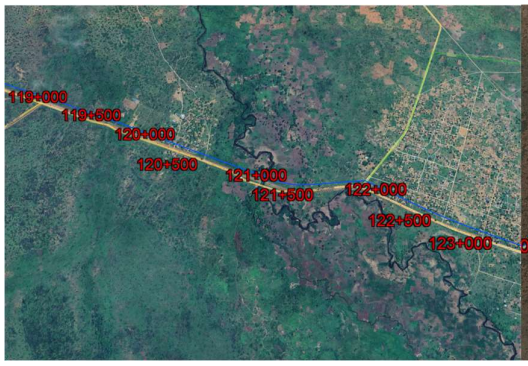
The water samples were analyzed for several parameters including:

- Total Suspended Solids (TSS)
- pH levels
- Turbidity
- Conductivity
- Chloride (Cl), Fluoride (F), Nitrogen as Nitrates (NO_3), Orthophosphates (PO_4^{3-})
- Total Dissolved Solids (TDS)
- Dissolved Oxygen (DO)
- Chemical Oxygen Demand (COD)
- Biological Oxygen Demand (BOD)
- Escherichia coli (E. coli).

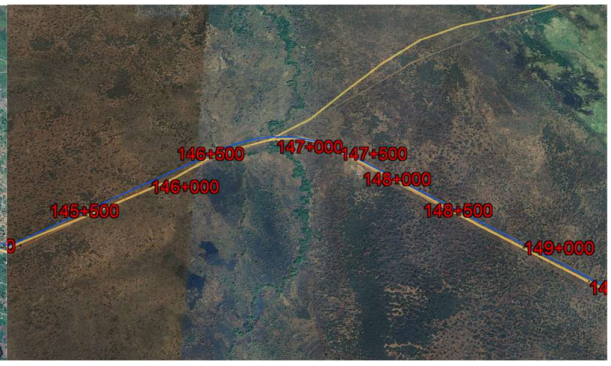
The analyses were conducted according to established methods, such as SAS-TM-CHEM protocols for chemical testing, to ensure reliable and comparable results. The laboratory tests provided data on the chemical and microbial quality of the water, enabling an assessment of its suitability for domestic, agricultural, and ecological purposes.

The baseline water quality and hydrology in the project area include a mix of surface and groundwater resources, with varying characteristics influenced by local geological and hydrological conditions. South Sudan possesses numerous wetlands, seasonal rivers, and groundwater systems, which play a critical role in water supply, ecosystem support, and agriculture.

The hydrological conditions along the proposed road alignment passing through Central and Eastern Equatoria are primarily influenced by the region's diverse topography and water resources, including rivers, streams, and groundwater systems. Figure 5-6 below shows major water courses along the proposed road alignment



Kineti River Ecosystem



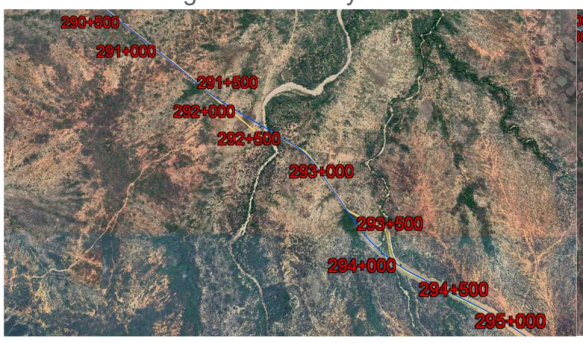
Kidepo River Vallery



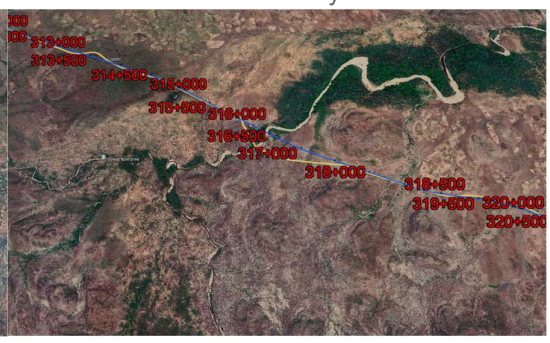
Singata river valley



Buno River ecosystem.



Korjip River line



Loyaro River ecosystem



Kidepo River Valley ecosystem River Hoss ecosystem.

Figure 5-6: Major water course along the road alignment

Water samples were collected from various rivers and key water sources along the project corridor. The sampling focused on rivers at critical crossing points, schools, and boreholes, reflecting both surface and groundwater resources in the region. The selected sampling locations are summarized in Table 5-1.

Table 5-1: Water sample collection points

#	Sampling Location	Easting	Northing
1	Huwaru Stream	-1642276.461	3819943.234
2	Lofiri Primary School	-1641607.16	3805664.193
3	R. Idolo	-1631243.364	3856849.261
4	R. Hoss	-1631370.333	3864329.974
5	R. Khorjip	-1585252.233	3975129.724
6	R.Kineti	-1643317.534	3834448.458
7	Kineti River Swamp	-1643240.218	3836075.206
8	River Imoli, (Kudo)	-1638492.518	3795650.098
9	Permanent BP- Lofiri	-1640740.316	3804551.782
10	R. Kidepo	-1624068.038	3909398.04

Surface Water

The road passes through several riverbeds, particularly in the Torit-Kapoeta section. Rivers in the area are mostly seasonal, and may dry up during the dry seasons except R. Kineti (permanent), while wetlands act as natural buffers, regulating water flow and absorbing runoff from torrential rains. Wetlands also provide a critical ecological function for wildlife habitats. Images of River Kineti are shown in Plate 5-1.



Plate 5-1: River Kineti at chainage 121+000Km

Plate 5-2 below shows collection of water samples by the study team for analysis.



Plate 5-2: Collection of Water Samples

Water sampling points were geo-referenced and presented in a detailed map (Water Sampling Points presented in **Appendix G2**).

Groundwater

The project area is underlain by aquifers, recharged by seasonal rainfall and river flooding. Boreholes along the road serve as key water sources for both domestic and livestock use. However, communities reported that water from these boreholes is insufficient to meet their needs. Plate 5-3 shows some of the existing water sources (were samples for baseline quality analysis).



Plate 5-3: Sampled manual and solar power Borehole water point respectively.

Baseline Water Quality Analysis:

The detailed water quality analysis report is inclided in Appendix F. the summary of key parameters assessed are presented below.

- pH Levels: Most water sources complied with WHO and EAS standards (5.5-8.5), though variations occurred in a few samples, such as the River Idolo with a pH of 4.79.
- Total Suspended Solids (TSS): Elevated levels of TSS were detected in some samples, such as 45 mg/L in the Swampy Area at Kineti, exceeding standard limits.
- Turbidity: Many samples did not comply with WHO standards, with turbidity levels exceeding the 5 NTU limit, such as 103 NTU in the Swampy Area.
- Escherichia coli: The presence of E. coli was absent in most samples, indicating relatively safe water concerning microbial contamination.

5.1.5 Landscape and Visual

The project area is currently devoid of touristic activities, however the potential for this is evident. Once the road is completed the project area tourism may be linked with the Northern Kenya and Northern Uganda tourism circuits. That said, there are scenic sites especially to the east of the project area comprising the spectacular Imatong ranges. Plate 5-4 shows some of the rock outcrops in the project area.



Plate 5-4: Steep rocky outcrop at Ngangala and Lobira

Rock outcrops are common around Ngangala that could be developed for rock climbing enthusiasts. Some of these outcrops have been tested for hard rock materials to be used in road construction, a development that may not be advisable as they could be of long-term tourism value as herein stated.

Active and abandoned quarries and borrow pits: There are over 30 unsightly active and abandoned quarries within 500m on either side of the road (see Table 5-2). Majority of them are between Km 0+000 and Km 130.00. Most quarries are privately owned and operational supplying ballast to developers in Juba City. Nearly all borrow pits were used as material sources for the recent rehabilitation of the road and have been abandoned and left open without rehabilitation. These abandoned sites range in size from seven acres to as large as 66 acres and some are quite close to settlements.

Table 5-2: Chainage of both abandoned and potentially active borrow pits and quarry along the alignment

No.	Chain age	Easting	Northing	Estimated Area (Hectares)
1	08+700	350584.35	524044.06	9.92
2	09+400	350800.52	523626.71	11
3	19+700	358362.32	519329.65	36.6
4	20+600	359185.06	518682.65	4
5	22+600	360667.05	519190.90	25.5
6	25+300	363469.18	519572.76	15.2
7	25+700	364042.19	519093.32	11.3
8	27+700	365737.42	519614.48	14.4
9	29+000	366946.91	519287.83	32
10	30+500	368423.5	518873.87	6.87
11	32+600	370554	519166.29	0.93
12	33+200	371316.7	519132.16	5
13	36+800	374473.92	518716.15	18.28
14	37+900	374792.07	519790.66	1.37
15	39+000	375527.33	520578.66	5
16	41+400	377766.73	520489.57	7
17	46+600	383025.34	519479.53	9.71
18	49+100	385365.25	518955.27	3.38
19	54+000	390802.27	517490.94	18
20	62+800	396398.24	512832.30	3.22
21	63+400	396699.08	513089.64	3.15
22	66+500	394948.56	514009.93	2.94

No.	Chain age	Easting	Northing	Estimated Area (Hectares)
23	68+600	401182.55	510862.98	6.62
24	71+000	403269.76	509679.71	10
25	73+100	404795.16	508419.2	1.24
26	75+800	407459.57	507124.33	8.08
27	78+000	409122.13	505738.45	0.51
28	78+600	409737.35	505635.41	0.79
29	84+600	414108.92	503272.88	3
30	86+200	416462.54	502067.98	3
31	88+100	417993.27	501331.92	3
32	119+600	446128.5	488824.22	14
33	132+200	457717.73	489212.29	1.34

Some of the abandoned borrow pits are ponded with water. These ponded sites pose substantial safety risk to the local community and are habitats for disease vectors, especially mosquitoes. Indeed, the local community cited these abandoned material sites as bad practice that should not be repeated by the project. Images of some of the existing borrow pits are illustrated in Figures 5-7 to 5-10.



Figure 5-7: Google earth image of an abandoned borrow pit being used as dumpsite about 10Km from 0+000 (Estimated area is 10Ha)



Figure 5-8: Large borrow area estimated 32 Ha at approximately Km 30+000

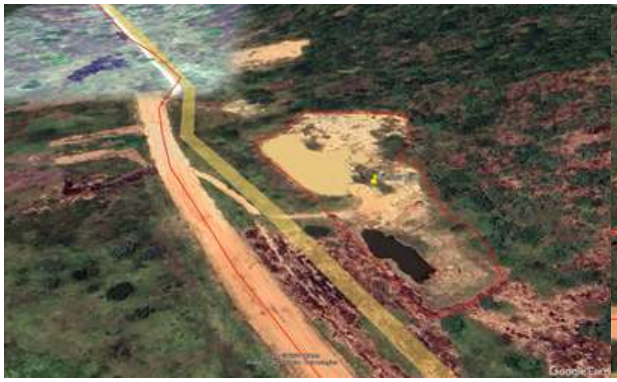


Figure 5-9: Ponds of water in one of the abandoned borrow pits approximately Km 63+000 (estimated borrow pit size 2.94 Ha



Figure 5-10: Abandoned borrow pits next to settlements (129+000)

Other than the risks associated with the abandoned borrow pits, these also have negative aesthetics as they are scars on the landscape.

5.1.6 Baseline Noise Level

An ambient noise survey to map sensitive receptors and establish existing noise levels was conducted along the proposed road alignment between 3 September 2024 and 12 September 2024.

Equipment

Baseline noise levels were measures using a Class 1 RION NL-52 Sound Level Meter. This is a high-precision device compliant with international noise measurement standards, designed to provide accurate readings for environmental noise monitoring.

The sound level meter is dully calibrated to manufacturer's specification to guarantee accuracy and reliability of results. The valid annual calibration certificate is included in the Noise Measurement Report – Appendix D.

Measurement Points

Noise measurement points were selected purposefully based on their proximity to sensitive receptors, including Residential areas, Schools, Hospitals, Wildlife habitats etc..

Measurement Conditions

Noise levels were measured during different time of the day to capture ambient noise due to different activity levels. Measurements were conducted in conditions that avoid abnormal influences, such as extreme weather (e.g., high winds or rain), which could distort the readings.

Measurement Procedure

The Sound Level Meter was placed at a height of 1.2 to 1.5 meters above ground, representative of the typical human ear level, and at least 3.5 meters away from any reflecting surfaces (e.g., walls, buildings) to avoid sound reflection interference. Each measurement session lasted 5 minutes to obtain a reliable sample.

The sound level meter measured parameters as follows; Leq (Equivalent Continuous Sound Level): Average noise level over the monitoring period, Lmax (Maximum Sound Level): Highest recorded noise level, Lmin (Minimum Sound Level): Lowest recorded noise level. The device was self-calibrated before each measurement session to ensure accuracy.

Standards Considerations

Data was compared to the international noise standards (e.g., World Health Organization guidelines) to assess the potential impact on human health and wildlife. Specific noise sources (e.g., traffic, construction activities, natural sounds) was identified to distinguish between project-related and existing ambient noise levels.

Findings

The measured noise levels are presented in Table 5-3. The findings informed mitigation strategies to minimize noise impact during the road project construction and operation phases.

The detailed Baseline Noise Measurement Report is presented in Appendix D.

Local Ambient Noise Levels at the Periphery of the Project

The survey recorded the noise levels at different locations along the alignment. These measurements are crucial for assessing the current acoustic environment and determining potential noise impacts caused by the project during construction and operational phases.

The ambient noise levels were recorded at 15 sampling points, each representing different site characteristics, such as markets, business centers, and residential areas. The recorded parameters include the maximum (Lmax), minimum (Lmin), and equivalent continuous sound level (Leq), which are compared to the World Bank Group Environmental, Health, and Safety (EHS) Guidelines for noise levels in various environments.

Table 5-3 summarizes the findings from the noise survey, including site descriptions, GPS coordinates, and recorded noise levels:

Table 5-3: Baseline Noise Measurement Points and Levels

Ref	Name	Site Description	GPS Coordinate	Lmax dB(A)	Lmin dB(A)	Leq dB(A)
NL-1	Rajaf	Businesses and Vehicles	-319157.8,53105	79.6	54.2	66.5
NL-2	Nesitu	Vehicles and Business	-302885,522849	79.6	54.2	66.5
NL-3	Jebel Moluak	Market Center	-306191,526243	86.5	46.8	63.4
NL-4	Ngangala	Few Shops and Animals Grazing	-251460,523781	80.6	49.4	69.2

Ref	Name	Site Description	GPS Coordinate	Lmax dB(A)	Lmin dB(A)	Leq dB(A)
NL-5	Ngulere	Shopping Center	-243385,521119	81.0	46.1	64.9
NL-6	Illiangari	Village	-234777,520941	75.7	45.0	61.2
NL-7	Liria	Business / Wind Blowing	-232115,516327	103.7	68.1	88.0
NL-8	Kudo	Market	-216230,505944	79.0	46.5	58.9
NL-9	Kineti Bridge	Washing / Motorbikes	-207445,491391	87.9	46.5	66.4
NL-10	Torit Town	Businesses and Vehicle	-205603,490082	83.6	62.6	72.6
NL-11	Buno	Market	214293,522960	98.2	56.6	78.6
NL-12	Napotpot	Market	14628,513199	90.3	56.6	73.2
NL-13	Lolua Sec. School	School	-15233,499888	84.5	54.4	67.6
NL-14	Nadapal	Market	-15605,488634	87.3	48.3	63.4
NL-15	New Kenya	Center	-151333,497242	87.3	48.3	63.4
	Range			**28.0**	**23.1**	**29.1**
	Standard Deviation			**7.24**	**6.50**	**7.17**

Maximum Permissible Noise Levels[4]

Residential, institutional, educational areas:

- ✓ 55 dBA during daytime (7:00 a.m. – 10:00 p.m.)
- ✓ 45 dBA during nighttime (10:00 p.m. – 7:00 a.m.)

Industrial and commercial areas: 70 dBA for both daytime and nighttime.

The noise levels have been analysed based on three parameters: **Lmax**, **Lmin**, and **Leq**. For each of these datasets, the range and standard deviation were calculated to provide insight into the variability of the noise levels.

- Lmax (Maximum Noise Level): The range of Lmax values is 28.0dB(A), indicating a significant variation in maximum noise levels across the measured points. The standard deviation is 7.24dB(A), which shows moderate variability around the mean, suggesting that most of the data points are distributed somewhat consistently but with some fluctuations in peak noise levels.
- Lmin (Minimum Noise Level): The range of Lmin values is 23.10dB(A), showing a considerable spread between the lowest noise levels. The standard deviation is 6.50dB(A), reflecting a slightly lower variability compared to Lmax, indicating that the minimum noise levels are relatively stable but still show some variations.
- Leq (Equivalent Continuous Noise Level): The range of Leq values is 29.1dB(A), representing the broadest spread among the datasets, suggesting notable differences in continuous noise exposure. The standard deviation is 7.17dB(A), indicating that there is moderate variability around the average noise levels, similar to Lmax, with continuous exposure levels showing some degree of fluctuation.

Generally, noise levels were observed to be slightly above the recommended permissible levels set by the WB-EHS guidelines, as measurements were taken in areas with different activities, which cumulatively impacted the sound levels. Measurements were taken at major centers along the alignment. Plate 5-5 shows field measurements.

[4] World Bank Document-General-EHS-Guidelines



Plate 5-5: Images of Field Noise Level Measurement

Measurement points were geo-referenced and presented in a detailed map (Noise Measurement Points presented in Appendix G3).

5.1.7 Baseline Air quality

The methodology outlined below was adopted for baseline air quality assessment through measurements.

Equipment

AQM-09 Air Quality Monitoring Station was used. The AQM-09 was configured to measure the following pollutants and parameters critical for assessing air quality along the road project corridor: PM2.5, PM10, sulfur oxides (SOx), nitrogen oxides (NOx), carbon monoxide (CO), carbon dioxide (CO_2), and volatile organic compounds (VOCs). The equipment is dully calibrated to guarantee accuracy and reliability.

Measurement Points

Measurement locations were strategically and purposefuly selected along the road. This was informed by variouscaspects including sensitive receptors such as residential areas, markets area, shopping centres, schools, and hospitals. Placement considered prevailing wind directions and proximity to potential emission sources like construction sites, vehicular traffic, and industrial areas.

Equipment Setup

The AQM-09 unit was installed at each selected site using its modular, all-in-one design, ensuring a quick setup. The unit's double-layer protection box safeguarded it from external environmental factors.

Data Collection

Continuous air quality data was collected for at least 24 hours at each location. The built-in pump ensures rapid response and accuracy in measurements, while the high-resolution sensors detect pollutants down to parts per billion (ppb) levels. Data on wind speed, wind direction, temperature, and humidity helped correlate pollutant concentrations with weather patterns, assisting in understanding pollutant dispersion.

Remote Calibration and Maintenance

The remote parameter correction function ensured that the equipment remained calibrated, reducing downtime and ensuring consistent data accuracy throughout the monitoring period. Maintenance was facilitated by the modular design, allowing easy access for any required adjustments or repairs.

Data Analysis and Reporting

After completing the data collection period, the air quality data was analysed to identify pollutant levels and trends. The results have been compared with international standards (such as WHO guidelines) to assess compliance and potential health risks. These findings have been feed into this environmental and social impact assessment, helping to inform mitigation strategies for the road project.

Basic Parameters

The baseline air quality measurements along the Juba-Torit-Kapoeta-Nadapal Road corridor was conducted to evaluate the ambient concentrations of key pollutants, including PM2.5, PM10, sulfur oxides (SOx), nitrogen oxides (NOx), carbon monoxide (CO), carbon dioxide (CO_2), and volatile organic compounds (VOCs), prior to the commencement of road construction.

Air quality levels at the Periphery of the Project

The results indicated that most locations met the EPA and WHO standards for PM10, which are set at 50 µg/m³ by WHO and 150µg/m³ by the EPA. However, elevated PM10 levels were noted at specific sites, including Blind Mountain, Kapoeta Roundabout, and Kapoeta Market. For PM2.5, all sixteen monitoring points met the WHO 24-hour mean limit of 25µg/m³, as well as EPA regulations. Similarly, the concentrations of sulfur oxides and nitrogen oxides across all sampling locations were within the permissible limits established by both the EPA and WHO.

Furthermore, the measured levels of VOCs, carbon monoxide, and carbon dioxide remained within acceptable thresholds at all points. The variability in air quality across different locations was largely influenced by factors such as vehicular emissions, the presence of local vegetation, ongoing economic activities, and meteorological conditions, particularly wind speed.

Table 5-4: Air quality Measurement Points/ Location

Monitoring Point	Description of the sampling point	Easting	Northing
MP1	Blind Mountain area	-2225106.439	3870690.583
MP2	Illiangari	-2220636.859	3920068.948
MP3	Liria	-2222689.801	3925907.095
MP4	Torit	-2229189.831	3989928.955
MP5	Abalwa	-2224392.142	3997465.097
MP6	Tirangore	-2214156.404	4016826.976
MP7	Hiyala	-2213262.586	4022664.668
MP8	Illeu	-2206654.548	4034315.733
MP9	Lobira	-2211504.996	4046451.364
MP10	Loriyok	-2192425.102	4073977.352
MP11	Kapoeta roundabout area	-2158882.599	4098019.067
MP12	Kapoeta Market area	-2159040.397	4098275.809
MP13	Kapoeta Junction area	-2159844.141	4099214.326
MP14	Buno	-2157837.297	4119464.364
MP15	Napotpot	-2162072.422	4137748.358
MP16	Nadapal	-2188160.502	4128388.971

Selected images for air quality measurement are shown in Plate 5-6.



Plate 5-6: Air Sampling Points

Figure 5-11 shows a visual representation of a typical analysis of air quality sampling undertaken at blind mountain point during the baseline assessment. Details of other point are presented in the Ambient Air Quality Report attached in **Appendix E**

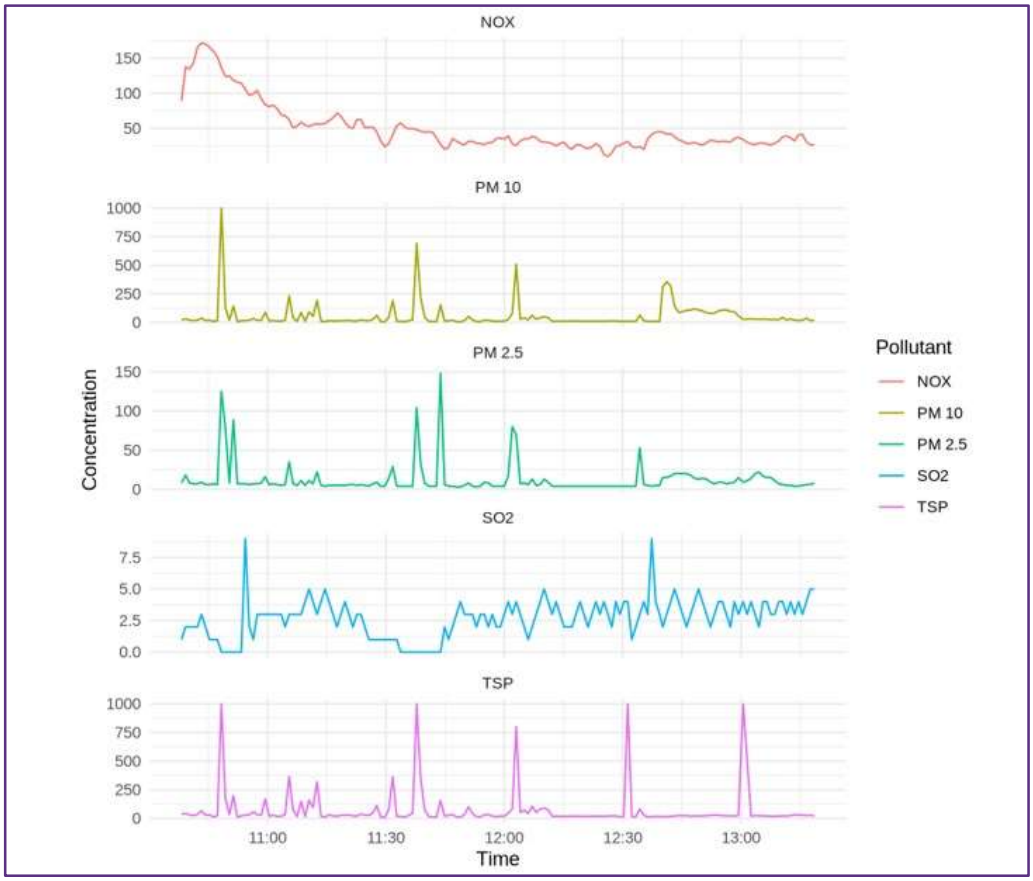


Figure 5-11: Air quality analysis at Blind Mountain area

5.1.8 Solid and Liquid Waste

The waste management infrastructure in South Sudan, particularly in Central and Eastern Equatoria, remains underdeveloped. In Eastern Equatoria State (EES), access to proper water and sanitation facilities is limited, with a significant portion of the population lacking basic services. According to the 2010 South Sudan Health and Household Survey, only 14.6% of the population had access to sanitation services. The Local Government Capacity Programme (LGCP[5]) identifies insufficient sanitation services, poor management systems, and a lack of adequate facilities as major challenges in Eastern Equatoria.

Solid waste disposal typically involves open dumping, while liquid waste, such as sewage, is often left untreated due to the absence of wastewater treatment plants. The water and sanitation departments at the county level have limited capacity to address these issues, hampered by poor regulatory frameworks and insufficient funding. Additionally, low community awareness regarding waste management further exacerbates these challenges.

During the field assessment conducted in September 2024, it was observed that each town along the road alignment had an uncontrolled dump site. For example, in Torit, a dump site was identified approximately 300 meters from the main alignment near Magwi Junction. This dumpsite was located in an abandoned borrow pit, posing significant risks to public health and safety. If left unmanaged, it could trigger disease outbreaks and insecurity. Cattle were also observed drinking water from a pond within the borrow pit, which increases the risk of disease transmission to humans.

In Kapoeta, the field study team visited a municipal dumpsite located about 1 km from Kapoeta town. Various types of waste were observed, including medical and surgical waste from local health facilities, which significantly increases the health risks to the public. The dumpsite was not fenced off, exposing the general population to potential health hazards. Some of the solid waste dumping points are shown in Plate 5-7.



Kapoeta Dumpsite



Torit Dumpsite

Plate 5-7: Major Dumpsites along the project alignment

5.1.9 Environmental Sensitive Areas

An environmentally sensitive area (ESA) can be defined as a type of designation for an area which needs special protection because of its ecological functions, landscape, wildlife or historical value.

Wetlands are a common feature of the flat plains within the project area and the existing road system traverses them on many occasions, often over causeways or raised roadbeds which have disrupted the wetland ecosystem. The predominance of wetlands is vitally important as part of the land-use strategy among the agro-pastoralist society which retreats to them during the long dry season to sustain their cattle with fresh fodder and water

The other ESAs within the project area are wildlife conservation areas. Towards the East, the project road crosses the Kidepo Game Reserve, an important conservation area that extends into Uganda. Indeed within the wider project area each year millions of white-eared kob, Mongalla gazelle, tiang and Bohor reedbuck migrate across the Boma Badingilo Jonglei Landscape where the project road crosses between around Km 200 and Km 250.

[5] https://www.vng-international.nl/wp-content/uploads/2015/06/LGCP_South_Sudan_Programme_New.pdf

5.2 Biological Environment

South Sudan's rich biodiversity, supported by its diverse ecosystems, is critical for conservation, especially given the fragility of these ecosystems and the threats posed by over-exploitation of natural resources.

The ministry of Environment and Forestry has developed a standard categorisation of the habits, however, an environmentally sensitive areas can be designated as such if the habit actual or prospective habitat of any environmentally sensitive species or required to be protected for the purpose of meeting the government's international obligations under any of the global Multi-lateral Environmental Agreements. Biological baseline data was obtained through desk study and field ecological survey, as presented below.

5.2.1 Flora

From Juba to Torit, about three distinct vegetation types were observed. These include woody grasslands (dominated by *Acacia* spp, *Balanites* sp, *Grewia* sp. Streams and riverine areas had palms (*Hyphaene coriace*), Acacias, and bamboo.

Ngangala Hills area consisted of broad-leaved trees doum palms (*Hyphaene coriace*), *Kigelia africana*, Teak (*Techtona grandis*), Acacias, Terminalia.

The road then cuts through the Kidepo Game Reserve with some distinct vegetation type of wooded grassland. This is dominated by Combretums, Balanites, Acacias. This vegetation type goes all the way to Kapoeta.

Wetland at the Kidepo River Bridge is dominated by sedges, doum palms (*Hyphaene coriace*), Ficus. The several wetlands will require non-directional drainage structures that can accommodate future changes in wetland characteristics that may be exercabated by climate change.

Observation shows that there are three distinct vegetation types along the Torit-Kapoeta section.

Torit to Hiyala; this is a purely closed woodland, and Hiyala to Kapoeta including luggas; more open wooded grassland. Within townships and small settlements along the road vegetation is dominated mostly by exotic species.

The closed woodland from Hiyala is dominated by tall trees which included: Sclerocarya, Tamarindus, Lannea, Balanites, Sterculia, Ziziphus, Combretum, Mangifera indica, Piliostigm, Azadirachta indica, Acacias, Ficus, Kigelia, Celtis, Hyphaene. Vitallaria, Ekebergia, Milicia, Khaya (African mahogany), and Erythrophleum.

The resurgence of this vegetation type is as a result of the influence of forest species which marks the transitional zone between the high-altitude species found on hill tops and the lowland woodland.

The second vegetation type from Hiyala to Kapoeta to Nadapal is more open lowland wooded grassland dominated by scattered trees and shrubs. It is well described as *Acacia-Terminalia-Balamites* open wooded grassland to bushland. The dominant species include*: Terminalia brownii, Terminalia spinosa, Acacia polyacantha, Acacia tortilis, Dichrostachys, Harissonia, Tamarindus indica, Ficus, Kigelia,* and *Acacia* spp.

Bushlands from Kapoeta towards Nadapal were dominated by arid bush species with very sparse annual grass cover. Bush species include *Acacia, Balanite, Cadaba, Maerua, Grewia, Combretum spinosa, Boscia*, and *Sansevieria* (an indicative species of arid or dry conditions).

Species found within townships and small settlements along the road are mostly exotics. These include: Azedirachta indica, Jatropha curcas, Tectonia grandis, Senna siamea, Ricinus communis, Parkinsonia anacantha, Ceiba pentandra, Prosopis juliflora, Carica papaya, Musa paradisiacal, Hibiscus rosachinensis and Mangifera indica. The indigenous species include Acacia nilotica, Salvadora persica, Acacia tortilis, Balanites aegyptiaca, Cordia sinensis, Kigelia africana and Hyphaene coriacea.

The most dominant species with a wide distribution all along the road include: Sclerocarya birrea, Tamarindus indica, Kigelia africana, Harissonia abyssinica, Flueggea virosa, Dichrostachys cinerea, Combretum collinum, Balanites pedicillaris, Piliostigma thonningii, Grewia villosa and Ziziphus abyssinica.

In all these zones, grasses were found including *Panicum, Digitaria, Hyparrhenia*, etc.

Land cover is diverse in South Sudan and is driven by rainfall. Rainfall decreases from west to east along the road corridor so does vegetation cover.

Nangala: Mature trees and historical sites within the road reserve and a bypass has been proposed to protect trees and some 'historical sites". Whereas the bypass is intended to protect some mature mango trees, it will also lead to substantial loss of vegetation along the new alignment.

Most of the houses in the project area are grass thatched mud huts. Indeed, thatching grasses are sold in most centers in bundles, often alongside charcoal. These are transported to bigger centers especially Torit

and Juba using tuk tuk, trucks and motorbikes, meaning the market exists and that an improved road may enable access to bigger markets beyond the project area.

Plates 5-8 and 5-9 show some of the flora species in the project area.



Plate 5-8: *Boscia angustifolia* (near Nadapal) and *Euphorbia kibwezensis* (near Nadapal) Respectively



Plate 5-9: *Sansevieria* near Napotpot and *Terminalia spinosa* at Napotpot Respectively

Plate 5-10 shows some of observed indigenous species along the route.



Plate 5-10: *Acacia tortilis* near Torit and *Kigelia africana* at Kapoeta Respectively

A species list was compiled of plant species (and their potential uses) found along the road corridor. These are presented in Table 5-5.

Table 5-5: Plant species encountered along the road project and some of their uses[67]

Plant Species	Local Name	Part Used	Known Uses	Conservation Status (after IUCN)
Woody/Herb Species				
Acacia elatior			Firewood	Threatened –requires ex-situ conservation efforts
Acacia etbaica			Firewood	Not Threatened
Acacia hockii			Firewood	Not threatened; native invader species in some areas
Acacia mellifera		Twigs or branches	Fencing	Not threatened
Acacia nilotica		Fruit	Antiseptic	Not threatened
Acacia nubica				Not threatened
Acacia reficiens		Twigs or branches	Fencing	Not threatened
Acacia senegal			Gum Arabic	Endangered
Acacia seyal			Firewood	Not threatened
Acacia tortilis			Firewood	Not threatened
Adansonia digitatata		Fruits	Food	Not threatened

[6] Ali Omer, Maha Kordofani, Haytham H, Gibreel L, Peter Pysek, and Mrk van Kleunen. 2021. The alien flora of Sudan and South Sudan: taxonomix and biogeographical composition. Biological Invasions, 23:2033-2045.

[7] Joseph DWL, Kenneth Lado LS, Clara Stephen GL, Jada PY, James Augustino MU, Sampson AB, Yatta Samuel LN, Massimo KM, Thomas FL, and Awad HK. 2020. Diversity and Distribution of Medicinal Plants in the Republic of South Sudan. World Jornal of Advanced Research and Reviews, &91): 18-31.

Plant Species	Local Name	Part Used	Known Uses	Conservation Status (after IUCN)
Albizia				Not threatened
Azadirachta indica	Neem	Fruits, leaves	Malaria, insecticides	Not threatened
Balanites aegyptica		Leaves, Stems, branches	Lowering blood pressure, stomach disorders Charcoal making	Endangered
Borassus eathiopum	African fan palm	Leaves	Thatching	Endangered
Boscia coriacea				Unkown
Bridelia sp				Not threatened
Cadaba farinosa				Not threatened or Endangered
Calotropis procera		Leaves, fruit kernel	Cholera, asthma, wounds	Not threatened
Clitoria sp				Not threatened
Crotalaria axillaris				Endangered
Dalbergia melanoxylon		Leaves, bark	Parasitic worms	Not threatened
Diospyros mespiliformis				Endangered and Protected
Diospyros scabra				Not threatened
Euphorbia candelabrum	Candelabra tree			Not threatened
Euphorbia kibwezensis				Not threatened
Ficus sur				Not threatened
Grewia bicolor				Least Concern
Grewia villosa				Least Concern
Hyphaene coriace				Least Concern
Jatropha curcas		Leaves, seeds	Burns, retained placenta, dermatitis, biofuel	Not threatened
Khaya senegalensis	African mahogany	Leaves, roots	Diarrhea, stomach worms	Threatened/Vulnerable
Kigelia africa		Fruits	Syphilis, antibacterial, brewing alcohol	Not threatened
Lannea microcarpa	Ash tree			Least Concern
Leptadenia hastata				Not threatened
Mangifera indica	Mango	Fruits	Food	Not threatened
Mauerua decumbens				Least Concern
Ocimum sp				Not threatened
Phoenix reclinata	African Wild Date Palm			Not threatened
Piliostigma thonningii				Not threatened
Prosopis juliflora				Invasive
Ricinus communis	Castor bean			Invasive
Sanseviera sp				Not threatened
Tamarindus indica		Fruits	Laxative, pneumonia	Not threatened
Tectonia grandis	Teak			Endangered
Terminalia brownii		Wood, roots	Hepatitis	Not threatened

Plant Species	Local Name	Part Used	Known Uses	Conservation Status (after IUCN)
Vangueria apiculata				Least Concern
Ziziphus mauritiana		Leaves, fruit	Cuts, wounds, ulcers	Not threatened
Grasses				
Bothriochloa insculpta				Not threatened
Andropogon contortus				Not threatened
Chrysopogon aucheri				Not threatened
Cynodon dactylon	Bermuda grass			Not threatened
Sedges/Other Aquatic Plants				
Eicchornia crasspes	Water Hyacinth			Invasive
Typha latifolia				Not Threatened
Sedges (various)				Not threatened

Invasive Species

In terms of invasive species, two of them were noted. In the wetland at Torit, water hyacinth (*Eicchonia crassipes*) was found in the waters. This invasive species is a very prolific invader of tropical inland water bodies. Along the road reserve from Nadapal to Kapoeta, the invasive mesquite (*Prosopis juliflora*) was noted to be invading the road reserve. This invasive species is a very prolific invader too and is mostly prolific on alluvial soils. Plate 5-11 shows some of the noted invasive species.



Plate 5-11: Eicchonia crassipes at Torit wetland and Prosopis juliflora near Nadapal Respectively

5.2.2 Fauna

In terms of fauna, very few were observed along the road corridor, even at the famous Kidepo Valley Game Reserve. Only at the Lowoyakali stream baboons were seen (but they took off for fear). However, the project area is likely rich in wildlife considering that the road crosses Kidepo Game Reserve to the east and the migration corridor of a range of ungulates that move between Badingilo National Reserve towards the River Nile to the west.

Along the way from Rajaf east in Juba County, squirrels and snakes were observed, and Rajaf east mountain is known to have hosted significant population of monkeys and baboons. As settlements have encroached to this important ecological site, no evidence of the current biodiversity status is published.

Mammalia

Juba county accommodates part of the Badingilo National park which is of national biodiversity importance. Like Juba county, significant parts of Eastern Equatoria state is home to diverse wildlife species of South Sudan. The mountains and the hills in Eastern Central Equatoria, including Rajaf, and Oponi mountains in Lyria are home to considerable population of baboons (*Papio anubis*), Vervet monkey (*Cercopithecus aethiops*), and macaques. Squirels (*Parazerua ochraceus*) are commonly encountered in these areas. According to the local communities, warthogs (*Phacochoerus spp*), antelopes dikdik (*Rhynchotragus kirki*) and Thomson's Gazelle (Eudorcas thomsonii) are commonly seen in the villages during the dry seasons. Hyenas, Egyptian mongoose (*Herpestes ichneumon*), leopards, wild cats and lions are mostly observed during the night time as they are the common predators of domestic mammals.

Images of mammals observed by the study team are shown in Plate 5-12.



Baboons (Papio anubis)



Vervet monkey (Cercopithecus aethiops)



Squirels (Parazerua ochraceus)



Antelopes dikdik (*Rhynchotragus kirki*)

Plate 5-12: Common mammals within the project area.

During the field visit and baseline data collection, the assessment team observed a monkey killed by the road as shown in Plate 5-13 below.



Plate 5-13: A monkey killed by the road near Napotpot

Reptilia

Reptiles by nature are sensitive to foreign intrusions especially if intruders are at the size of a predator. For this result coupled with the risks of landmines within the vicinity of the one kilometer off road survey, the baseline information specific to reptiles are limited. Along the targeted project area, reptiles such as the gracile blind snake (*Letheobia toritensis*), unidentified chameleon species and monitor lizard were identified. Previous assessment studies have recorded red headed agama (*Agama agama*), gecko (*Lygodactylus picturatus*), savannah monitor lizard (*Veranus exanthemettic*), Nile monitor lizard (*Veranus niloticus*), rock python (*Python sebae*) and brown backed snake (*Rhamphioplus oryrhynchus*) as the common reptiles in the study area.

Insecta

Insects are very common along the road alignment. In the drier areas from Torit to Nadapal termites are very common inside termite mounds. Other insects noted include various types of butterflies, houseflies, dragon flies near water points and rivers. Some observed insects are shown in Plate 5-14.



Plate 5-14: Termites at Napotpot and Butterflies at Kidepo River bridge Respectively

5.2.3 Avifauna

The Central and Eastern Equatoria regions of South Sudan are integral to the larger East African savannah and woodland ecosystems, which host a diverse variety of bird species. The landscape consists of woodland savannas, open grasslands, riparian zones, and scattered wetlands that create a favorable environment for both resident and migratory bird species.

The project corridor from Rajaf in Juba to Nadapal traverses one of the most ecologically rich areas of South Sudan, supporting significant avian diversity. Avifaunal distributions were observed to be somewhat

random, but nests were often found near water points and insect breeding grounds. Certain species, like tick-eaters, were seen in close association with cattle and donkeys, while weaver birds were commonly spotted near borrow pits, which had turned into permanent man-made wetlands.

Previous studies in the area have recorded notable bird species such as the Egyptian Goose (*Alopochen aegyptiacus*), Egyptian Vulture (*Neophron percnopterus*), African Fish Eagle (*Haliaeetus vocifer*), Red-necked Falcon (*Falco chicquera*), Somali Bee-eater (*Merops revoilii*), African Spoonbill (*Platalea alba*), and Pygmy Falcon (*Polihierax semitorquatus*). Additionally, other species observed include the Cattle Egret (*Bubulcus ibis*), Black Egret (*Egretta ardesiaca*), Grey Heron (*Ardea cinerea*), Rüppell's Starling (*Lamprotornis purpureus*), and Black-chested Snake Eagle (*Circaetus pectoralis*).

While no single habitat type was found to host specific bird species exclusively, the baseline survey identified various birds including Weaver Birds (*Ploceus cucullatus bohndorffi*), the Red-cheeked Cordon-bleu (*Uraeginthus bengalus*), Pied Crow (*Corvus albus*), and Helmeted Guineafowl (*Numida meleagris*). In the Kidepo Valley, notable species such as the Ring-necked Dove (*Streptopelia capicola*), Great Egret (*Ardea alba*), Red Bishop (*Euplectes orix*), and the endangered Shoebill (*Balaeniceps rex*) were also observed.

Locals reported the disappearance of certain bird species, attributing this to habitat destruction caused by activities like charcoal burning, brick-making, and firewood collection, which has increased insecurity for avian species.

Key bird species commonly found in this region include ground-dwelling birds like the Helmeted Guineafowl (*Numida meleagris*) and woodland species such as the African Harrier-hawk (*Polyboroides typus*). The woodland habitats provide essential shelter and breeding grounds for both resident and migratory birds, while wetlands serve as critical stopover points for migratory waterfowl. Some of the avifauna species images captured are presented in Plate 5-15.



Helmeted Guineafowl (*Numida meleagris*)



African Harrier-hawk (*Polyboroides typus*)



Red Bishop (*Euplectes orix*)



Red-cheeked Cordon-bleu (*Uraeginthus bengalus*)

Plate 5-15: Observed Avifauna

5.2.4 Conservation Status of Fauna in the Project Area

This section presents the Conservation Status of the wild fauna based on the South Sudan Wildlife Bill of 2023. The South Sudan Ministry of Wildlife Conservation and Tourism categories the conservation status

of wild fauna in three categories, I – Completely Protected Species, II – Specially Protected Species and III – Protected Species. Table 5-6 depicts the conservation status of the faunal species in the vicinity of the project site.

Table 5-6: Conservation Status of the Faunal Species in the Vicinity of the Project Site

Common name	Scientific name	Conservation Status in South Sudan	IUCN
Mammalia			
Baboon	*Papio anubis*	Protected species	Least Concern (LC)
Vervet monkey	Chlorocebus pygerythrus	Specially Protected	Least Concern (LC)
Squirrel	*Xerus erythropus*		Least Concern (LC)
Warthog	*Phacochoerus spp*	Protected species	Least Concern (LC)
Antelopes dikdik	*Madoqua kirkii*	Protected species	Least Concern (LC)
Thomson's Gazelle	*Eudorcas thomsonii*	Completely protected	Least Concern (LC)
Spotted Hyena	*Crocuta crocuta*		Least Concern (LC)
Egyptian mongoose	*Herpestes ichneumon*		Least Concern (LC)
Leopard	*Panthera pardus*	Completely protected	Vulnerable (VU)
Wild cat	*Felis lybica*	Protected species	Least Concern (LC)
African Wild Dog	*Lycaon pictus*		Endangered (EN)
Lion	*Panthera leo*	Completely protected	Vulnerable (VU)
Bohor reedbuck	*Redunca redunca*		Least Concern (LC)
White eared kob	*Kobus kob*		Least Concern (LC)
Mongalla gazelle	*Eudorcas albonotata*		Least Concern (LC)
"Tiang"	*Damaliscus lunatus*		Least Concern (LC)
Buffalo	*Syncerus caffer*		Near Threatened (NT)
African Bush Elephant	*Loxodanta Africana*		Endangered (EN)
Cheetah	*Acinonyx jubatus*		Vulnerable (VU)
Reptilia			
Gracile blind snake	*Letheobia toritensis*		Least Concern (LC)
Chameleon	*Trioceros conirostratus*	Specially protected	Least Concern (LC)
Monitor lizard	*Varanus gouldii*	Specially protected	Least Concern (LC)
savannah monitor lizard	*Varanus exanthematicus*		Least Concern (LC)
Nile monitor lizard	*Varanus niloticus, L*		Least Concern (LC)
Red Headed Agama	*Agama agama*		Least Concern (LC)
Gecko	*Gekko gecko*		Least Concern (LC)
Avifauna			
Tick-eater	*Buphagus erythrorhynchus*		Least Concern (LC)
Weaver birds	*Ploceus melanocephalus*		Least Concern (LC)
Egyptian Goose	*Alopochen aegyptiacus*	Specially protected	Least Concern (LC)
Vulture	*Neophron percnopterus*	Completely protected	Endangered (EN)
African Fish Eagle	*Haliaeetus vocifer*	Completely protected	Least Concern (LC)
Red-necked Falcon	*Falco chicquera*		Near Threatened (NT)
Somali Bee-eater	*Merops revoilii*		Least Concern (LC)

African Spoonbill	*Platalea alba*	Completely protected	Least Concern (LC)
Pygmy Falcon	*Polihierax semitorquatu*		Least Concern (LC)
Cattle Egret	*Bubulcus ibis*	Specially protected	Least Concern (LC)
Black Egret	*Egretta ardesiaca*	Specially protected	Least Concern (LC)
Grey Heron	*Ardea cinerea*	Completely protected	Least Concern (LC)
Rüppell's Starling	*Lamprotornis purpureus*		Least Concern (LC)
Black-chested Snake Eagle	*Circaetus pectoralis*	Completely protected	Least Concern (LC)
Red-cheeked Cordon-bleu	*Uraeginthus bengalus*		Least Concern (LC)
Pied Crow	*Corvus albus*		Least Concern (LC)
Helmeted Guineafowl	*Numida meleagris*	Specially protected	Least Concern (LC)
Ring-necked Dove	*Streptopelia capicola*	Specially protected	Least Concern (LC)
Great Egret	*Ardea alba*	Specially protected	Least Concern (LC)
Red Bishop	*Euplectes orix*		Least Concern (LC)
Shoebill	*Balaeniceps rex*	Completely protected	Vulnerable (VU)
Helmeted Guineafowl	*Numida meleagris*	Specially protected	Least Concern (LC)

Of the fauna species listed above, up to eight are listed as facing some degree of threat, with the vulture and the African wild dog being the most fragile, listed as endangered. The other avian species in the list is the red-necked falcon which is near threatened and the shoebill which is vulnerable. The bulk of the species are big game comprising the leopard, lions buffalo, cheetah, all of which are either vulnerable or near threatened.

5.2.5 Ecosystems within the Project Area

Land Cover

Land cover is diverse in South Sudan and is driven by rainfall. Rainfall decreases from west to east along the road corridor so does vegetation cover. The proposed road is located within two states: Central Equatoria and Eastern Equatoria. Central Equatoria State is located in the southern part of the country, bordering with Uganda and Democratic Republic of Congo. Most of the land is covered by natural vegetation, mainly open vegetation with shrubs and grassland (42 and 30 percent of the total area respectively). Herbaceous crops cultivation covers about 1.5 percent of the total land[8]. [9]The major vegetation type in Central Equatoria is illustrated in Figure 5-12.

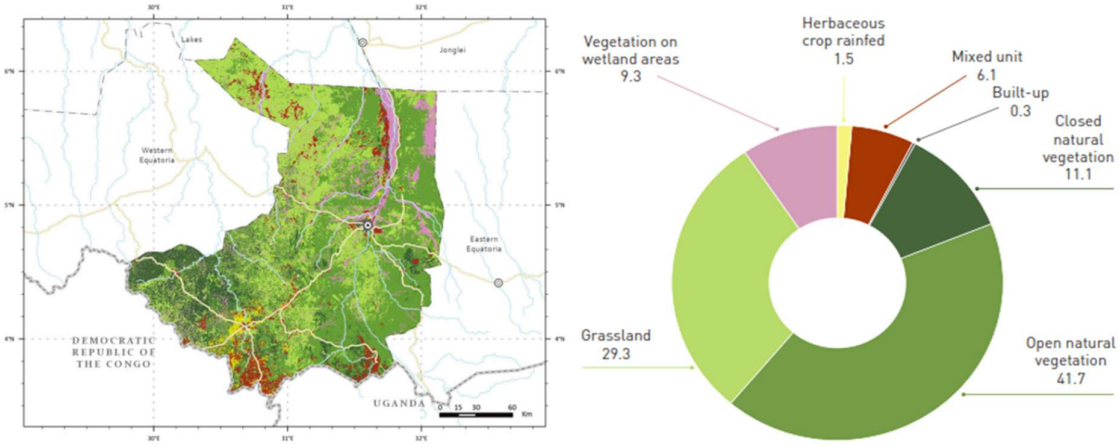


Figure 5-12: Major vegetation types in the Central Equatoria State

[8] FAO. 2023. Land Cover Atlas of the Republic of South Sudan. Rome. https://doi.org/10.4060/cc6216en).
[9] FAO. 2011. Land Cover Atlas of the Republic of South Sudan. Rome. https://www.fao.org/documents/card/en/c/cc6e5ce5-bbde-4608-b2ac-1d5a6f5042cd

Eastern Equatoria state is located in the southeastern region of the country, bordering with Uganda, Kenya and Ethiopia on the east. Open vegetation is the most represented land cover class. Most of the land is covered by natural vegetation, mainly open vegetation with shrubs and grassland. Imatong Mountains are mainly located in Eastern Equatoria and with plains and the lower parts of the mountains covered by deciduous woodland, wooded grassland and bamboo thickets to the north and west.

The major vegetation type in Eastern Equatoria is illustrated in Figure 5-13.

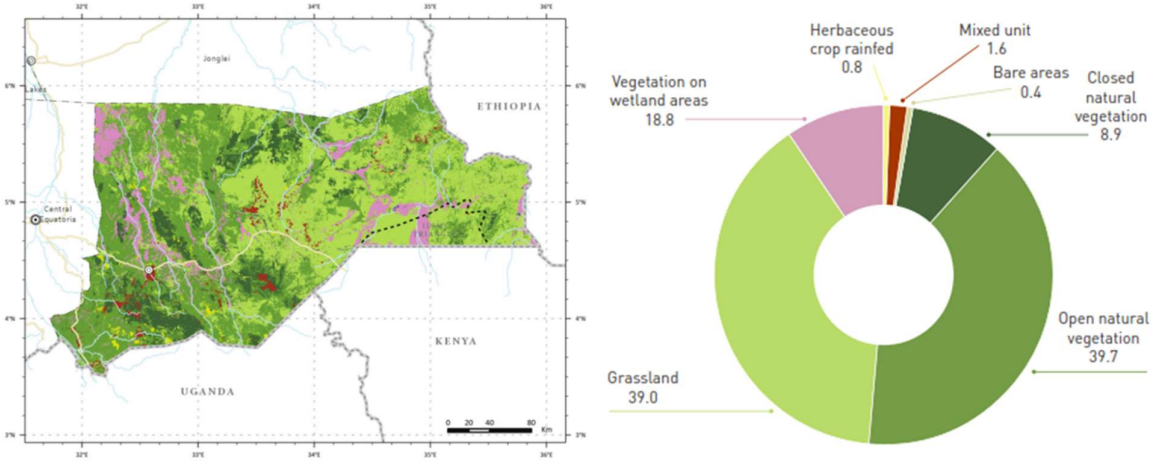


Figure 5-13: Major vegetation types in the Eastern Equatoria State

Wetlands

Wetlands have very important ecological functions including absorption and storage of flood water during torrential rains, controlling/regulating run-off, release of water into streams and the environment during dry season, and as buffers or natural sponges, wetlands mitigate the impacts of strong runoffs. Some wild animals including crocodiles find refuge in wetlands. Wetlands serve as breeding ground for some aquatic animals.

At zero kilometer in Rajaf, man-made seasonal wetlands are observed in both sides of the alleviated main road, as there was no proper cross drainage system on site. As a result, most of the settlements are submerged.

The mountains and hills in the project area from Juba to Nadapal affect the morphology of the highway as strong runoffs from the highlands (including the mountains and the hills) cross the road from left to right all along. This has created a significant number of seasonal and permanent wetlands.

Within the Central Equatoria section, at 36.8Km, Khor Gana is one of the significant seasonal wetlands. Other wetlands around seasonal streams were observed at (38km, 43km, 43.9km, 48.6km, 49.1km, 50.5km, 52.4km) in this section from 0.00km at Rajaf.

In Eastern Equatoria, Torit County, Imoli River (aka Khor Ingliz or Khor English), Khor Dileb, Kineti, Iyodo, Idoulu and Hoss rivers are some of the important wetlands, which according to locals, are habitat to some fish (mud fish) and crocodiles, but the survey team could not authenticate this to support this claim. Some borrow pits in Kudo payam keep water all year round, providing suitable breeding ground for insects, snails and amphibians. Locals claim that the borrow pits are hosting crocodiles, but there is not enough evidence to support this claim. Due to suitable micro-climate created as a result of presence of water, these man-made wetlands become breeding ground for birds, and watering point for wildlife and domestic animals (livestock).

Kidepo valley [which is of wildlife and ecological significance] and Loriyok seasonal stream are some of the important wetlands in Budi County of Eastern Equatoria. River Singiata, Khor Marchi, Loworeng Stream, Loriyok stream and Lowoyokali river are some of the wetlands in Kapoeta East County. Some of these wetlands provide water for wildlife during the dry seasons of the year.

Near the wetlands, it was observed that some livelihood activities such brickmaking, farm irrigation were practiced by the local communities.

Important Conservation Areas

Situated in the south of South Sudan, Badingilo and Boma national parks make up nearly three million hectares and form an integral part of the larger 20-million-hectare ecosystem that stretches through the Jonglei corridor and to the White Nile. Known as The Boma Badingilo Jonglei Landscape (BBJL), this landscape is home to the largest land mammal migration on Earth, where millions of white-eared kob, Mongalla gazelle, tiang and Bohor reedbuck merge in Badingilo during the wet season for breeding, before migrating north and east towards Boma National Park and the Sudd, and into Gambella National Park in Ethiopia.

In 2023, the government committed to understand and safeguard the landscape further by partnering with African Parks to conduct the first comprehensive aerial survey of the BBJL, which confirmed that approximately six million antelope traverse this remarkable landscape every year – the largest immigration on the planet. This comprehensive aerial survey of the BBJL revealed approximately six million antelope, making it the world's largest land mammal migration. The survey covered a 122,774km^2 contiguous block, encompassing the entire known range of the four main migratory antelope species in the Great Nile Migration. The results of the systematic assessment of wildlife, livestock and human activity show that each year, millions of white-eared kob, Mongalla gazelle, tiang and reedbuck migrate across the BBJL. Gambella National Park in Ethiopia is a critical component of this ecosystem.

The significant numbers of people that live inside and on the boundaries of the parks comprise different ethnic groups, including the Dinka, Murle, Anyuak, Jie, Toposa, Nyangatom, Nuer, Mundari, Bari, Loyoya, Madi, Lolubo, Ari, Lopit, Latuka, Boya and Didinga. Each has distinct traditions, culture, and livelihood activities connected with nature and the landscape. Each of these communities has deep cultural traditions, and livelihood activities that are firmly embedded and heavily reliant on wildlife and the vast landscapes they inhabit. Working with these local communities to protect this vital ecosystem will help perpetuate this global phenomenon whilst also bringing about stability, safety and security and creating a sustainable future for the people who live in this area – many of whom are still recovering after years of war and disruption.

Unmanaged exploitation of this resource could trigger the collapse of migratory patterns, ecological integrity, and the livelihoods dependent upon them. A comparison with studies conducted in the 1980s shows that there have been substantial declines in most sedentary species which do not exhibit a migratory pattern including elephant, warthog, cheetah, hippo and buffalo. The prolonged years of conflict have had a devastating impact on wildlife population, with white rhinos becoming extinct and elephants and giraffes significantly reducing in numbers.

South Sudan is rich in biodiversity. Despite years of conflict that has led to the reduction of the number of Africa's Big Five game animals, including elephant, lion, African buffalo, rhinoceros and leopard, the population of the white-eared kob, tiang and mangalla gazelles has continued to rise.

There is an opportunity to protect and develop the parks to support both people and wildlife. Through effective management, infrastructure, conservation law enforcement, and engagement with local communities, the parks have the potential to continue providing natural resources to the communities in the landscape and more broadly to the people of South Sudan in a way that supports sustainable development.

Boma and Badingilo parks are proposed UNESCO World Heritage Sites and together form an Important Bird Area (IBA). The parks also support an important population of Critically Endangered Nubian giraffe (a subspecies of northern giraffe), Critically Endangered northern lion and north-east African cheetah.

Understanding local knowledge on wildlife and integrating local conservation practices into the country's wildlife conservation policies and strategies will help promote conflict-sensitive and sustainable conservation. For example, it has been reported in community forums that local communities are prohibited from hunting during rainy season as it is believed that doing so can lead to failed crops. As a result, hunting is only done in dry seasons, and between January and March each year, and is primarily carried out when wildlife begins to encroach into human settlements and farms. Local communities also limit their use of certain water points during animal migration to avoid human-animal conflicts. As the values attached to wildlife and local conservation methods may be unknown, conservation interventions need to prioritize community engagement with the aim of documenting and sharing knowledge and experiences on how communities live with wildlife and why animals matter to them, and how they sustainably manage wildlife. This will enable conservation interventions to cherish the culture, history and heritage of local communities and to promote and conserve them for future generations.

Studies from Kenya show that conservation interventions can become more sustainable if they allow local communities to play a key role in decision making in conservation related activities. Accordingly, involving local communities in conservation efforts by creating wildlife conservancies managed by locals with assistance from the government can create a sense of ownership and enables them to sustain wildlife beyond the lifespan of conservation projects. To better foresee and mitigate potential conflicts with communities in South Sudan, conservation interventions should consider integrating conservation into humanitarian, development and peacebuilding (HDP) efforts in conservation areas.

Kidepo Game Reserve

The Kidepo Game Reserve is a protected area located in Ikotos and Budi counties, Eastern Equatoria State. With an area of 1,200 km^2, this reserve is located 4° 04'N and 33° 28'E on the South Sudan/Uganda border, where it forms a contiguous ecosystem with Uganda's Kidepo Valley National Park (where animals consist of over 475 bird species, including a number that are endemic to the Kidepo region e.g. rose ringed parakeets, Clapperton's francolin and Karamoja apalis. Other highlights include the ostrich, secretary bird, kori bustard, red-throated bee-eaters, the Abyssinian roller and the Abyssinian ground hornbill. Kidepo is also notable for 56 raptor species including the rare lappetfaced vulture, lesser kestrel and Denham's bustard).

Three quarters of the Kidepo Game Reserve is in Bira Payam of Ikotos County and also part of Budi County, which is inhabited by the Ketebo, Didinga and Buya. Sudan deployed some game rangers in Bira from 1976 to 1983, until civil war broke out in 1983.

The 1,200 km^2 reserve includes savanna, grassland, and woodland habitats. Acacia short-grass savanna predominates in the plains. Low ranges of rocky hills are covered in scrub. The Ibakany -Toomodo and Narus plains, Lonyili Mountains, Akorou-Bira Mountain, Dongatona Mountains and Didinga Hills have areas of montane forest and shrubland.

Mammal species in the reserve include African bush elephant, African wild dog, lion, cheetah, leopard, spotted hyena, lesser kudu, African buffalo, and giraffe. The present conservation status of these and many other mammals, birds, reptiles and amphibians is not known. It is likely that due to the protracted war and other conservation challenges, the numbers of wildlife have been reduced in a similar way as those in Nimule and Southern national parks.

The reserve is an IBA. Native birds include Heuglin's spurfowl (*Pternistis icterorhynchus*), yellow-necked spurfowl (*Pternistis leucoscepus*), and dusky turtle dove (*Streptopelia lugens*).

Bandingilo National Park

The Bandingilo National Park, sometimes spelled Badingilo, is located in South Sudan's Central Equatoria (outside project area). It is important to mention outright that the project road does not pass through the park neither does any part fall within the project's zone of influence, but is discussed here because of its ecological linkages with the wider project area. The park covers the erstwhile states of Central Equatoria and Eastern Equatoria. It was established in 1992. Situated in a wooded area near the White Nile River, it is over 10,000km^2 in size. It also contains large marshlands stretching up into Jonglei State.

The world's largest[10] annual animal migration takes place when multiple species of antelope, including Bohor reedbuck, tiang, and white-eared kob, move between Bandingilo Park and Boma National Park. In 2021 it was estimated the migration included 1 million kob and 200,000 tiang. A 2023 survey found it may be the largest migration, including 5 million white-eared kob, 350,000 Mongalla gazelle, 300,000 tiang, and 160,000 bohor reedbuck.The migration happens from January to June. The animals move from Bandingilo into Boma and the Gambella National Park in Ethiopia. Then the pattern is reversed from November to January.

The park is also home to the critically endangered species of the Nubian giraffe, Northeast African cheetah, and Northern lion. Additionally, there are African wild dog, caracal, and spotted hyena. The park supports large bird populations, estimated to be 400 species in 2021. It is an Important Bird area (IBA).

During the wet season, the grasslands are flooded. Then during dry season there is extensive burning. This helps maintain the grassland habitats.

10 https://www.africanparks.org/worlds-largest-land-mammal-migration-confirmed-south-sudan

Wildlife Migration

Significant wildife movement across the project area has been documented (Enjonjo Foundation, 2022). From information provided by Dr. Malik Doka Morjan (personal communication), at the University of Juba, there are observable mmovements (migration during wet and dry seasons) of animals between Boma, Badingilo, Nimule game parks and Kidepo Game Reserve. Basically, wildlife spend their time in Badingilo National Park and migrate to other areas during the dry season. This pattern was also confirmed by the senior staff of the Ministry of Wildlife Conservation and Tourism (Ms. Lona Nalurit Darius and Paul Peter Awol) at the Ministry Headquaters, Juba. The main conservation and migratory routes within the project area are shown in Figure 5-14.

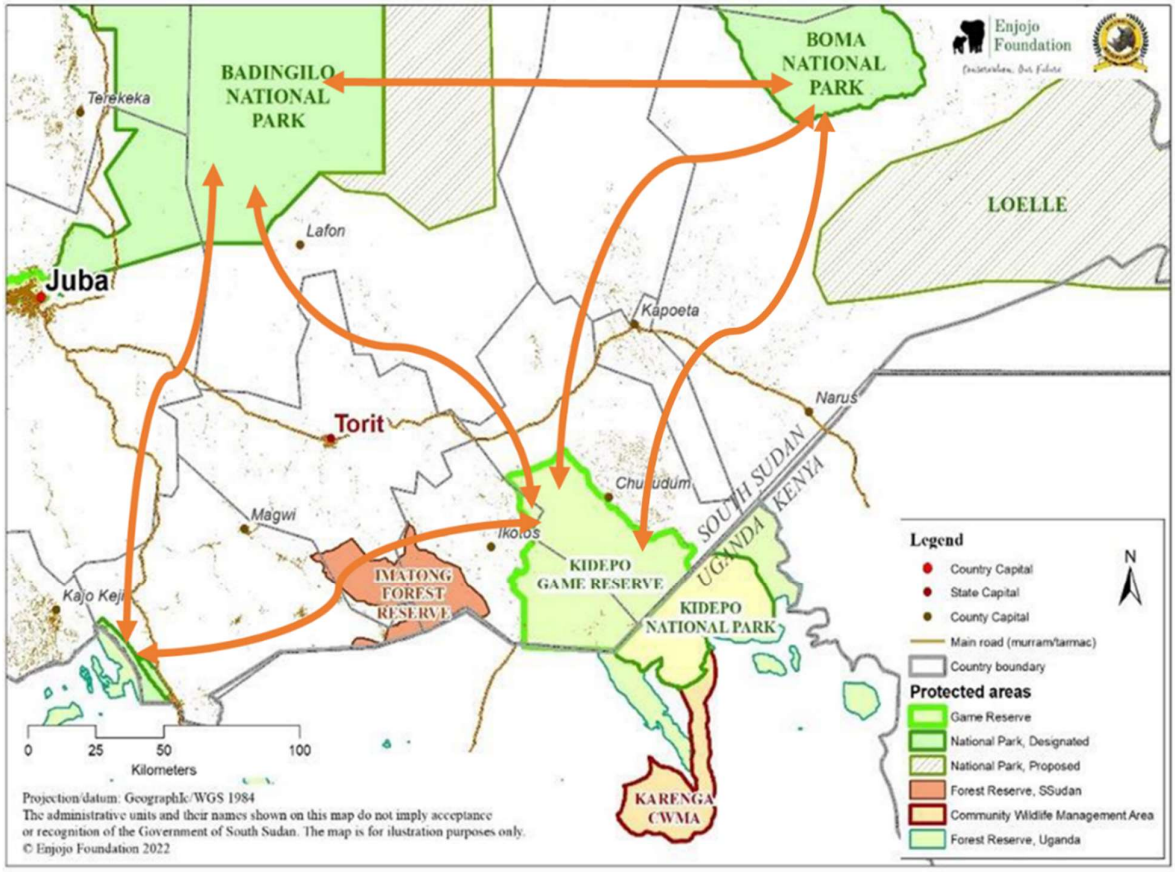


Figure 5-14: Map showing conservation areas and migration routes within the project area[11]

[11] Kidepo Game Reserve wet season aerial survey, Enjonjo Foundation, 2022

The established wildlife crossing points along the road route is presented in Table 5-7.

Table 5-7: Wildlife Crossing Areas/Points along their Movement Corridors

#	Crossing Point/Zone	Chainage	Animal	Boma	Number/Frequency	Drainage structure
01	Abilingwa near the bridge	44+00 - 47+00	Elephants, Antelopes	Ngangala	Less/rare	Box culverts with widths of 4-5m and height of 2m – These can accommodate the small mammals however large mammals such as the elephants will cross the road at grade. Further, small mammals avoid structures with a tunnelling effect since they feel trapped in case of ambush by the predators.
02	Pass between the two hills in Illiangari	57+00 - 61+500	Monkeys	Illiangari	Less/rare	Box culverts with widths of 4-5m and height of 2m – These can accommodate the small mammals however large mammals
03	Khor Lakabata	120+00 - 122+00	Antelopes	Lakabata	Less/rare	The section only has river Kinet bridge structure, this cannot be used by most animals since it's a permanent river
04	Mt Oduniarik - Lotoba-Langior- Kidepo valley (Entire section between Illeu and Kidepo Valley)	176+00 - 216+00	Elephants, Hyenas, Leopard, Cheetah, Lions, Monkey, Buffalos, Antelopes, Gazellle, Dikdik	Illiue, Lobira Kidepo	More/daily	This section has two bridges and numerous box culverts of varying widths ranging from 2.5 to 5.0m and the heights varying from 1.2 to 2.0m. The bridges have a height of approximately 3.0m
05	Nakodok (1and 2)	337+00 - 349+00	Elephants, Buffalos	Nairus	Less/Seasonally	This section has three bridges and numerous box culverts of varying widths ranging from 2.5 to 5.0m and the heights varying from 1.2 to 2.0m. The bridges have a height of approximately 3.0m

It is clear that the project road crosses important wildlife migration corridors connecting major conservation areas. It is therefore important that the road project does not adversely affect wildlife movements. It is noted that the small mammals can use the proposed design drainage structures for crossing the road especially during the dry season, however the small mammals will avoid using the drainage structures especially the box culverts which have a tunnelling effects and poses a danger to them as predators will normally lay in wait at the exit.

Potential impacts and measures are discussed in Section 7–.

5.3 Prevalence of Natural Disasters

South Sudan generally is prone to natural disasters driven by either climate change or other anthropogenic factors. Prevalence of natural disasters is unpredictable. The country's climate is characterized by extremes, and it regularly experiences drought, torrential rains and seasonal flooding worsening food scarcity or triggering a decline into poverty.

The most important natural disasters in the project area are floods, droughts and occasional wildfires. These natural disasters, when occur, destroy or degrade the natural resources that are significant source of livelihoods. Apart from frequent droughts, the floodplains that are common in the project area experience occasional flooding that result in widespread crop failure, livestock deaths, loss of cropland, and loss of pasture. There is a lack of information about the extent of forest loss to uncontrolled fires in the project area. However, fires are used in the traditional practice of shifting cultivation, for hunting and to rejuvenate grazing areas. Other triggers for uncontrolled forest fires are lightning, smokers used by honey collectors, and in some cases, communities deliberately setting forest fires to signal discontent with government policies and regulations.

5.4 Socio-Economic Environment

The consultant undertook a socio-economic study across the communities within the project area between 2nd September and 11th September 2024. The study entailed use of a socio-economic survey questionnaires that were administered to the area resident (community members).

The data collected included: Gender distribution; Household characteristics; Religious affiliations; Housing; Water Sources and Disposal of wastewater; Transport; Energy Sources; Land Ownership and Access to Health. The findings of the socio-economic survey are discussed in detail below.

5.4.1 Administrative Unit

Administration

A total of 196 household heads were interviewed of whom 78% were rural while 18% were urban residents of Juba, Torit, Kapoeta, Narus and Nadapal. The road traverses through two states: Central Equatoria and Eastern Equatoria State. 27% of the respondents were from Central Equatoria while 73% were from Eastern Equatoria-. It also cuts across the counties of Juba, Torit, Ikotos, Budi, Kapoeta South and Kapoeta East.

The respondents from the payams are as shown in the Table 5-8.

Table 5-8: Respondents by Payam

Payam	Number	Percent (%)
Narus	45	23.0
Hiyala	37	18.9
Liriya	19	9.7
Kudo	9	4.6
Lokiliri	16	8.2
Hiyala	8	4.1
Chahari	7	3.5
Nyong	21	10.7
Katodori	21	10.7
Loriyok	13	6.6
Total	196	100.0

The population distribution within the project area is shown in Table 5-9.

Table 5-9: Population distribution within the Project Area

State	County	Total
Central Equatoria	Juba	372,413
Eastern Equatoria	Torit	99,740
	Kapoeta East	252,271
	Kapoeta South	79,470
	Budi	99,199
	Ikotos	84,649

	Total	**987,742**

Source: South Sudan Census Report, 2008

Gender of the respondents

Out of the 196 respondents interviewed during the household survey, 79% were male and 21% female. At household level more men were found and were more willing to be interviewed. It was established that farm work is mostly done by women hence during the time of interview (most of which were done between 10am-1.00pm) most women were in the field away from home.

Respondent's Age Group in years

The repondents age group is presented in Table 5-10.

Table 5-10: Respondent's Age Group in years

Age Range (Yrs)	Number	Percent (%)
19 - 35	112	57.1
36 - 45	35	17.9
46 – 55	19	9.7
56 – 65	12	6.2
66 – 75	8	3.9
Below 18	10	5.2
Total	**196**	**100.0**

Marital status

The marital profile of the respondent household heads was: Married 73%, widow 1%, separated 1% and single 25%.

Religious affiliation

The vast majority 99% are Christians of the Roman Catholic faith. while only 1% have no religious affiliation. In Juba, Torit and Kapoeta towns there is a significant Muslim population. However a previous study found Christians were over 80% but the scope of traditionalists was high to 50% in the section between Juba and Torit[12].

Household Size

The mean household size for both males and females is 4. The average number of household members below 18 years is 4, while the number above 18 years is 5. The minimum household size was 1 and a maximum of 10. In the 2013 assessment the household size was 6.7 for rural households and 1.5 for urban households with an average household size of 4 [13]

The household heads statistics are presented in Table 5-11.

Table 5-11: Household heads

	Number	Percent (%)
Elder Brother	3	1
Father	180	92
Mother	13	7
Total	**196**	**100.0**

The dominance of male-headed households, particularly by fathers, suggests that traditional patriarchal structures are strong in the community. This may influence decision-making processes within households and could have implications for how resources and information are shared, particularly in relation to development initiatives such as the road project.

[12] GOSS, 2013. Upgrading of Nadapal-Juba Road. Final ESIA Report.
[13] GOSS, 2013, Upgrading of Nadapal-Juba Road. Final ESIA Report.

5.4.2 Water Use/Sources

The national water coverage in 2019 was 41%. Access to pipe water is low. In urban areas there is heavy reliance on boreholes. Access to safe sanitation facilities is as follows: national 11%; rural 5% urban 37%; and 62% of the population have no access to any sanitation facility (GOSS, 2023). The project area is largely semi-arid in the Central Equatoria Stare and more arid in the Eastern Equatoria State. In Central Equatoria the Nile River is the principal source of water for domestic and livestock use. In Eastern Equatoria State rivers (permanent and seasonal) are the principal sources of water for domestic and livestock. The rivers observed along the road include River Khor English, River Kineti, River Idolu, River Hoss, River Kidepo and River Nzoro. River Kineti is the only permanent river along the route. Boreholes are common sources of water and are visible in or near settlements. Most boreholes are communal and were constructed by NGOs. Such boreholes do not produce enough water for domestic and livestock use all year round and the communities struggle to find the resource. Therefore, most of the water sources for domestic use are classified as unsafe.

There was no evidence of roof catchment in urban centres nor water storage tanks. Investments in water at community and/or household are not evident since the communities in the project area are just emerging from a long period of conflict. It is only in Torit town that there is limited piped water system confined to within the town centre with scattered public tap points. The water is managed by the Torit Urban Water Supply Services Company Ltd (TUWSS-CO. Ltd) under the Ministry of Water Resources and Irrigation. In the water and sanitation sector some of the initiatives by government (with support from World Bank) for improvement include: Resilient Water Project for Improved Livelihoods in Juba; and the Strategic Water Supply and Sanitation Improvement Project. The project's aim is to increase access to water by rehabilitating 80km of the distribution network pipes; training of women on water management, management of water kiosks and installation of solar to power the water system.

Some of the water sources observed by the study team are shown in Plate 5-16.



Plate 5-16: Samples of Water sources observed among communities at Korjip River, at a borehole at Liria, and a Water Kiosk at Torit Town

According to a Key Informant, *"There is no piped water in Rajaf section of Juba, Nadapal, Kapoeta and Narus. It is only Torit with very limited water pipes."*

Sources of water among the household is presented in Figure 5-15.

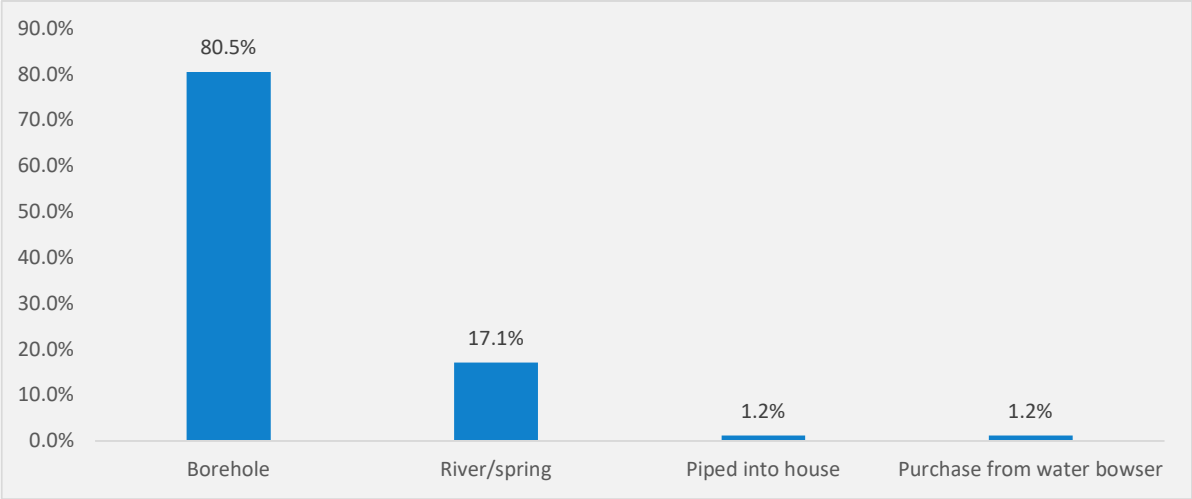


Figure 5-15: Sources of Water among Households

Despite the water scarcity observed in the project area, there is no recycling of water reported among the households. 73.6% of the households use direct-to-ground disposal, 22.2% rely on pit latrines, and only 4.2% have access to sewer systems. Those with access to sewer are more likely to be in Torit.

5.4.3 Land Use and Land Cover

The land use and land cover along the proposed Juba-Torit-Kapoeta-Nadapal road can be categorized into three principal types, reflecting both natural and modified landscapes shaped by rural and urban activities. In the area near Juba, the principal land uses are light industrial and real estate development. At the capital city, Juba is characterized by residential, commercial, and institutional land use, with ongoing trends toward land fencing and privatization, reflecting increasing urbanization. The area serves as a hub for businesses and services, contributing to a more structured urban landscape.

As one moves away from Juba towards Torit, the landscape transitions to predominantly small-scale sorghum farming. This rural section is marked by subsistence-based agriculture, where land use is communal, and fencing is minimal, primarily used to protect cultivated land from animals. The natural landscape includes woodlands and scattered forest patches, interspersed with human activity, reflecting the balance between farming and the environment.

Further east, from Kapoeta to Nadapal, the land is largely dominated by pastoralism, with the Toposa pastoralist community using the extensive grasslands and savannas for grazing. Agro-pastoralism, which combines small-scale sorghum farming with livestock rearing, is also practiced here. The land remains largely communal, with minimal development except for occasional settlements near or attached to army camps. In this region, much of the land is under natural vegetation, with only occasional cleared farmland. Additionally, bare land and rocky outcrops are visible in some areas near Kapoeta and Nadapal, where vegetation is sparse.

Across the entire road alignment, a mix of natural vegetation, small-scale farming, and pastoralism prevails, with pockets of urbanization around major towns like Juba, Torit, and Kapoeta. The land use reflects a mosaic of agriculture, grazing, and settlements, with a gradual transition from more industrial and residential land near Juba to predominantly rural and pastoral land toward Nadapal. The figure below show the general land use along the proposed road project.

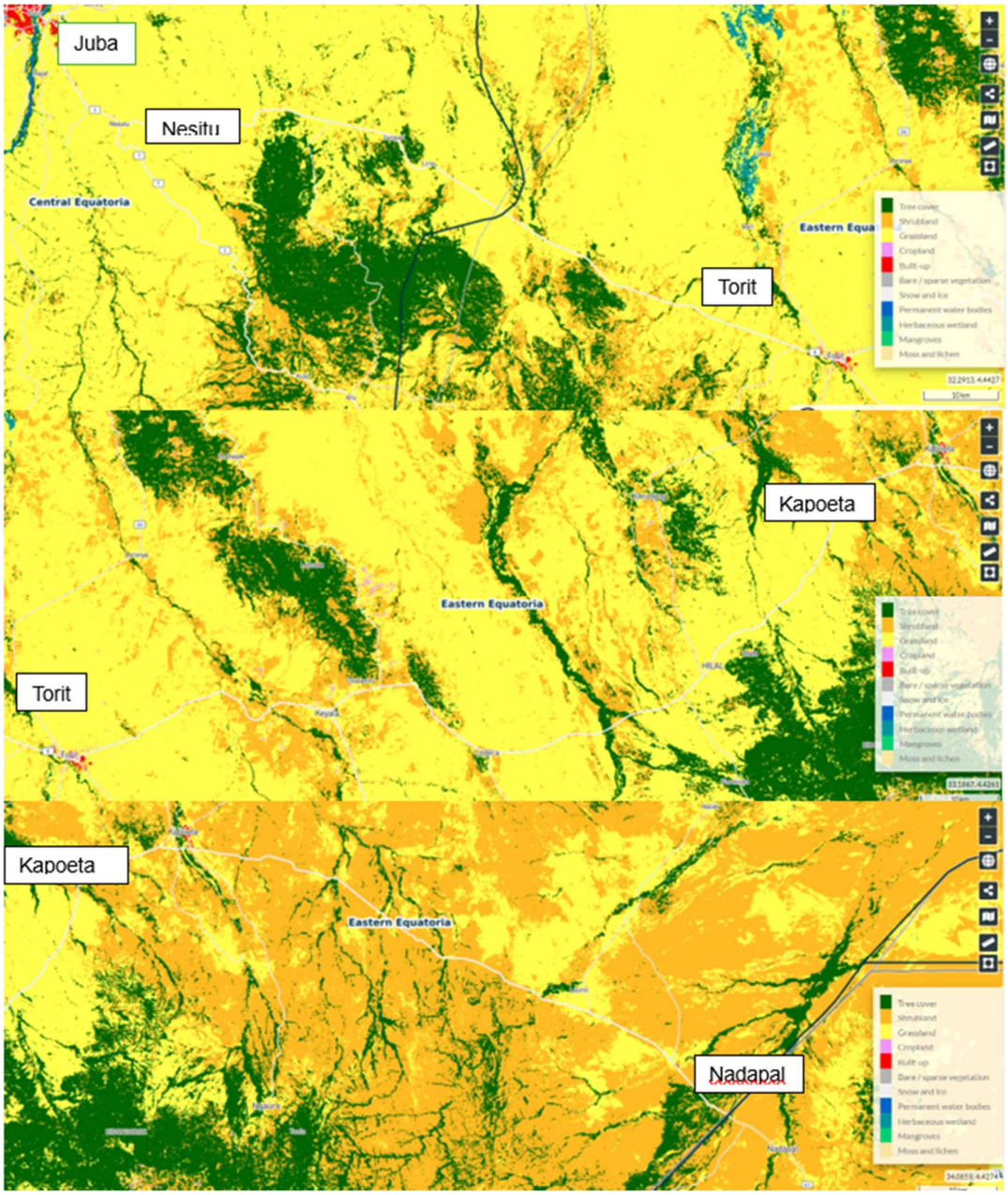


Figure 5-16: Juba-Torit- Kapoeta-Nadapal land Use and Land Cover[14]

Figure 5-18 highlights the key towns along the proposed project alignment, where human settlements are concentrated. These towns serve as the central hubs for social and economic activities, with amenities such as markets, schools, healthcare facilities, and places of worship. The concentration of settlements in these areas underscores their significance in the region, with most of the population relying on these hubs for daily activities. These key towns along the alignment include: Torit, regional hub that plays a critical role in connecting the surrounding rural areas to the broader network of services and opportunities. Kapoeta, known for its bustling marketplaces and vibrant community life, it's a central point for economic growth and Nadapal, positioned near the border, Nadapal is a gateway town, strategically important for trade and cross-border movement.

[14] WorldCover Viewer (esa-worldcover.org)

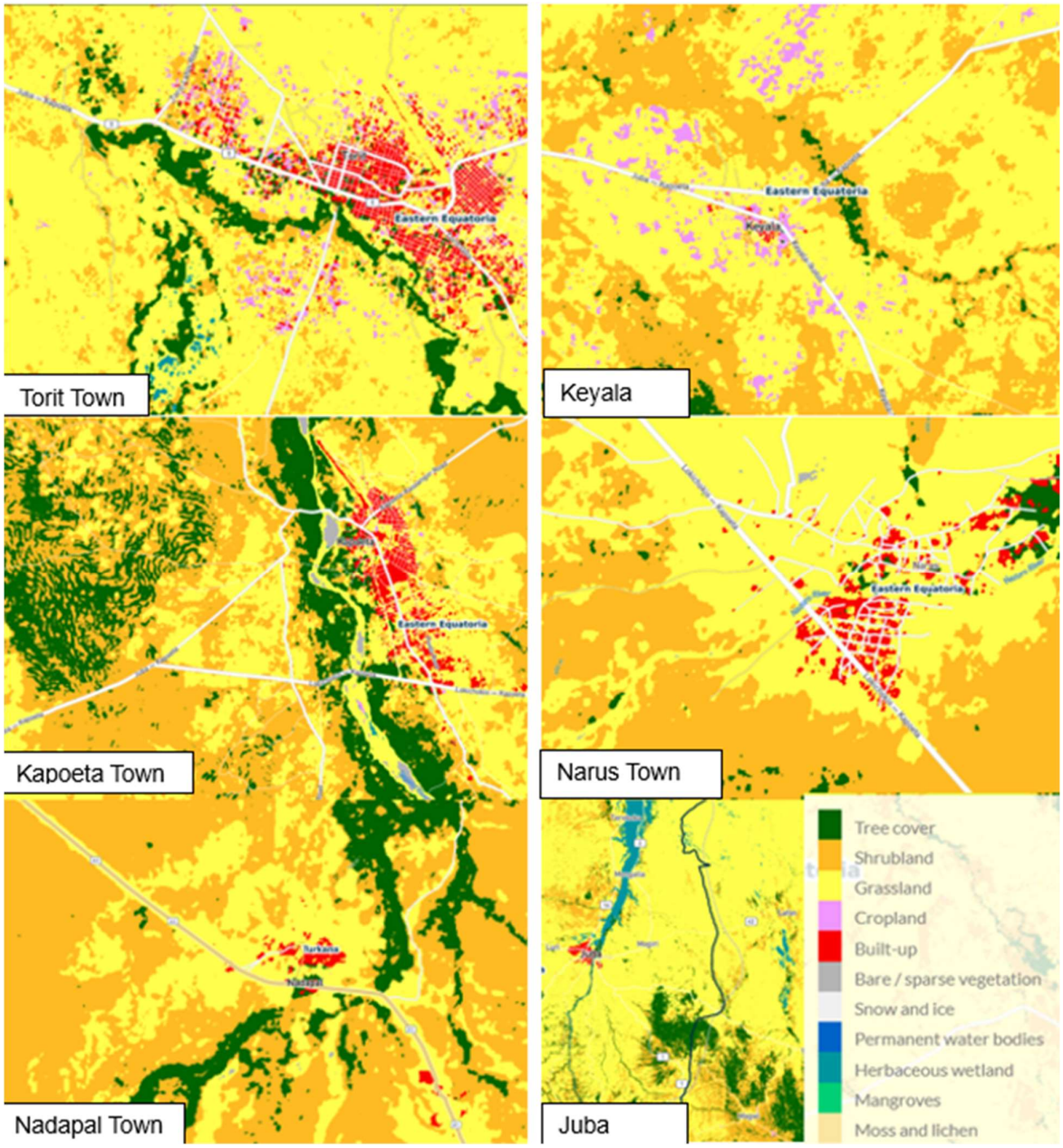


Figure 5-17: Key land use and Land cover within towns along the road alignment

5.4.4 Land Tenure

Land Tenure System in South Sudan as provided for in the Land Act 2009 comprises of customary, freehold and leasehold. The road corridor has been largely defined in most sections, however there are instances where land may need to be acquired to align the proposed route and address potential issues such as sharp corners, cultural heritage, social amenities (prison at Torit town), sources of livelihood (mango trees at Ngangala).

Land tenure types among landowners interviewed during the socio-economic survey. 64.3% of the respondents have freehold tenure, 32.2% have customary tenure, and 3.5% have leasehold tenure. In Juba, Torit and Kapoeta towns there is more scope for private and fenced land. from qualitative sources it was established that each community has its own known boundaries which are recognized by the neighbouring communities. Each community member by extension automatically has access and utilizes the land of his community. Everyone identifies and clears a section of community land either for housing or farming. The clearance and eventual ownership is marked by burning the earmarked portion. The act of burning signifies ownership and claim to that piece of land. Such a claim is recognized by other including the community landlord *(aboloni*). The concurrence of aboloni implies community acceptance of your land ownership. However, land ownership is often temporary or until the soil is exhausted as one moves to claim a new more

fertile section. There is no land ownership document other than being a community member. In cases of a contractor requiring land for the camp the aboloni must be consulted and give concurrence.

Two types of land tenure exist. In the road sections near Juba there is private land ownership. In Torit and Kapoeta town there is private land ownership. However, all the rural sections of the road fall under communal land ownership based on ethnic membership. The land belongs to the community and individual land users are allocated by the community. The land is owned on the basis of the first person to clear a section and burn it. Land ownership, however, are not devoid of conflicts. Despite the widespread belief that most land in the project area is communally owned, most families own their land at either the extended family or nuclear family level. The appropriation of land for grazing and hunting rights by tribes is often seen as critical in causing widespread conflict throughout the area. In other areas, tribal land ownership is under threat from a variety of sources. The socio-economic findings during the socio-economic survey found that 69% household heads own the land on which they live, while 31% most of whom were town dwellers do not own the land.

5.4.5 Demography and Ethnicity

The project area comprises mainly of the Eastern Southerners occupying the Eastern Equatoria State and the Central Southerners occupying the Central State. The Central State consists of Nilotic speakers; the main groups include the Dinka, Nuer, Shilluk, Luo of Bahr el Ghazal, Acholi, Lango, and the Pari of Lafon. The Eastern Southerners consists of the Nilo-Hamites; Bari-speaking, Lotuko, Lopit, Lokoya, Anuak-Murle-Didinga-Toposa groups. Each ethnic group has a well-defined territory.

The bulk of the road is in East Equatoria with a population of 1,393,765 (2017 census) distributed as shown in Table 5-12.

Table 5-12: Population distribution along the project corridor

County	Population[15]
Budi County	153,314
Ikotos County	129,620
Kapoeta East County	252,271
Kapoeta North County	158,889
Kapoeta South County	122,651
Lafon County	163,071
Magwi County	260,634
Torit County	153,314

Arabic Is the main medium of communication in the entire project area. However, Toposa region also use local language. English is marginally spoken/understood by majority of the population. During the stakeholder engagement, the Consultant incorporated local translators to ensure understanding of the project information.

The ethnic groups along the road corridor frequently conflict and are just resettling after a brutal conflict up to 2018. The decades of conflict in Eastern Equatoria State disrupted the economic and social state of the region. During the prolonged conflict the entire population lived in an environment of total insecurity and violence, abject poverty, weak government and social service institutions and characterized by collapsed community and family structures. With the return of relative stability, the post conflict period remains bogged with many latent and open conflicts; the most common conflicts issues being land ownership, competition over scarce water and grazing land, armed cattle raids and theft. Sexual and gender-based violence and violence arising as a result of strained relations are equally having a negative impact on the communities. The relationship between communities remains frosty, and each keeps within its territory. Members of one ethnic community cannot work in another community.

The project area is multi-ethnic. Each section of the road project is dominated by a particular ethnic group.

The Dinka near Juba, Bari and Lotuko near Juba, and Lokoya, Lotuko dominate around Kudo, Torit, Tirangore and Hiyala.The Didinga and Boya communities are found around Loriyok. The largest section of the project is inhabited by the Toposa who are mainly pastoralists and who occupy Kapoeta to Nadapal

15 https://www.citypopulation.de/en/southsudan/admin/93__eastern_equatoria/

section of the road project. The ethnic groups have conflictual relations and frequently practice cattle rustling against the neighbouring community.

5.4.6 Livelihood activities

Mixed farming is the main source of livelihood in the rural sections of the project. However, the consultant observed that the scope of pastoralism as the main source of livelihood increases in the area occupied by the Toposa community from Kapoeta town to Nadapal. Crop farming is for domestic consumption but minimal for the market. Others practice bee keeping, and they sell the honey at the prospective market centres. Most of the supplies sold at the trade centres are obtained from Kenya, Uganda and Ethiopia.

The communities residing along the road corridor are mostly agro pastoralists (cattle, sheep, goats and sorghum). Livestock rearing is the primary activity in this area, but a significant amount of crop cultivation, mainly of sorghum, also occurs along the road.

The findings of the primary data collected support the secondary reports. Out of the 196 households interviewed, 79% rely on agriculture/livestock keeping only, 16.7% combine self-employment and farming/livestock keeping, 33.3% combine agriculture with trading/business and 8% rely on charcoal burning and agriculture. Of the 17 households in business 52.9% trade in charcoal and 47.1% operate retail shops. In agriculture, small scale sorghum farming is the most common food crop on the farms along the entire road corridor. Production is mainly for domestic consumption, but little quantities are sold in the markets and by the road-side. The most common farming technique is shifting cultivation where the farmers slash-and-burn the area to be cultivated. No farm inputs are involved in the cultivation. Traditional seeds are used.

Cattle keeping (indigenous breeds) is found in the entire project corridor, however the scope of cattle and sheep/goats increases from Kapoeta to Nadapal in the section occupied by the Toposa community who are largely pastoralists with limited sorghum farming. Bush meat is common in the hotels and domestic diet, but it is a minimal source of livelihood. In the towns of Juba, Torit, Kapoeta and Narus there are large shops and diversified businesses. In the farming system labour is communally provided for each household. The household in whose field work is done provides food and refreshments to the workers. The human settlement is crammed together into 50-100 huts and the farms are located away from the homesteads. For safety purposes people go to the farms as a group and stop working as a group.

Table 5-13: Source of Income

Source of Income	Number	Percent (%)
Farming	122	62.2
Sale of Charcoal	23	11.7
Salary	18	9.2
Business	14	7.1
Trading/Shopkeeping/Retailing	12	6.1
Sale of Farm Produce (includes bananas, sorghum, milk)	7	3.6
Grazing	1	0.5
Hunting Game Meat	1	0.5
Total	**196**	**100.0**

Some of the livelihood activities especially farming and grazing and shops/businesses may be lost due to land acquisition during construction. Therefore, it is recommended that a Resettlement Action Plan (RAP) be undertaken to guide the resettlement and compensation for the losses incurred by the Project Affected Persons (PAPs).

Plates 5-17 & 5-18 show some of the economic activities noted in the project area.



Plate 5-17: Sorghum plantations and livestock grazing along the road corridor



Plate 5-18: Bags of Charcoal for sale spotted along the project area

Table 5-14: Category of Monthly Average Household income

Income in SSP	Number	Percent (%)
0-10,000	107	54.6
10,001-20,000	37	18.9
20,001-30,000	37	18.9
30,001-40,000	11	5.6
40,000-50,000	7	3.6
Above 50,000	7	3.6
Total	**196**	**100.0**

5.4.7 Education Sector

The Gender Education Act (2012) provides for free and compulsory basic education. The Transitional Constitution (Article 6) ensures the right to education without discrimination and promotion of gender equality. However, during the 2013-2017 inter-ethnic conflict most schools were either damaged, destroyed or closed. Hence, the illiteracy rate remains high 40.26% (GOSS, 2023).

There are both primary and secondary schools located next to the road corridor and others within the project area of Influence. A few vocational centres are also located in the major urban areas. During the reconnaissance visit, many children of school-going age were observed to be out of school during school days, which shows that enrolment is still low. There are several collapsed/derelict/abandoned/ schools along the road corridor. Access to education for children is still a challenge among all the rural communities. Abandoned schools and vocational centres were also observed in urban areas. Hence, the problem of access to education is both urban and rural. For instance, In the peri-urban areas of Kapoeta, the Consultant observed two schools that had been abandoned and many children were observed in the sorghum fields acting as scarecrows against birds despite the government order to schooling for all. A similar situation was also observed at Illeu primary school that remains deserted with no learning taking place. The institution has all the necessary infrastructure, but the pupils and teachers are not available. The community indicated that the institution is not utilized because young children are involved in pastoralism. The NGOs had started a feeding programme in 2020 to encourage more children to enroll in the schools, but the programme stopped in 2024.

School attendance remains low as illustrated in the primary data. A majority of respondents, 53.1% attained secondary education, 28.6% primary school education,8.7%, never attended school, 6.6% have tertiary education and 3% had university education. Currently teachers have been on strike and learning has not taken place for a long time in some of the schools. In other areas such as at Ngulere and Illiangari, learning is ongoing. The teachers have still not received their salaries. Infrastructure is a challenge in some of the schools where they do not have adequate classes. For instance, at Ngulere Primary School, the community has managed to build classes P3-P8, but two classes are conducted under the trees as the community strives to finish constructing the remaining. Obule primary school in Obule boma has four classrooms but the school is up to class 6. In Ngangala primary school the only teacher was the untrained volunteer whom the community requested to teach all the classes in order to retain some of the pupils in school. Secondary education faces unique challenges such as drop out of learners due to early marriages and teenage pregnancies. However, the schools re-admit the students who return even after establishing their families. Therefore, the education sector remains unstable. There is critically limited schooling in the project area.

The average schooling years is 7 years for both male and females. -Figure 5-19 shows the respondents' years spent in school. The majority, 69.9%, have spent over 8 years in school, 11% had 6–7 years, 11% had 4-5 years, 4% had 3-4 years, 2.9% had 2-3 years and 1.2% had 2–3 years and 1.2%and 1–2 years. The average years spent in education for both male and female is 7 years compared to 4.6 years in 2014[16].

The duration of school attendance is shown in Figure 5-19.

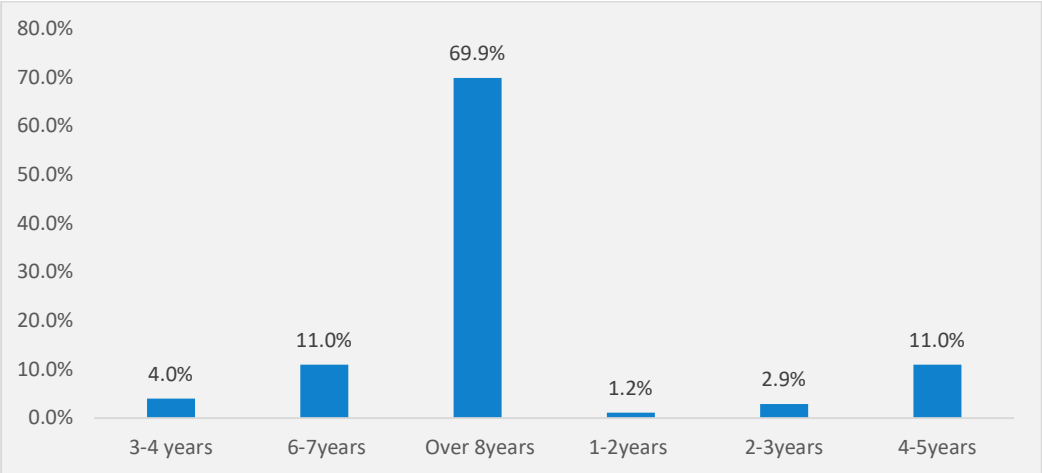


Figure 5-18: Duration of school attendance among respondents

[16] GOSS (2013 Upgrading the Nadapal-Juba Road. Final ESIA Report)

A look into how far the learning institutions are from the respondents homesteads showed that the mean distance to the nearest primary school is 4.1 kilometres, with a median of 4.0 kilometres (minimum distance to school is 0.09km and highest 15km as summarised in Table 5-18 below). This shows that a primary school is within walking distance to most children. However, the distance is prohibitive for early childhood education. The long distance to school especially in the section between Juba and Torit presents another challenge to young children as they become vulnerable to abduction. Hence the fear of abduction has prevented many children from attending school.

The respondents cited different reasons for not enrolling/attending/finishing learning. The majority, 74.6% indicated lack of school fees, 12.1% attributed it to inter-ethnic conflict, 6.4%, mentioned family relocation, and 4% provided other reasons. Only 2.9% of respondents reported school closure as the cause. Given the volatility present in sections of the project area there has been considerable migration from areas perceived unsafe to those considered safe. Migration implies children drop out of school. School closure is a reality in the project area due to a variety of reasons. The principal reason is conflict leading to abandonment of schools and more recently the year-long teachers strike forced many schools to close. According to qualitative sources, teachers were last paid salary in October 2023 hence many have abandoned schools, and many schools closed. Where schools are open either private schools or those minimally supported by community members who contribute a token to keep some teachers in school.

In the 196 households interviewed there were 1,075 (girls 550, boys 525) of school going age who were not attending school. The reasons for non-attendance varied but they were generally related to lack of school fees, insecurity, fear of abduction, distant schools, tending of sorghum fields and livestock grazing.

5.4.8 Community Health

There are critically few formal health facilities in the project area. The main hospitals are in Juba, Torit and Kapoeta. Torit is served with the Torit State Hospital and Kapoeta has the Kapoeta General Hospital. Health Care Units (HCU) have been established across a few payams as a way of promoting access to basic health care. Apart from the major hospitals in the towns there are 17 primary health centres in the project zone of inflence. They are usually served by between 1-2 staff who reside outside the facility.

The common diseases reported across the health centres within the project area is Malaria ((the leading killer disease) exposure, cases and death by 2021 are as shown in Figure 5-20)), water borne diseases (typhoid and diarrhea), respiratory infections, and chronic illnesses such as diabetes and high blood pressure.

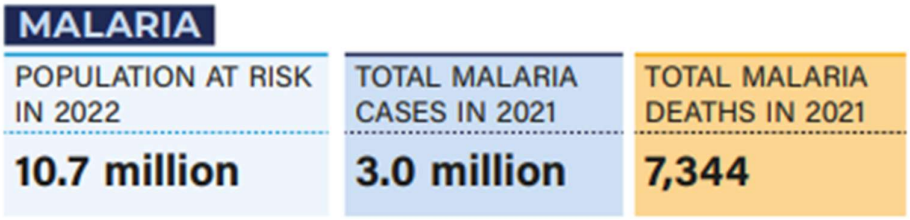


Figure 5-19: Malaria Risk Exposure[17]

The health system structure at different levels is illustrated in Figure 5-21.

[17] https://www.afro.who.int/sites/default/files/2023-08/South%20Sudan.pdf

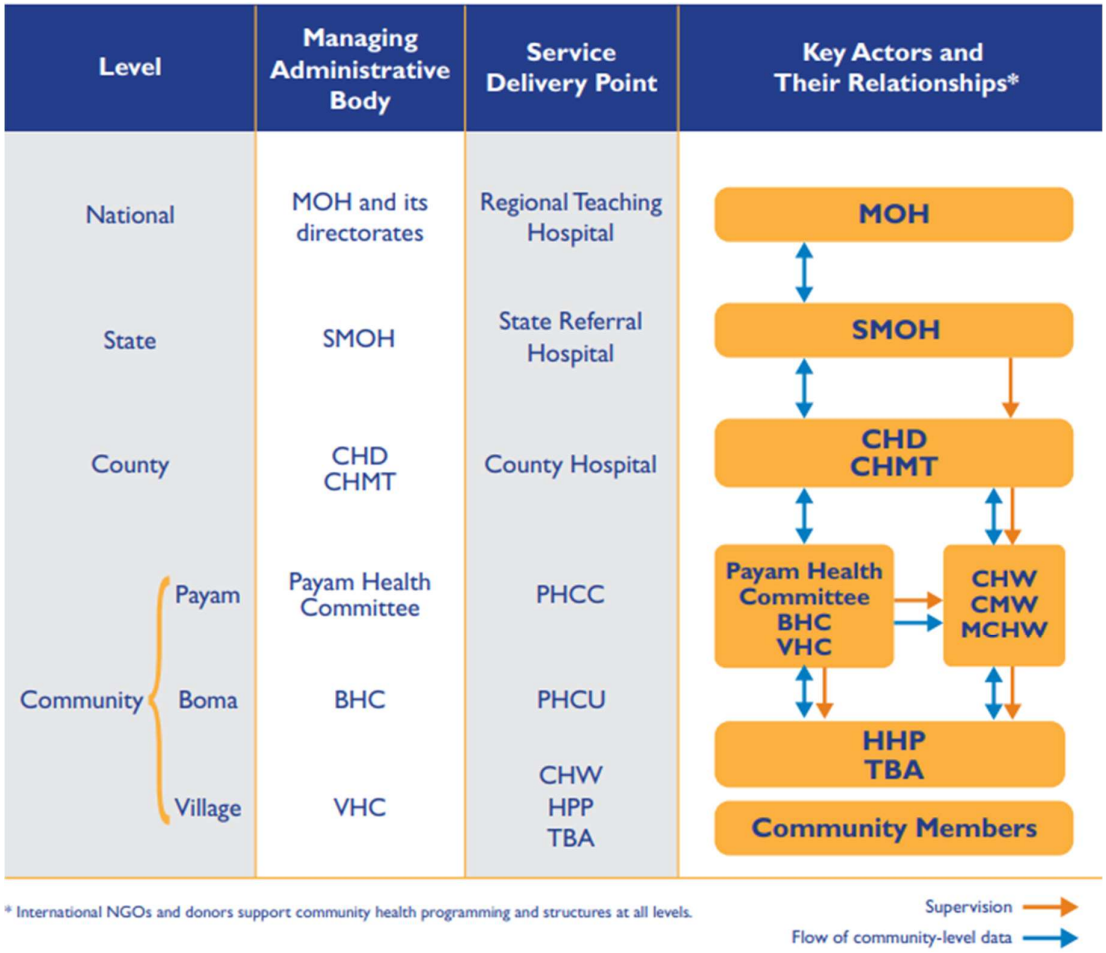


Figure 5-20: Health System Structure[18]

The major challenges that the health sector is facing and which is limiting their ability to offer basic health care services include:

- Lack of drugs/ irregular supply of drugs
- Insufficient storage space
- Inadequate staff
- Inadequate equipment or machinery for diagnosis or laboratory
- Lack of inpatient facilities
- Long distance to health facilities

For instance, at Illiangari, the Clinical officer reported that a midwife has been deployed to the HCU but there is no consultation room to offer the maternity services. Another challenge associated with the poor road condition is the high mortality rates among patients who cannot access health services particularly during the rainy season. Whenever a patient is referred to the state hospitals at Torit or Kapoeta, they spend much time on the road and their health deteriorates. Ambulances are also unable to access some of the villages where patients need medical care. This has resulted in most of the rural dwellers continuing to rely on traditional medicine.

Some of the challenges faced by households engaged during socio-economic survey in the project area are lack of drugs and medical equipment (62.4%), lack of staff (14.6%), inexperienced staff (14.5%), and long waiting times (8.5%). Long distance was a common complaint among community members. Respondents indicated that the average distance to a health facility is 5.4km from the household. Distance ranges from 0.1 to 40.0 kilometers for households in the project area. Only 6.6% had a health facility within their area of residence. Most of the health facilities were dispensary/primary health centre (the lowest level) of health facility. They provide basic health services.

[18] https://www.advancingpartners.org/sites/default/files/sites/default/files/resources/south_sudan_chs_catalog_profile_0.pdf

Observations made in several primary care facilities found that most of them were closed due to lack of medicine or no staff. More often staff must be called from their home to serve patients. Discussion with the few health facility staff showed that the government supply of drugs is irregular and sometimes it took up to two months to receive a consignment. In addition, all the rural health facilities visited are small 2-3 door block. Plate 5-19 shows some of the health care units in the project area, as captured by th consultant during the field studies.



Plate 5-19: Health Care Units at Ibalang and Abalwa

Most births occurred at public health facilities (63.6%), homes (29.2%), and private health facilities (7.2%). The high rate of births in a health facility could be attributed to the fact that households targeted in the survey were those living in settlements along the road and within a one-kilometer radius from the existing road. This community has relatively higher access to health facilities compared to those located further away from the road.

Statistics place of last birth among respondents is presented in Table 5-21.

Table 5-15: Location of Last Birth

Place of Birth	Number	Percent (%)
Public health facility	59	63.6
Private health facility	2	7.2
At home	49	29.2

Further analysis on community's knowledge and prevention of HIV/AIDS revealed the following:

- HIV Test Status: A total of 94% household heads had ever tested for HIV/AIDS. The project could build on this through increased awareness creation and support to health facilities to enhance further testing. The road development could further facilitate access to healthcare services, enabling more people to participate in health screenings and preventive measures.
- Awareness of Sexually Transmitted Infections (STIs): The awareness of sexually transmitted infections (STIs) is 97.4%.

The high level of STI awareness indicates a well-informed community regarding sexual health. The project could build on this given the anticipated changes and increased population movement to the project area during and after construction.

STIs Prevention Methods: Among household heads, 53% reported that Condom is the most common STIs prevention method in the project area as shown in Figure 5-24 below. Hence there is need for more awareness creation on STIs prevention methods. In order to effectively undertake this the project could partner with existing health facilities/health professionals in the project area.

5.4.9 Settlement Pattern

In the entire rural section of the road traverse communities live in communal settlements often on the hill slopes but practice farming and grazing in the adjacent plains. The communal living is a response to insecurity that is prevalent in the area. Most rural settlements are embedded to or in the vicinity of the army

detachments. The settlement pattern is influenced by the existing road because of the relative safety and access to services associated with it.

From Km 0+000 to Nesitu junction, the road has been paved but it has significantly dilapidated with potholes. There are several human settlements observed along the entire stretch comprising of modern houses and traditional huts.

The consultant established the road has a total of 30 settlements (*boma* or village) distributed along and between the following sections: Juba - Torit (13); Torit – Kapoeta (9); Kapoeta - Nadapal (8).

They include: Rajaf, Nesitu Village/Nesitu Checkpoint, Army detachment village/Jebel Malok, Korgana, Nangala, Ngulere, Illiangari, Liria town, Kudo, Lofri, Lakabata, Ibalang, Torit town, Abalwa, Tirangore, Hiyala town, Illeu, Lobira, Camp 15, Loriyok, Kapoeta Town, Loweriyang, Army detachment settlement, Buno, Lowoyakali, Napotpot, Lolim, Narus town, & Nadapal.

5.4.10 Housing

Most of the houses in the project area are traditional grass thatched mud huts. Indeed, thatching grass are sold in most centres in bundles, often alongside charcoal. These are transported to bigger centres especially Torit and Juba using tuk tuk, trucks and motorbikes, meaning the market exists and that an improved road may enable access to bigger markets beyond the project area. In big towns like Torit, Kapoeta, Narus, there is a mixture of permanent, semi-permanent and temporary housing.

Most households live in traditional-round grass thatched huts often crowded together on hill sides. Such settlements are informal with no element of planning. In Juba, Kapoeta and Torit are the only towns with permanent houses, but they are mixed with traditional structures.

The houses roofing materials and type for most households is shown in Plate 5-20.



Plate 5-20: Grass for roofing huts ready for transportation at Ngulere and Grass thatched huts at Nesitu Respectively.

According to the primary data collected, most household heads 76% own their houses, while 49% rent. Those who rent were mainly those interviewed in Juba, Torit, Kapoeta, Narus and Nadapal towns.

The majority, 70.9%, live in traditional grass-roof and mud-wall structures, 21.4% in semi-permanent structures (often mud-wall and iron roof, and 7.7% in permanent houses. The household heads in permanent houses were in the urban areas of Juba, Torit, Kapoeta, Narus and to a less extent Nadapal. It was observed that the largest sections of the towns have grass-roof houses.

5.4.11 Vulnerable and Disadvantaged Groups

In South Sudan there are many vulnerable and disadvantaged groups (VDGs) who suffer from diverse vulnerabilities ranging from food, conflict, forms of disability, etc. and are spread in both rural and urban areas. Some of of the institutions championing the rights of the vulnerable include South Sudan Union of Persons with Disability (SSUPD) and Organization for People with Disability (OPD). Although the two organizations represent all people with disability, its reach is still too low or non-existent in the project area. Discussions with people with disability in the rural areas showed they were not aware of the organization hence they remain unreached. The organizations have concentrated their outreach in the urban areas of Juba, Torit and Kapoeta.

In the project area there are several types of VDGs. They include the elderly. widows, widowers and orphans are a considerable population arising from a long period of inter-ethnic conflict. There are also many people living with disabilities in the community. At Torit and Kapoeta, associations for Persons Living With Disability have been formed and the members get the necessary assistance from the government and other human aid agencies. Vulnerable and disadvantaged groups especially the aged persons above 60 years were observed within the project area. In the towns, there were many begging children as well. Such groups because of their economic disadvantage, low social status may be more adversely affected by the project.

The population of VDGs in the country is estimated to be 9 million with 7.1 estimated to be food insecure.[19] The immediate impact of this general food insecurity has been an increase in inter-ethnic violence and conflicts, as well as an increase in acts of banditry. The lack of rain not only affect food security for households, but also grazing land and water points' availability for pastoralist activities. This competition over natural resources especially affects relations between pastoralist ethnic groups, such as the Toposa, Buya and Logir.

In the project area the United Nations Office for Project Services (UNOPS) is implementing the South Sudan Safety Net Project on behalf of the Government of South Sudan with the aim of bolstering the VDGs through cash transfer and labour intensive public works and direct income support.[20] On February 24, 2024 the South Sudan Government signed the Convention on the Rights of Persons with Disabilities. Hence that implies that the government had accepted to have the legal duty to respect, protect and fulfil the rights of people with disabilities in the country.

The baseline survey identified a total of 101 individuals with various types of vulnerabilities from 47 households. All of them had no meaningful support system for a livelihood and all were not connected to the National Organization for People with Disability. Most of them are unemployed and dependent on family members.

The significant presence of VDGs, particularly among the elderly and disabled, highlights the need for targeted social support and access to services. The road project should consider these groups when planning infrastructure to ensure accessibility and inclusivity in addressing their specific needs. In the Community sensitization meetings, a total of 14 people with disability attended the meetings. One Focus Group Discussion (FGD) was held with people with disabilities.

(a) People with Disability in the Household

Out of 196 households, 47(24%) identified at least to have a person with disability. In the 47 HHs, 21 had a male while 12 had a female.

Table 5-16 presents the types of disability found in households. The most common disability is general physical disability.

Table 5-16: Types of disability

Category	Number
Blind	5
Deformed hand/leg/other part of the body	23
Paralysed	1
Deaf	3
Mental disorder	1
Vision/Glare problem	2
Total	**35**

The road project should ensure that accessible facilities and resources are incorporated to improve the quality of life for the VDGs.

(i) Characteristics of Males Living with Disability

- Age Distribution-majority of the males living with disability fall in the 10-19 years age group. This implies most are children and adolescents (youth). Such children are most likely not to attend school given the vulnerability they suffer. Hence the project will need to identify and support them to attend school, acquire skills or link them to the national Organization for People with Disability (OPD). The

[19] WHO, 2024 Sudan Conflict-Refugee Crisis in neighbouring Countries-Central Africa Republic, Chad, Ethiopia, South Sudan. Public Health Situation Analysis
[20] UNOPS, 2021, Providing A Social Safety Net in South Sudan, Copenhagen

project can also set aside a work program or skill-based work program for people with disabilities during implementation.

- The majority of people; living with a disability, 81%, are unemployed, while only 19% are employed. The high unemployment rate among males with physical disability highlights significant barriers to employment for this vulnerable group. This underscores the need for targeted interventions, such as vocational training and inclusive employment opportunities, particularly in the context of the road project, to ensure that disabled individuals can access jobs and benefit from the socioeconomic developments spurred by the project. The Government of South Sudan signed the Convention on Rights of People with Disabilities in February 2023 hence it should be petitioned to provide opportunities for this category of citizens.

- Profession of male with disability: The majority, 76.2%, are in unspecified professions or none (including doctor), while 9.6% are farmers, 9.4% are students, and 4.8% are teachers. The predominance of unspecified professions among employed disabled males suggests limited job diversity and possibly informal or self-employed roles. This highlights the need for broader vocational training and job creation opportunities that are accessible to those living with disability in the community. They can be included in government and Civil Society Organization programs targeting support for income generation, village saving schemes (sanduku) and other loan schemes.
- Source of Livelihood among Males Living with Disability: Table 5-17 presents the sources of livelihood for disabled males.

Table 5-17: Source of Livelihood for Persons Living with Disability

Source	Number	Percent (%)
Farming/farming	4	19.0
Business	1	4.8
None	16	76.2
Total	21	100.0

The high percentage of males with physical disability with no specific source of livelihood highlights their vulnerability and a need for targeted support to improve their condition. Initiatives such as access to microfinance, training in business, vocational training and support for entrepreneurship could help enhance their economic opportunities and integration into the community.

(ii) Characteristics of Females Living with Disability

- The age distribution among females living with disability was: 41.7%, are within the 20–29 age range, 25% in the 40–49 range, 18.7% in the 10–19 age group, while 14.6% are in the 50 years and above. Therefore, the majority fall in the children, youth and adolescent group. The group is in the formative age therefore can be supported at this early age.
- The Employment Status among females living with disability is presented in Table 5-18.

Table 5-18: Employment Status

Status	Number	Percent (%)
Employed	1	8.3
Self-employed	2	16.7
Student	3	25.0
Unemployed	6	50.0
Total	12	100.0

The high unemployment rate among females with disabilities indicates substantial barriers to gaining employment in the current context. The project should therefore develop special work programmes and skills acquisition for female persons with disability. The project should also support to link the female persons with disability to the national level Organization for People with Disability.

- The professions of females living with disability is as presented in Table 5-19.

Table 5-19: Profession of female disabled members

	Number	Percent (%)
Farmer	3	25.0
None	6	50.0
Student	3	25.0
Total	12	100.0

The lack of specified professions for half of the females with disabilities underscores the need for targeted vocational training and employment opportunities. Developing tailored programmes to enhance job skills and create diverse employment options could improve their economic participation and overall quality of life.

The source of livelihood among females living with disability was: half of the respondents, 50%, rely on agriculture, while 16.7% are self-employed. The remaining 33.3% have no specified source of livelihood. This statistic buttresses the dominance of women in agriculture,

(b) Elderly and Orphans in the Household

Out of 196 households, 39 (19.8%) had an elderly person (above 70 years). They were 39 (male 21, female 18). Most of them 40% rely on dependants for their livelihood, 33% engage in agriculture or farming, and 27% are involved in livestock keeping as summarised in the table 5-33.

The high dependence on family or dependents highlights the need for additional support systems for the elderly, particularly in ensuring financial and social stability. Programs to enhance agricultural and livestock productivity could also provide supplementary income sources and improve overall livelihood security for elderly in the community.

In order for the project to address the needs of the vulnerable population it is recommended the development of the Vulnerable and Marginalized Groups Development Plan (VMGP).

5.4.12 Road Traffic and Safety

The road in the project area is in poor state and impassable during rains. The river drifts flood and vehicles are often swept by flood water. In its present condition it will be difficult to sustain heavy construction equipment. The existing road geometry consists mainly of long straight sections only being interrupted by the occasional curves as the road changes direction and the occasional stream/ River crossing. There are however some sections that consists of short and sharp curves especially where the road traverses through the hilly sections.

The project area has limited transport options due to the bad state of the road and insecurity. Most households 67.0%, use public vehicles. Other common means of transport are presented in Figure 5.25. Based on observations the most common public service vehicle is the Toyota Probox car that carries up to 10 passengers inside and often 2-3 on top roof (instead of 4 passengers) in addition to luggage. The Probox cars ply between Nadapal and Juba. Motorbikes are frequently used for short distance. Private cars are frequently used but they are unpredictable as it is dependent on the willingness and benevolence of the owner. Therefore, for one to travel it takes several days of planning. The cost of transport is high and therefore prohibitive to the vast majority. Key Informant and FGD participants indicated that it takes 24 hours to travel between Nadapal to Juba or vice versa and this includes a night sleep-over at Torit or Kapoeta. Motorcycles are commonly used. Many community members have not travelled outside their bomas mainly because of poor road network, lack of transport vehicles and high cost of transport.

The road's development may enhance transportation options and infrastructure, improving access and reducing travel times. Expanding transportation choices, such as increased motorbike or bicycle infrastructure, could further benefit mobility and accessibility for the population.

The travel time and cost between towns/ centres is presented in Table 5-20.

Table 5-20: Current Transport Cost between Towns along the road

From	To	Time in Hours	Sleep-over	Cost in SSP
Juba	Nadapal	24	yes	200,000
Narus	Torit	6	no	

Torit	Juba	4	no	80,000
Narus	Kapoeta	4	no	30,000
Lowoyakali	Juba	14	Yes	150,000
Loriyok	Juba	12	no	100,000
Lobira	Juba	11	yes	100,000

The works that had commenced along the road conducted bush clearing along the better part of the road corridor, however when the works stalled vegetation cover has re- established. The existing carriageway width ranges from as Narrow as 5.0m to as wide as 25m, the latter being where works to upgrade the road had started.

It was also noted that some sections of the road have challenges of drainage with water ponding on or on the side of the road, while other sections are marshy and will require the road to be raised and provided with relieve culverts. Most of the rivers have sandy riverbeds with most of them having the siltation blocking the vents in the case of the drift. Most of the drifts are also in a state of disrepair with the mid-section having been broken/ washed away, this has resulted with vehicles having to use the sandy riverbed for crossing which sometimes results in the vehicles being stuck in the riverbed. This poses a road safety challenge to the motorists using the road. The existing bridges are mostly steel (bailey) bridges of varying spans which only provides one vehicular lane crossing.

The transport challenges as identified by the respondents is presented in Table 5-21.

Table 5-21: Existing transport challenges

Transport Challenges	Percent (%)
Poor roads	36.0
Lack of vehicles	23.5
Inadequate transport means	20.3
High cost of transportation	20.2
Total	100.0

The main concern in roads safety will be during construction as there will be many vehicles and other heavy machines in the community. Therefore, safety measures especially in populated areas will need to be considered by the contractor. Another concern may be places that still have mines/explosives although at least 25m of the road corridor on both sides have been determined. Plate 5-21 below shows challenges in crossing river.



Plate 5-21: Left: A car waiting to cross the River Singata that has no bridge for crossing. Right: A truck stuck in the river

The available mode of transport between Juba-Nadapal is Road and Air with road being the main form of transport for locals. They rely on vehicles, motor bikes and tuktuk to ferry their luggage and to move across their homes and the trading centres. However, due to the poor road conditions, motorists spend many hours on the road and in case of a breakdown, they end up spending days trying to fix the vehicles whereas the passengers are left stranded.

The modes of transport observed along the road are shown in Plate 5-22.



Plate 5-22: Modes of transport observed along the Juba-Torit Section

Road safety is an important area of concern for the community, and should be considered.

The safety measures proposed by the respondents is presented in Table 5-22.

Table 5-22: Road Safety Suggestions

Recommended road safety measures	Percent (%)
Create pedestrians' walkways	32.7
Road construction/tarmacking	17.6
Create zebra crossings	14.4
Conduct road safety awareness/sensitization	10.3
Construction of pavements	5.1
Put road signs	8.1
Streetlights	2.9
Erect bumps	2.2
Maintain good road conditions	1.5
Community orientation	1.5
Road traffic/security	1.5
Public awareness on project construction	2.2

The emphasis on pedestrian walkways and road construction reflects a strong need for infrastructure improvements to enhance road safety. Implementing these suggestions could significantly reduce accidents and improve overall road safety, making transportation safer for all users. Drawing from observations made there were many livestock along the road. In the community meetings there was consensus that livestock on the road posed danger to road users and may become a greater risk once the road is tarmacked. It was agreed that livestock owners would be sensitized on the importance of road safety.

5.4.13 Gender Based Violence/Sexual Exploitation and Abuse and Sexual Harassment

Findings from the baseline show the presence of various forms of GBV in the project area. Various studies on GBV in South Sudan (eg UNICEF, 2019: Gender Based Violence. South Sudan Country Office, Juba; World Bank, 2012: World Development Report on Gender Equality and Development,) have shown that women are often objects of gender-based violence which include rape, defilement, domestic violence and

trafficking. The communities in the project area largely lead traditional ways of life. There is no legal minimum age for girls and 52% of the girls are married by age 18. Early marriage also occurs as a result of cases of sexual violence involving girls and young women being resolved through customary law which dictates that victims must marry their abusers (GOSS, 2023). Schooling is low or non-existence therefore child marriage is commonly practised. For instance, among the Toposa ethnic/inter-clan feuds that result into death are settled through exchange of girls for appeasement.

Trafficking of female children especially between Kakuma and Kalobeyeyi Refugee Camps in Kenya to South Sudan (Eastern and Central Equatoria States) is common. Such girls are taken to South Sudan for arranged child marriage. Child traffickers use unofficial routes to evade detection and/or arrest by border/immigration officers. The poor road network and limited border surveillance has made the trafficking of girls to continue unabated. The Eastern Equatorial State government has formulated by-laws on GBV under the Ministry of Gender that are currently in parliament for debate and adoption into law.

In order for the project to fully address issues of gender in the project, it is recommended that a Gender Action Plan (GAP) is developed by the project proponent prior construction phase.

5.4.14 Cultural Heritage

In the project area no critical cultural heritage sites are observed. However, area with potential cultural heritage have been avoided by by-passes in Ngangala and Torit town. No graves/graveyards or cemeteries or other significant building or ceremonial sites are affected.

Road diversion/bypass have been made in areas with cultural heritage such as in Ngangala village, Torit town. In other towns the road will be limited to the existing line to protect cultural heritage.

Areas of potential cultural heritage that will require protection and enhancement are:

- ***Ehumwa* Ceremony**. It is practised by the Lotuko ethnic group that occupies the general Torit area including Kudo. The ceremony is practiced annually (September 5th) It is celebrated on Imuahali mountain (it is in the vicinity of the road project). It is celebrated to mark the beginning of burning and clearance of the fields in readiness for planting. It is celebrated in the mountain because their god lives there, and they go to him for blessings so that the women can have many children and protection against disease and all other misfortunes. It is celebrated by rubbing simsim oil on the men's chest and for women on the breasts. During celebration all people (men, women, and children) leave all they are doing, including school to participate in the ceremony. The ceremony is mandatory for all Lotuko people, but foreigners are free to attend. For those Lotuko community members who will be employed in the project during construction the employer must give them permission to attend the ceremony on that ceremonial day. Project tasks assigned to Lotuko members on this day may be suspended to allow them to observe the ceremony with others.
- **Annual *Kajiwaya* Celebration at Ngulere Town-**Every year on January 1st all the Lokoya ethnic group members converge at Ngulere town to welcome and celebrate New Year in a ceremony known as *Kajiwaya*. It is an occasion filled with pomp and celebration. It draws together thousands of people on this occasion. The ceremony has potential for tourism, sports and business.
- **Trees**. Trees are the main meeting venue for community meetings. They provide natural shade. Every boma has dedicated trees for meetings. They are the peoples a*mang'at* or parliament. All community issues and decisions are presented, discussed, resolved or decisions taken under trees. Therefore, trees hold special cultural significance to all communities in the project area. Although charcoal burning is widespread but trees dedicated to meeting or those with potential to be meeting venues near settlements are highly respected. Therefore, the project must strive to avoid but where unavoidable minimize tree cutting. Where tree cutting near settlements takes place it must be with prior engagement with and free concurrence with the community.
- **Other Ceremonies**- In all villages where meetings were conducted, they reported that before construction commences, the elders or traditional leaders need to perform an animal sacrifice to prevent any bad occurrences such as accidents during construction. A similar animal sacrifice also needs to be undertaken at the borrow pits where the contractor will be sourcing construction material. The animal sacrifice varied between a goat and a cow from one community to another. For instance, the Buno community reported an animal sacrifice involving a black bull, the Tirangore spoke of a goat sacrifice, at Illiangari, they reported of a black goat sacrifice.

5.4.15 Women, Agriculture and Employment

Findings from the baseline showed that the agriculture sector is dominated by women. They provide most labour and it is their main source of income. Discussions with female and some male participants showed that women generally retain most income from sale of agricultural procude but they must spare some produce (sorghum) for their husbands for beer making. But men mostly retain and control income obtained from sale of livestock.

South Sudan has an estimated 30 inadequate million hectares of arable land but only 4.5% is cultivated. The country imports 90% of its food. More than 80% of the people rely on agriculture and pastoralism for a livelihood. Agriculture is the responsibility of women and over 80% of the farm activities fall on them. Only 10% women have access to agriculture and livestock extension services[21] . In most of the countryside 58% households have as the primary source of income. Therefore, gender responsive approaches to agriculture would be useful given the role women play in the feminization of agriculture. The key challenges in agriculture however are: lack of quality seeds, weak or non-existent capacity to provide agriculture and livestock extension services to farmers, reliance on traditional tools of farm work, inadequate market infrastructure as markets are concentrated in or around Juba, knowledge of storage leading to up to 15-50% post harvest loss , and the land mines and explosives placed in the 2013-2017 conflict has constrained land available for farming. A useful initiative has been government partnership with the UN to undertake de-mining in several areas of farm land.

Women provide most of the labour force on the farms. Hence agriculture is the most important source of employment for women. With climate change and given that women rely more on natural resources for food and livelihood they become more vulnerable. It is estimated that about 80% of farm labour in South Sudan is provided by women (GOSS, 2023 South Sudan Country Gender Profile, Juba). In the gold mining sector women representation is lower than men in the labour of prospectors. For women aged 15 years and above their participation in labour force is 70.9% compared to men 73.8% and women make up 49% of the labour force. There are as twice male employers than female and almost three times self employed men than women. A study found that 57% women were in vulnerable employment compared to 43% men.[22]

Initiatives to support women economic empowerment and increase access to credit and income include:

- South Sudan Women Entrepreneurs Association established in 2009
- Voice for Change established in 2007

Both organizations provide financial support to women through village savings (sanduku) and loan schemes. Ministry of Agriculture implementing the extended credit facilities to 4,000 rural women and 500 women with agricultural inputs and skills training. (GOSS, 2023: South Sudan Country Gender Profile, Juba). A diversity of Civil Society Organizations support rural women in agriculture to increase food production and income.

5.4.16 Energy

The energy sector is constrained by limited power generation and lack of an interconnection transmission grid. Only 5.9% of the rural population has access to electricity and where it is available it tends to be produced by diesel generators. In Torit town a small section is provided by state government run electricity. Private businesses also generate their own electricity. However, the electricity is mainly available between 6am and 10pm. In the baseline survey a very critical minority of household in Torit town and Nesitu had access to electricity. All rural households had no access to electricity.

(a) Most common source of energy for lighting: most households 64.3% use candles, 18.5% solar lighting, 10.1% electricity, 5.6% paraffin tin lamps, and 1.5% use firewood. In the entire project area there are no electricity mains. Private generators and solar lighting are used to provide electricity to a few households. And business establishments. In hotels for instance the power is often switched off from 10pm and switched on at 7am. In Torit town the state government supplies generator electricity to limited households and government offices up to 10pm.

(b) Source of cooking energy: majority of the households 68.7%, use charcoal, 28.2% use firewood, and 3.1% use gas.

The high reliance on charcoal and firewood indicates a need for more sustainable and efficient cooking energy sources. The road's development could facilitate access to alternative energy solutions and improve infrastructure, potentially increasing the availability of cleaner and more efficient cooking options. This could reduce environmental impact and enhance the quality of life for residents.

5.4.17 Communication

The main medium of communication within the project area is through use of mobile phones. The locals rely on telecommunication that is provided by MTN. Boosters of communication masts were observed near the project corridor. However, there are sections between Tirangore and Lobira, and Lobira to Loriyok that are still experiencing poor network coverage. 77% of the respondents interviewed during the socio-economic survey own a mobile phone and 53.1% were registered with the mobile money transfer service Project Perception.

[21] GOSS, 2023 South Sudan Country Gender Profile, Juba
[22] World Bank, 2012: World Development Report on Gender Equality and Development

Most respondents 75.0% view the proposed Juba-Torit-Kapoeta-Nadapal road project on a positive note, 15% are neutral and only 10% negative.

Majority of the respondents, 80% view the proposed road project as worthwhile. The project enjoys widespread support among all stakeholders as observed in all the stakeholder engagements. To all of them the road project will open up the region to the rest of the country and to the region. The road is associated with numerous benefits to the community and the country. It will enhance security and improve security forces response time in case of need.

6 Stakeholder Engagement

The relevant stakeholders to the Juba-Torit-Kapoeta-Nadapal road project were identified with the aim of creating project awareness and obtaining their concerns, views and feedback regarding the design and implementation of the proposed road project. This chapter discusses the stakeholder identification, the consultation process and feedback from the stakeholders after consultation.

6.1 Identification of Stakeholders

The identification of stakeholders was guided by ESS10. The process focused on the individuals or groups who are affected or are likely to be affected by the project and those who may have an interest in the project. The identified project stakeholders are presented in Table 6-1

Table 6-1: Stakeholder Identification

Stakeholder Category	Relevant Stakeholders
Financier	International Development Association (IDA)-Financier
National Government	Ministry of Roads and Bridges Ministry of Transport Ministry of Environment and Forestry Ministry of Wildlife Conservation and Tourism Ministry of Health Ministry of Gender, Child, & Social Welfare Ministry of Youth, Culture & Sports Ministry of Water Resources & Irrigation Ministry of General Education and Instruction
State and Local Government	Governors -Central and Eastern Equatoria states County Commissioners/Mayors/Members of Parliament Payam Administrators Boma Chiefs
Institutions	Learning Institutions Health Institutions Religious institutions
Interested Parties	Civil Society Organizations (CSOs) Business Community Persons Living with Disability (PLWD) Public Service Vehicles (PSV) Drivers, Rickshaw and Motorbike Operators within the transport sector
Human settlements along the road corridor	Rajaf, Nesitu Village/Nesitu Checkpoint, Army detachment village/Jebel Malok, Korgana, Nangala, Ngulere, Illiangari, Liria town, Kudo, Lofri, Lakabata, Ibalang, Nyong, Torit town Abalwa, Tirangore,, Hiyala town, Illeu, Lobira, Camp 15, Loriyok, Kapoeta Town Loweriyang, Army detachment settlement, Buno, Lowoyakali, Napotpot, Lolim, Narus town, Nadapal.

6.2 Approach and Methodology for Consultation

The Consultant employed a hybrid consultation approach that makes use of both open and closed consultation tools. The approach was informed by the different categories of stakeholders who needed to be consulted using different methods to achieve meaningful consultation.

The following methods were adopted when engaging the different categories of stakeholders.

- Courtesy Calls
- Key Informant Interviews
- Focus Group Discussion
- Public Meetings

6.3 Description of the Consultation Process

The process of consulting with the relevant stakeholders was done during the reconnaissance site visit and during the field studies. During the reconnaissance, the consultations were limited to the government

officials and a few members of the public to create awareness on the project, obtain relevant contacts for purposes of planning for the larger stakeholder meetings.

During the field studies, the Consultant paid courtesy calls to more government offices for consultations, administered key informant interviews (KII) to key stakeholders and socio-economic questionnaires to households, and conducted focus group discussions and public meetings across the human settlements situated within the Project Area of Influence (1km on either side of the road). Table 6-5: Summary of Public Meetings Undertaken tables 6-2, 6-3 & 6-4 below presents a summary of the stakeholder consultations undertaken between 29th July 2024-1st August 2024 and 2/9/2024-11/9/2024.

Table 6-2: Summary of KII undertaken

Date of engagement	Stakeholder Engaged
29/07/2024	▪ Governor-Eastern Equatoria State (EES) ▪ Mayor-Kapoeta Municipal Council ▪ Member of Parliament-Kapoeta East
30/07/2024	Mayor-Torit town council
30/07/2024	Director General-Ministry of Roads and Bridges -Eastern Equatoria State
01/08/2024	Local Government Inspector on behalf of County Commissioner-Kapoeta East County
01/08/2024	Head of Nadapal Immigration Office-South Sudan Border
01/08/2024	Head of Nadapal Immigration Office-Kenyan Border
2/9/2024	▪ Biodiversity Expert-Ministry of Environment and Forestry- National Government ▪ Director General, Biodiversity & Wetlands- Ministry of Environment and Forestry- National Government ▪ Technical Director- Ministry of Wildlife, Conservation and Tourism-National Government
5/9/2024	Wildlife Service, Torit, Eastern Equatoria State
5/9/2024	Director General-Ministry of Environment and Forest, Eastern Equatoria State

Table 6-3: Summary of KII Undertaken

Date of Consultation	Stakeholder Engaged
2/9/2024	Central Equatoria State ▪ Ministry of Health, ▪ Ministry of Gender, Child & Social Welfare, ▪ Ministry of Culture, Youth & Sports
3/9/2024	Central Equatoria State ▪ Ministry of Education, ▪ Ministry of Water
	Truck driver-Nesitu Checkpoint
	Health Institution ▪ Illiangari Public Health Care Unit Learning Institution ▪ Ngulere Primary School
5/9/2024	▪ Eastern Equatoria State ▪ County Commissioner-Torit County ▪ Mayor-Torit Municipality ▪ Ministry of Environment (EES) ▪ Ministry of Wildlife (EES) Health Institution: Torit State Hospital
6/9/2024	▪ Learning Institutions ▪ Dr. John Garang Memorial Secondary School ▪ Torit Day Secondary School
9/9/2024	▪ Commander Camp 15 - Army Base Camp
	▪ Mayor-Kapoeta Municipality ▪ County Commissioner-Kapoeta South County ▪ Executive Director-Kapoeta South County

Date of Consultation	Stakeholder Engaged
10/9/2024	▪ Director of Accounts (representing county Commissioner), Narus Town, Kapoeta East County
	▪ Executive Director (Kapoeta East County) ▪ Member of Parliament (Kapoeta East County) ▪ Head of Immigration-Ministry of Interior-Immigration Nadapal

Table 6-4: Summary of FGDs undertaken

Date of Consultation	Stakeholder	No. of attendees for FGDs *(attendance list provided in Appendix B.3)*		
		Males	Females	Total
4/9/2024	Ngulere	18	1	19
5/9/2024	Ibalang Boma-Opinion Leaders	12	1	13
	Motor Bike & Rick shaw Operators-Torit town	22	1	23
	PSV and Truck drivers-Torit Town	19	1	20
6/9/2024	Abalwa- Opinion Leaders	17	3	20
	Business Community-Torit town	17	6	23
9/9/2024	Loriyok-Women Representatives	1	26	27
	CSOs	7	3	10
	PLWD	15	4	19
	Business Community-Kapoeta	13	1	14
10/09/2024	Buno Boma	20	1	21
11/09/2024	Kapoeta-Women Representatives	14	2	16

Generally, fewer women attended the meetings, espcially those that were held in the morning hours of the day. This was because (as we later learnt), most farm work which is dominated by women is done in the morning section of the day. Nevertheless, the few women who attended were given opportunity to air their views and express their opinions about the project. There were no known cultural barriers that constrained women from attending community meetings and addressing issues that they find useful.

Table 6-5: Summary of Public Meetings Undertaken

Date of Consultation	Stakeholder	No. of attendees for Public Meetings *(attendance list provided in Appendix B.3)*		
		Males	Females	Total
3/9/2024	Kudwo Boma (Nesitu Village)	17	17	34
4/9/2024	Ngangala	25	4	29
	Illiangari	36	7	43
5/9/2024	Lirya	27	0	27
	Lofiri	34	67	101
	Lakabata (Obule Village)	36	22	58
6/9/2024	Kudo Boma	46	20	66
	Nyong Boma-Block 1	24	12	36
7/9/2024	Tirangore, Harforere, Mura-Hatiha	67	4	71
	Illeu Boma	33	1	34
	Hiyala Boma	24	5	29
	Lobira Boma	30	4	34
9/9/2024	Loriyok Boma	84	32	116
	Local Community-Kapoeta Municipality	14	13	27
10/9/2024	Lowoyakali Boma	40	44	84
	Napotpot Boma	48	8	56
	Narus Boma	22	23	45
	Nadapal	53	33	86

6.4 Outcome of the Consultation Process

6.4.1 Feedback from Key Stakeholders

Key stakeholders comprising of civil servants from the national and state governments of Central and Eastern Equatoria states were consulted on the proposed road project. Institutions such as learning and health institutions, CSOs, business community, PLWD and other interested parties also gave their concerns that are summarised below:

Table 6-6: Summary of Feedback from Key stakeholders consulted through Courtesy Calls

Issue/Concern/View Raised	Stakeholder Feedback
Hydrological setting of the project area	River flooding during the rainy season tends to limit movement. Undertake detailed hydrological studies including consultations with the local community on the behavior of rivers. Proper drainage systems should be developed because of the existing underground aquifers within the project area.
Nadapal checkpoint Conflict	On Nadapal check point conflict, South Sudan government is in dialogue with the Kenyan counterparts, but that will not deter the construction of the proposed road.
Borrow pits	Rehabilitate material borrow sites into water pans that can serve as a source of water for livestock during the dry season. Land degradation is arising from unrehabilitated borrow pits that have been turned into waste dump sites
Previous construction works	From Nesitu junction until New Kenya, clearance of the road corridor has been done and the road condition improved using murram.
Loss of infrastructure	Adhere to the proposed design that has provisions for bypass roads across Torit town to avoid demolition of critical public infrastructure such as the prison. The communities should be compensated for any affected property that will be displaced and any losses suffered due to the implementation of the project.
Design of bridges	Recommended the design for bridges to allow for sufficient freeboard and urged the client to ensure design standards are met during the construction phase especially on drainage facilities
Wildlife	The Kidepo Game reserve cannot be upgraded to a National Park because it will result in human displacement. Immigration patterns of the wild animals found in the park are mostly observed along the Kineti river which forms part of the Balangeru Swamp. Seasonal group hunting is common among the communities residing near the game reserves within the project area. The local community are more knowledgeable on wildlife matters and should be consulted as well. The contractor should not locate their campsites at the national parks because it increases the risk of poaching and illegal trade of wild meat
Road design	The design for the road needs to be reviewed to ensure proper alignment of the sharp corners. During construction, closely monitor the supervision activities to ensure a durable road is constructed and the standard material is used.
Pastoralism as a source of livelihood	The consultant to propose mitigation measures that will not endanger the livestock in the area as it's a major source of livelihood.
Waste management	Poor waste management is an existing environment challenge that contributes to water pollution particularly from open defecation
Excessive logging	Excessive logging and charcoal burning are contributing to biodiversity loss with Katire Forest reserve being fully degraded. The ministry has no local government policies. They rely on ministry orders that are ineffective. The Eastern Equatoria State (EES) is drafting a wetland Management Plan for Torit and Kapoeta Counties.
Health	The road project will improve access to medical facilities and reduce the referral system of patients to Juba. Patients will easily get to hospitals thus reducing the mortality rates among citizens who pass on while trying to access medical services.

Issue/Concern/View Raised	Stakeholder Feedback
	As part of the CSR, the contractor can consider setting up a health care unit (HCU) at Lirya to serve both the construction workers and the larger population. The HCU can have an emergency unit and an ambulance. During operation, road accidents are likely to increase. Therefore, road awareness campaigns should be conducted among the public and road signs erected along the road.
Employment opportunities	Conflict over employment is expected across the different communities along the road. The Contractor should provide employment opportunities across each section equally and in a fair manner. Children are likely to seek job opportunities as well. The chief need to certify that all workers are of legal age
Child abduction	During operation, there will be reduced cases of child abductions.
Cultural exchanges	A mix and changes in cultural practices is expected
Improved connections across regions	The road will improve connectivity to other countries in Africa like Kenya, Uganda, Ethiopia. The road will improve the transportation of goods and ease the movement of people.
Improved access and supply of water	The road will help in servicing of the urban water project and creating employment for the youth. Water bowsers will be able to easily supply water. The organization will also be able to service and maintain the water systems. Water pipes in the urban section of Torit town may be damaged during construction. Urban water authority should be engaged to identify location of existing water pipes in Torit town. The contractor can consider putting up elevated water tanks as part of their CSR activities. The road design also needs to provide adequate space along the road corridor for utilities such as water pipes for use in the future.
Public awareness and campaigns	Road accidents are likely to be on the rise during both construction and operation phases. Sensitization needs to be done in schools. Engage livestock owners to sensitize them on road safety for their livestock.
Road safety measures	Road signs and speed bumps should be put up near learning institutions.
Access to education	Enrolment rates to schools is likely to increase especially among children residing near the road. The road construction will improve security and reduce the cost of taking children to school. It will also improve the movement of staff salaries.
Security	Security will be enhanced resulting in a decrease in the highway robberies and killings

6.4.2 Feedback from Public

The communities residing along the road corridor were consulted through Focus Group Discussions and Public Meetings between 2nd September 2024 and 11th September 2024. A summary of their concerns and feedback during the engagement process is provided in the table below

Table 6-7: Summary of Feedback from FGD's and Public Meetings

Issue/Concern Raised	Stakeholder Feedback
Employment Opportunities	During the construction phase, the communities requested to be offered job opportunities. The casual positions should be given to the locals as well as the technical positions as the communities have learned youths. However, the contractor needs to develop a good criterion for allocation of job opportunities across each community as it can be a potential source of conflict among the locals.
Road Safety	Road signages need to be erected at critical points such as near learning institutions. Speeds needs to be regulated by placing speed bumps near the human settlements, market centres and the towns. The local communities including the livestock owners need awareness on road safety, signages and the designated animal crossing points to reduce the risk of accidents.
Bridges	The design of the bridges should meet the international standards and be informed of the hydrological assessment of the local area. During rainy season, people and vehicles get stranded for hours and days along the bridges as its

Issue/Concern Raised	Stakeholder Feedback
	risky to cross the rivers. Some of the trucks that attempt to cross the rivers end up being carried away resulting in huge losses. Many lives have been lost during the rainy season.
Insecurity	The poor road condition has encouraged robberies among the travelers and hijacking of vehicles. The tarmacking of the road will help address the insecurity incidences along the Juba-Torit-Kapoeta-Nadapal Road.
Cultural Practices	▪ In all villages where meetings were conducted, they reported that before construction commences, the elders or traditional leaders need to perform an animal sacrifice to prevent any bad occurrences such as accidents during construction. A similar animal sacrifice also needs to be undertaken at the borrow pits where the contractor will be sourcing construction material. ▪ Trees are the main meeting venue for community meetings. They provide natural shade. Every boma has dedicated trees for meetings. They are the peoples a*mang'at* or parliament. All community issues and decisions are presented, discussed, resolved or decisions taken under trees. Therefore, trees hold special cultural significance to all communities in the project area. ▪ Every year on January 1st all the Lokoya ethnic group members converge at Ngulere town to welcome and celebrate New Year. ▪ Ehumwa Ceremony is also conducted annually by the Lotuko community every 5th of September at the Imuahali Mountain (located within the vicinity of the road project). The ceremony is conducted to prepare for the planting season and protect the community members from any diseases and misfortunes. It is mandatory for the Lotuko community to attend the ceremony, therefore, during construction, the contractor will be required to give them permission to attend the ceremony.
Grievances	Grievances that arise within the respective communities are reported to the community committees that comprise of elders, men, women, and youth representative. The issues that the committee is unable to resolve are reported to the Boma chief and if need be they involve the police officers or senior authority such as the payam or mayor's office.
Animal crossing points	The communities located along the road corridor are mainly pastoralists with large herds of cattle, goat and sheep. The locals asked the designer to ensure they put animal crossing points by taking into consideration the location of the water points to reduce the need to cross the road. Speed bumps should also be placed to prevent accidents associated with animal crossings.
Corporate Social Responsibility	The community requested the contractor to give back to the community through implementing different projects along the road corridor. For instance, the Napotpot community indicated that they experience water scarcity, and they have a water borehole that was drilled and needs to be cemented to enable the community access water. The Tirangore Boma requested for construction of a health facility. The Illiangari & Kudwo Boma indicated that the contractor should consider building permanent camp sites such that after decommissioning of the camp sites, they are reverted to the community to use as police stations, schools, etc.
Borrow pits	During construction, the contractor can source construction material from the project area. However, some communities indicated that the material would be available at a fee. Other communities such as the Ngulere community indicated that they would be willing to enter into an agreement with the contractor where he utilizes the materials in exchange for what the community will request.
Compensation	The communities indicated that they prefer being compensated for the losses they are likely to suffer such as buildings and trees such as mango and tamarinds. During past road clearance activity, the communities encountered huge losses and despite being promised compensation, they were not compensated.
Legacy of past projects	The community emphasised that the issues they faced with the past contractor should not be encountered during construction. The complaints they raised have never been addressed to date. The road levels were raised too high resulting in poor drainage and flooding of shops located near the road.

The pictures below show some of the engagements undertaken. More photos are provided in Appendix C.



Plate 6-1: Community Consultation meeting at Nyong Boma Block 1 and at Narus



Plate 6-2: Courtesy call at Torit's County Commissioner and Mayor Torit Municipal Council



Plate 6-3: FGD with Torit Drivers and CSOs at Kapoeta

7 Environmental and Social Impact Assessment

7.1 Environmental and Social Impacts Analysis

An Environmental and Social Impact analysis was carried out to devise mechanisms to manage and monitor the associated potential risks and impacts and thereby ensure the project will be environmentally and socially sound and sustainable. Potential negative environmental and social impacts of the project are considered and classified as either positive or negative and followed by rating of their significance, which can be described as insignificant, low, medium or high. Stakeholder consultations conducted also assisted in efforts to prioritize and analyze the anticipated impacts.

The consultant analyzed data and information from desk and field surveys/assessment including consultations feedback to inform the ESIA, ESMP and applicable sub-plans.

7.2 Impact Assessment Methodology

The ESIA process ranked impacts according to their significance determined by considering project activity event magnitude and receptor sensitivity. Determination of event magnitude entailed the identification and quantification (as far as practical) of the sources of potential environmental and socio-economic effects from project activities. The approach to evaluating the significance of potential environmental and socio-economic impacts entailed the following aspects.

(1) Project zone of impacts – for analysis of impact zones.

(2) Impact Type: whether beneficial or adverse.

(3) Nature of Impact: whether reversible or irreversible.

(4) Event Magnitude: assessed on the impact extent, frequency, duration, intensity, likelihood and reversibility.

(5) Receptor sensitivity: assessed the type, presence and resilience of the receptor.

(6) Impact significance: function of magnitude and receptor sensitivity.

The approach and criteria for the above aspects are described below.

7.2.1 Environmental impacts

The environmental impacts were evaluated using the criteria below.

Magnitude:

EVENT MAGNITUDE		
Extent/Scale	Events range from those where the effect extends across an area:	
	Near to the source (in the range of tens to hundreds of metres)	1
	At intermediate distance from the source (in the range of hundreds to thousands of metres)	2
	At far distance from the source (in the range thousands of metres and above)	3
Frequency	Events range from those occurring:	
	Once or twice;	1
	Repeatedly but intermittently;	2
	Frequently and persistently	3
Duration	Events range from those where effects occur over	
	Instantaneous/short term (i.e., hours to days)	1
	Medium term (between a week and 3 months)	2
	Long term (more than 3 months to permanent).	3

Intensity	Concentration of an emission or discharge with respect to standards of acceptability that include applicable legislation and international guidance, its toxicity or potential for bioaccumulation, and its persistence in the environment. Also, the degree/permanence of disturbance or physical impact (e.g., disturbance to species, loss of habitat or damage to cultural heritage). Ranges from:	
	A low intensity event;	1
	A moderate intensity event;	2
	A high intensity event	3
Likelihood	Likelihood is estimated on the basis of experience and/or evidence that such an outcome has previously occurred. The likelihood of impact occurring was assessed:	
	Unlikely	1
	Possible	2
	Likely	3
Reversibility	This characteristic denotes the possibility of the system to return to its original condition. Can be characterized as 1 (short-term, easily reversible), 2 (medium term, partially reversible if mitigated) and 3 (irreversible).	
	Short term, easily reversible	1
	Medium term, partially reversible	2
	Irreversible	3

The event magnitude was scored from low (1) to high (18) by adding the individual parameter scores. Resulting individual ratings were summed to give the overall event magnitude ranking. Table 7-1 presents the score ranges for magnitude rankings of Low, Medium and High.

Table 7-1: Environmental Event Magnitude Rankings

Event Magnitude	Score (Summed Parameter Rankings)
Low	1 - 6
Medium	7 - 12
High	13 - 18

Receptor Sensitivity:

The Receptor Sensitivity considered the type of receptor (namely, biological/ecological, human, and physical receptor/feature); and was determined based on the following parameters, which are equally weighted and are each assigned a rating of 1, 2, or 3:

RECEPTOR SENSITIVITY SCORING BY CATEGORY		
Biological/Ecological Receptors	Presence ranges from:	
	Presence of species which is none of the below.	1
	Internationally threatened species/protected area within the area impacted by the project activities outside of period of high sensitivity or during routine or reliably predictable peak presence. Internationally near threatened species within the area impacted by the project activities during period of high sensitivity and/or during routine or reliably predictable peak presence. Nationally protected species and/or species which are of importance to the local and regional ecosystem within the area impacted by the project activities.	2
	Internationally threatened species/protected area within the area impacted by the project activities during period of high sensitivity and during routine or reliably predictable peak presence; to	3
	Resilience (to the identified stressor) ranges from:	

	Species and/or population has high capacity to absorb or adapt to change (i.e., has capacity to move away from or adapt to the project impact) and is potentially unaffected or marginally affected.	1
	Species and/or population which has moderate capacity to absorb or adapt to change (i.e., has capacity to move away from or adapt to the project impact), leading to potential temporary but sustainable effect which does not substantially alter character or result in significant loss of ecological functionality.	2
	Species and/or population which has little or no capacity to absorb or adapt to change (i.e., little or no capacity to move away from or adapt to the project impact), leading to potential for substantial change of character and/or loss of ecological functionality.	3

Human Receptors	Presence ranges from:	
	People being uncommon in the geographical area of anticipated impact.	1
	People being present some of the time (e.g., commercial property).	2
	People being permanently present (e.g., residential property) in the geographical area of anticipated impact.	3
	Resilience (to the identified stressor) ranges from:	
	People being least vulnerable to change or disturbance (i.e., ambient conditions such as air quality are well below applicable legislation and international guidance)	1
	People being vulnerable to change or disturbance (i.e., ambient conditions such as air quality are below adopted standards)	2
	Most vulnerable groups (i.e., ambient conditions such as air quality are at or above adopted standards)	3

Physical Receptors/Features	Presence ranges from:	
	Feature which is none of the below.	1
	Feature with local or regional value and is sensitive to disturbance	2
	Presence of feature which has, in reverse order, national or international value (e.g., state protected monument)	3
	Resilience (to the identified stressor) ranges from:	
	Feature/receptor is unaffected or marginally affected (i.e., resilient to change)	1
	Undergoes moderate but sustainable change which stabilises under constant presence of impact source, with physical integrity maintained	2
	Highly vulnerable (i.e., potential for substantial damage or loss of physical integrity)	3

The overall impact receptor sensitivity was scored on a scale from low (1) to high (6) by adding the individual parameter scores. The Table below presents the score ranges for sensitivity rankings of Low, Medium and High

Table 7-2: Environmental Receptor Sensitivity Ranking

Receptor Sensitivity	Score (Summed Parameter Rankings)
Low	1 - 2
Medium	3 - 4
High	5 - 6

7.2.2 Socio-economic Impacts

The socio-economic impact assessment used a semi-qualitative assessment approach to describe and evaluate potential impacts based on the event magnitude and receptor sensitivity rankings set out in the tables above. Indirect socio-economic impacts (i.e. induced effects) was also assessed using a similar approach.

Table 7-3: Socio-economic Event Magnitude Rankings

Magnitude	Criteria
Low	Changes in social, economic or cultural dynamics with slight and temporary effect on any given sector performance and/ or population wellbeing. These impacts are unlikely to result in concerns being raised by governmental bodies or stakeholders. Events may include: ▪ Minor disruption to livelihoods or living conditions resulting in a localized, reversible and temporary nuisance; ▪ Temporary disruption to businesses that does not result in a loss of revenue or any reputational damage; ▪ No change in the health status of local communities; and ▪ Temporary disruption to public infrastructure (such as a road closure) that results in minor inconveniences to affected communities.
Medium	Changes in social, economic or cultural dynamics with moderate and noticeable adverse effect on any given sector performance and/or population wellbeing. Such impact may result in concerns being raised by governmental bodies or stakeholders. Events may include: ▪ Negative change in livelihood status, household assets/income or living conditions. ▪ Temporary disruption to businesses resulting in a small drop in business revenue. ▪ Increased risk to public health that can be controlled using detailed mitigation measures; and ▪ Disruption to public infrastructure that results in an inconvenience to other users.
High	Changes in social, economic or cultural dynamics with major adverse effect on any given sector performance and/or population wellbeing. Such impacts may result in immediate intervention by governmental bodies and stakeholders. Events may include: ▪ Negative change in livelihood status, household income/assets or living conditions affecting a high proportion of people resulting in economic loss and protests on the project. ▪ Reputational damage and/or drop in business revenue that threatens the future viability of the economic activity. ▪ Increased risk to public health leading to a fatality or injury to a member of a community; and ▪ Damage to public infrastructure leading to environmental or socio-economic impacts to other users.

Table 7-4: Socio-economic Receptor Sensitivity Ranking

Sensitivity	Criteria
Low	Receptor sensitivity will be considered low when there is a moderate to high capacity and means to adapt to a given change and maintain / improve quality of life. Receptors of low sensitivity may include: ▪ Individuals who are able to quickly adapt to temporary disruption in their living conditions, livelihood status or a change in the status of public infrastructure (such as a road closure); and ▪ Businesses with a robust economic model that are able to adapt easily to any restrictions placed upon their activities, or who are able to gain economically from such changes.
Medium	Receptor sensitivity will be considered medium when there is limited capacity and means to adapt to a given change and maintain / improve quality of life. Receptors of medium sensitivity may include:

	▪ Individuals who rely heavily on their livelihood to maintain their socio-economic status and have a limited ability to adapt to change; and ▪ Businesses that have a limited ability to adapt to change and are sensitive to any reduction in economic revenue or reputation.
High	Receptor sensitivity will be considered high in the case of vulnerable receptors, who have little capacity and means to adapt to a given change and maintain / improve quality of life (e.g. homeless people, Internally Displaced Persons community in temporary accommodation, people with low access to recourse (e.g. no land titles), people with no or low representation (e.g. migrants, seasonal herders with no permanent assets in the area). Receptors of high sensitivity may include: ▪ Individuals with a marginal livelihood, low socio-economic income or poor-quality living conditions. ▪ Individuals who are vulnerable due to their age, disability, or other reason and who may require special assistance during engagement activities; and ▪ Businesses with a marginal economic existence which are not able to easily adapt to change.

7.2.3 Impact Significance

For both environmental and socioeconomic impacts, **impact significance**, as a function of **event magnitude** and **receptor sensitivity**, was ranked as **Negligible, Minor, Moderate** or **Major** as presented in the table below.

Table 7-5 Impact Significance

		Receptor Sensitivity		
		Low	**Medium**	**High**
Event Magnitude	**Low**	Negligible	Minor	Moderate
	Medium	Minor	Moderate	Major
	High	Moderate	Major	Major

7.3 Potential Positive E&S Impacts

7.3.1 Economic Integration within East African Region

The road is critical as it will promote and facilitate regional economic integration of South Sudan by providing reliable road access to and from the Port of Mombasa in Kenya. Furthemore it will facilitate ongoing relief and reconstruction efforts in South Sudan and to improve the integration of East Equatoria and Central Equatoria states into the South Sudan economy. Beyond the regional and national economic benefits other beneficiaries of the project will include pastoralist communities, farmers and businesses along the road corridor, road users (passengers and freight), tradable sectors of the economy, agriculture, mining and ultimately, consumers and producers both inside and outside the two states.

Movement of goods from the port of Mombasa will be more efficient since the distance will be shorter with only one checkpoint crossing at Nadapal. Currently goods to South Sudan have to be cleared at Kenyan border with Uganda and Ugandan border with South Sudan leading to substantial delays. The distance covered by these transit goods will also be substantially reduced, thus leading to benefits of reduced fuel use and subsequent reduction in carbon footprint of both Kenya and South Sudan.

7.3.2 Security

The road project will improve the overall security of the project area. Security forces will deploy and respond faster to situations. Hijacking of vehicles and robbery of travellers will be minimized or eliminated altogether. The road clearance expected to accompany road construction will increase the visibility of road users.

7.3.3 Road Safety

Given the anticipated high volume of traffic during and after construction road safety will improve since roads will be more passable, well lit and signage provided to guide the different categories of road users. After construction more road worthy vehicles will be used and this will further enhance road safety.

7.3.4 Access to Social Amenities

The improved road will increase or enable access to schools, markets, health facilities and other social infrastructure in the community. It will substantially reduce the time and cost involved in accessing the social services. The quality of services will improve given that supplies and quality control measures will be more available. Social amenities that are currently closed are likely to resume operation. For example, Ngangala Primary School, Loriyok dispensary, and New Kenya Market Centre.

7.3.5 Roadside Amenities

The project shall consider provision of roadside amenities and truck parking at designated sites. However concrete sites and size of locations have not yet been identified and agreed upon with the appropriate authorities. The intention is for the project to compact and pave the sites and in collaboration with the local authorities who should prepare a site physical plan and operate the sites where facilities such as kiosks will be built. Priority for allocation of space shall be to youth and female traders, maintaining gender equity, who shall have been vacated from the project road. Amenities to be included at these sites shall include solid waste bins, potable water sources, rest places, restaurants, toilet facilities, shops/kiosks and HIV/AIDS, STIs, and drug abuse information booths, etc.

7.3.6 Tourism

The project area has considerable potential for tourism. For instance, the annual *Kajiwaya* celebration of the Lokoya community at Ngulere is a potential tourist attraction given its proximity to Juba. The annual *ehumwa* ceremony of the Lotuko community that is celebrated in September to kick off bush clearance is a potential tourist attraction. It is open to all people therefore attractive. The project area is rich in wildlife therefore the potential for tourism is high. The mountain ranges are an attraction for mountain climbers. Therefore, the improved road will open up the potential for tourism due to increased accessibility.

7.3.7 Mining

The upgrading of the Juba-Torit-Kapoeta-Nadapal road to asphalt standard will have a significant positive impact on the mining sector in South Sudan. The mining industry in South Sudan holds immense potential, with the country being rich in mineral resources such as gold, uranium, copper, manganese, marble, and rare earth elements.

The road corridor passes through regions with untapped mineral resources. With over 90% of South Sudan's landmass yet to be explored for minerals, improved road access will facilitate geological surveys, exploration, and investment in these areas.

By upgrading the road to an asphalt standard, the travel time for goods and services will be significantly reduced. This will lower the cost of transporting mining products such as ores and minerals to processing facilities or export markets. The availability of a reliable transportation route will also attract more investors, as logistics will no longer be a major barrier.

South Sudan has implemented a mining-friendly regulatory framework, including the Mining Act of 2012, which facilitates foreign investment in the mining sector. The improved road network will enhance investor confidence by providing better access to mining sites and reducing risks associated with remote and inaccessible areas

The upgraded road will link South Sudan to neighboring countries, providing a vital trade route for mineral exports.

The development of the road will likely spur the creation of other essential infrastructure, such as power supply, water systems, and communication networks, which are critical for mining operations.

7.3.8 Agriculture

Agriculture is a very important socio-economic/livelihood activity to almost all the communities living along the road project from Rejaf Payam of Juba County in Central Equatoria State to Nadapal in Narus County of Eastern Equatoria State. It is evident that most of the agricultural activities in the project area is subsistence, thus produces are lower than expected. This is attributable to, among others, insecurity, inter-communal conflicts, climate change and lack of access roads to markets.

Merchants in the business centers and centers with active markets do not risk travelling distance into the producer villages to purchase agricultural produce for sale in the towns.

The construction of this highway will enhance and reduce the time required for transport of agricultural inputs (including technical inputs by extension workers from the government department of agriculture and relevant NGOs) to the farming communities. The movement of agricultural production from the producers to the market will be enhanced, and this will encourage the rural producers to increase production for sales, resulting to increase in their income, leading to improvement of their livelihoods and live styles.

7.3.9 Conservation

Conservation of the environmental and natural resources is critical in ensuring the sustainability of these resources. Wetlands, wildlife, forests mountain ecosystems and biodiversity are some of the important natural resources in the project site all along from Juba to Nadapal. They are experiencing challenges, mainly due to encroachment of illegal settlements, poaching, deforestation, degradation and habitat destruction.

The highway and other access is expected to enhance the movement of the relevant institution to effectively and efficient manage and protect these environmental resources from illegal exploitation. The institutions and NGOs working in the fields of conservation will have access to local communities to effectuate conservation and protection campaigns, and involve the communities in an integrated approach in environmental and natural resources conversation.

7.3.10 Employment and Income

There are numerous economic benefits associated with the project. There will be employment opportunities for the community members. During preparations for construction and actual construction thousands of employment opportunities will be created. All the unskilled tasks will be reserved for the local community. Skilled and semi-skilled community members eg drivers, mechanics, plumbers, electricians, etc will be employed. Skilled community members in certain trades required by the contractor will be prioritized. Both men and women will be considered. There will be certain tasks reserved for women and Persons with Disability.

The project will inject considerable money into the community thereby spurring economic growth in other businesses. Suppliers and local contractors are likely to be considered for sub-contracts. Market for construction materials is likely to lead to growth in other sectors. Those employed will earn legitimate income to invest in the local economy, improve their social status and enjoy improved standard of living.

7.3.11 Climate Change Resilient Infrastructure

Recent historical climate data (see Chapter on baseline climate) indicate that both temperature and rainfall are increasing. This has been reinforced by climate change models that predict increase in rainfall and run-off in the short term (2021-2040) in the business as usual scenario. This knowledge will give an opportunity to factor in climate change scenarios in design to improve climate resilience of the road during the design life.

The impact category of the above key benefits associated with implementation of the proposed project are summarised below.

No.	Potential Impact	Category		
		Direct	*Indirect*	*Cumulative*
(i)	Promotion & facilitation of regional economic integration of South Sudan by providing reliable road access to and from the Port of Mombasa in Kenya; ongoing relief and reconstruction efforts in South Sudan and to improve the integration of East Equatoria and Central Equatoria states into the South Sudan economy.	☒	☐	☒
(ii)	Improve the overall security of the project area: (faster response by security forces to situations, Hijacking of vehicles and robbery of travelers will be minimized or eliminated altogether. The road clearance expected to accompany road construction will increase the visibility of road users).	☐	☒	☒
(iii)	Improved road safety (upgraded surface will be more passable, well lit and signage provided to guide the different categories of road users).	☐	☒	☒
(iv)	Improved road will increase or enable access to schools, markets, health facilities and other social infrastructure in the community.	☒	☐	☒

No.	Potential Impact	Category		
		Direct	*Indirect*	*Cumulative*
(v)	Improved road will open up the potential for tourism due to increased accessibility.	☐	☒	☒
(vi)	Mining: (improved road access will facilitate geological surveys, exploration, and investment in these areas; reduced travel time & subsequently cost of transport; Attraction of more investors; enhanced investor confidence; provision of a vital trade route to neighbouring countries for mineral exports; spur the creation of other essential infrastructure, such as power supply, water systems, and communication networks, which are critical for mining operations)	☐	☒	
(vii)	Agriculture: enhance and reduce the time required for transport of agricultural inputs to the farming communities; enhanced movement of agricultural production from the producers to the market and this will encourage the rural producers to increase production for sales, resulting to increase in their income, leading to improvement of their livelihoods and live styles.	☒	☐	☒
(viii)	Conservation: enhanced movement of the relevant institution to effectively and efficient manage and protect these environmental resources from illegal exploitation; institutions and NGOs working in the fields of conservation will have access to local communities to effectuate conservation and protection campaigns, and involve the communities in an integrated approach in environmental and natural resources conversation.	☐	☒	☒
(ix)	Employment & income: employment opportunities for the community members; project will inject considerable money into the community thereby spurred economic growth in other businesses; market for construction materials is likely to lead to growth in other sectors; those employed will earn legitimate income to invest in the local economy, improve their social status and enjoy improved standard of living.	☐	☐	☒

7.4 Potential Negative E&S Impacts

7.4.1 Air Quality-Pollution

Pre-construction and Construction Phases:

Limited air quality impacts are expected during pre-construction phase, mainly from preliminary survey works and minor vehicular movements. The generation of dust (PM10 and PM2.5) and emissions of pollutants such as NOx, SOx, CO, and VOCs will increase due to heavy machinery, transportation of materials, and earthworks during construction phase. These activities are likely to result in localized air quality degradation and can reduce the photosynthetic ability of plants by blocking sunlight when deposited on leaves.

The sensitive receptors along the project corridor will be affected by the deterioration of air quality during the construction phase due to dust generation (PM10 and PM2.5) and emissions from construction machinery and vehicles. Locations such as Jebel Aminin Institute (Chainage 4+250), Ngulere Primary School (Chainage 48+000), and Torit Market (Chainage 125+000) are likely to experience elevated levels of particulate matter and vehicle emissions, which can negatively affect the respiratory health of children and the general public. Additionally, healthcare facilities, including Torit State Hospital (Chainage 125+500), will be particularly vulnerable to airborne pollutants, which may worsen respiratory conditions in patients.

Mitigation Measures:

To control/ mitigate anticipated impacts the following measures should be implemented.

- Avoid leaving mechanical equipment, machinery, trucks, and vehicles idling unnecessarily at the work site.

- Ensure all vehicles, equipment and machinery are in good working order with a particular attention to motor combustion efficiency and antipollution systems.
- Limit vehicle and machinery speed within the work site to minimize dust generation. Authorized speeds on the work site should be specified and enforced by the contractor.
- Use environmentally friendly fuels such as low sulphur diesel.
- Use water bowsers as dust abatement to limit excessive dust emissions from granular material handling and piling, and vehicle movements.
- Strictly ensure no burning of waste on sites/non-designated areas.
- Ensure trucks transporting fine granular (sand) material and asphalt are equipped with a tarpaulin to cover the material during travel between material site source and work site.
- Drop granular material as close to the ground as possible to reduce generation of airborne particles.

Operational Phase:

There is no component of the proposed project that is anticipated to have the potential to directly affect the local air quality during its operation. However, since it will be used by motorists, vehicular emissions from its use are anticipated. This will be an indirect impact. The impacts during construction will drastically reduce to low during the operational phase, but ongoing monitoring and mitigation will still be required, particularly near highly populated or sensitive areas like schools and hospitals.

Impact Significance

Due to the nature of the construction process, dust and emissions will not be constant and will fluctuate according to the operating periods for each item of plant and the combination of combustion-engine machinery being used at any one time. Potential receptors, such as humans, flora and fauna will not, therefore, be continually exposed to construction dust and emissions for extended periods. The risk of dust and emissions is assessed to be Moderate.

Table 7-6: Impact Significance for Air Quality

TYPE	Beneficial (+ve)	☐	NATURE	Reversible	☒	Reversibility Score	1
	Adverse (-ve)	☒		Irreversible	☐		
CATEGORY	Direct	☒	Indirect	☒	Cumulative	☐	
MAGNITUDE							
Extent	Frequency	Duration	Intensity	Likelihood	Score	RATING	
1	2	2	1	2	9	Medium	
RECEPTORS	Ecological ☒		Human ☒		Physical ☒		
Presence	Resilience	Receptor Sensitivity	Receptor Sensitivity Ranking		Impact Significance		
3	1	4	Medium		MODERATE		

7.4.2 Landscape and Visual Intrusion

Construction Phase:

Road projects can lead to changes in landscape in two main ways, disfigurement resulting from material sourcing and the road itself. Previous road rehabilitation works have left many abandoned and unrehabilitated sites dotted across the landscape (See Table 7-7). Most of these are between Juba and Km 132, probably because of proximity to Juba town where such materials were previously needed (and still needed) for construction of urban roads and other roads close to the capital.

Table 7-7: Chainages for abandoned and potentially active borrow pits and quarries along the road alignment

No.	Chainage	Easting	Northing	Estimated Area (Hectares)
1	08+700	350584.35	524044.06	9.92
2	09+400	350800.52	523626.71	11
3	19+700	358362.32	519329.65	36.6
4	20+600	359185.06	518682.65	4
5	22+600	360667.05	519190.9	25.5
6	25+300	363469.18	519572.76	15.2

No.	Chainage	Easting	Northing	Estimated Area (Hectares)
7	25+700	364042.19	519093.32	11.3
8	27+700	365737.42	519614.48	14.4
9	29+000	366946.91	519287.83	32
10	30+500	368423.5	518873.87	6.87
11	32+600	370554	519166.29	0.93
12	33+200	371316.7	519132.16	5
13	36+800	374473.92	518716.15	18.28
14	37+900	374792.07	519790.66	1.37
15	39+000	375527.33	520578.66	5
16	41+400	377766.73	520489.57	7
17	46+600	383025.34	519479.53	9.71
18	49+100	385365.25	518955.27	3.38
19	54+000	390802.27	517490.94	18
20	62+800	396398.24	512832.3	3.22
21	63+400	396699.08	513089.64	3.15
22	66+500	394948.56	514009.93	2.94
23	68+600	401182.55	510862.98	6.62
24	71+000	403269.76	509679.71	10
25	73+100	404795.16	508419.2	1.24
26	75+800	407459.57	507124.33	8.08
27	78+000	409122.13	505738.45	0.51
28	78+600	409737.35	505635.41	0.79
29	84+600	414108.92	503272.88	3
30	86+200	416462.54	502067.98	3
31	88+100	417993.27	501331.92	3
32	119+600	446128.5	488824.22	14
33	132+200	457717.73	489212.29	1.34

It is nonetheless clear that some of the abandoned and existing material sites and quarries that still have viable quantities of materials will be used for the road. Most of these sites are expansive, majority of which are over 5ha and up to 36ha, and their continued use may mean increasing their sizes. Together with the new sites that will be opened by the Contractor, the impact of these materials sites could have significant visual intrusion and permanent scars on the landscape. This impact is considered low to medium depending on the extent to which the existing sites will be expanded and the new ones that will be developed. Furthermore, the design has proposed use of rock outcrops that are found around Ngangala for aggregates. The rock outcrops along the route are presented in Table 7-8.

Table 7-8: Rock outcrops observed along the road corridor

S/No.	Chainage (Km)		Description of the findings
1	49+70		Outcrop, but mine danger.
2	69+10	LHS	Outcrop, 272m off-road. Large and wide Potential quarry site.
3	85+20	RHS	Outcrop, but mine danger.
4	166+75		outcrop, 60m off-road. Large & wide potential quarry Site.
5	177+80		outcrops, 50m off-road. Large and wide potential, quarry site.
6	221+66	RHS	outcrop at 1 km off-road. A Potential quarry site.
7	227+80	LHS	Outcrop at 100m off-road
8	285+60	RHS	Outcrop; 50m off-road,
9	330+40	LHS	Outcrop; 60m off-road

As can be seen from Table 7-8, nearly all aggregate sites identified by the design engineers are rock outcrops. This is not recommended considering these are the features that characterize the landscape.

Mitigation Measures:

The study recommends the following measures.

- Existing material sites that are 5 ha and above should not be exploited further horizontally, unless with the express approval of the community and the Ministry of Environment and Forestry

- Wide consultations with the Ministry of Environment and Forestry, Tourism industry players should be done before any rock outcrop is cleared for use by the contractor
- Wherever possible imposing rock outcrops should not be used as source of aggregates as such use is completely irreversible.
- All material sites must undergo a detailed assessment culminating into preparation of site specific ESMP's before exploitation. The ESMP's should clearly elaborate the post-use decommissioning process including rehabilitation plan. For those that the community feel should be converted to a water pan, then a clear and elaborate procedure involving robust engagements with the community, Ministry of Roads & Bridges and relevant government agencies must be done before approval.

Operation Phase:

The road infrastructure itself is a permanent feature across the landscape and this is practically irreversible. In regard to material sites and quarries, the impact on landscape will depend entirely on their locations and the extent of their post-use rehabilitation. Generally, those that are located within 200 m of the road will be visually intrusive more than those further away.

Proposed Mitigation measures

- Wide consultations, especially with the community should precede siting of any material site or quarry
- The Contractor should develop a rehabilitation plan for each borrow pit to be approved by the Supervising Engineer (SE)
- Avoid material sourcing and quarrying from scenic areas such as hills and rock outcrops. Nonetheless, regardless of the choice, material sources and quarries should be rehabilitated or restored to the extent possible.
- In general, borrow pits should not be larger than 1 ha. The Contractor must get the approval of the RE and relevant government agencies whenever he intends to open up a borrow pit larger than 1 ha
- Borrow pits and quarries should be located at least 200 m from the road and buffered by trees around the perimeter of the pit or quarry
- The MRB should consider planting avenue trees on the edges of the road reserve to improve general aesthetics.

Impact Significance

The impact is direct and rated as Moderate and are likely to manifest during both construction and operational phases. The medium magnitude is attributed to potential permanent loss of the picturesque outcrops as they are targeted as source of aggregates. The impacts are, therefore, both short and long term in nature. It is important to note that loss of rock outcrops are permanent, while landscape disfiguration at material sites can be partially reversed.

Table 7-9: Impact Significance – Landscape and Visual Intrusion

TYPE	Beneficial (+ve)	☐	NATURE	Reversible	☒	Reversibility Score	1		
	Adverse (-ve)	☒		Irreversible	☐				
CATEGORY	Direct	☒	Indirect	☐	Cumulative	☒			
MAGNITUDE									
Extent	Frequency	Duration	Intensity	Likelihood	Score	RATING			
1	2	3	2	2	11	Medium			
RECEPTORS	Ecological ☐		Human ☐		Physical ☒				
Presence	Resilience	Receptor Sensitivity	**Receptor Sensitivity Ranking**		**Impact Significance**				
2	2	4	Medium		MODERATE				

7.4.3 Soil Degradation

Potential Construction:

Road construction will involve substantial excavations to optimize both vertical and horizontal profiles. These excavations can have localized impacts on the geology and soil. Impacts on geology is not expected to be significant as they are largely localized to sites where excavations are likely to be significant especially around foothills in the sections east of Ngangala such as alignment across Longario and Labewa east of Torit.

The project may have both direct and indirect impacts on soil resources. The photo below shows gully formation along the current road at Km 175 and soil erosion along the road corridor towards Torit.



Plate 7-1: Gully formation along the road corridor

Soil erosion is a gradual process by which the topsoil is moved or transported by various physical agents particularly wind and water causing its deterioration in the long term. Construction of the road will involve site clearance to pave way for the expansion of the road and although most of the road corridor has been cleared, a few sections still have significant vegetation which may be cleared during construction. Ground clearance and excavation works shall expose the soils to physical agents of wind and water. The section between Juba and Torit receives significant amount of rainfall between 1300-700mm and this progressively reduces to the east.

Due to slopes associated with the sections across hilly areas, soils are shallow and weakly developed due to constant erosion and hence are of medium to light texture increasing their potential to be transported. The sections are: Km 58 – Km 66; Km 85 – Km 98; Km 134 – Km 140; Km 162 – Km 171; and Km 212 - Km 250.

Soil erosion in these sections could be further enhanced by site clearances and excavations. Moreover soil erosion in these sections are expected to be cumulative in nature. During the rainy season the sediments are washed down to the seasonal rivers which mostly have dry and sandy river beds further impacting the river hydrology. In fact the deposited sediments can be metres deep.

In the rain season, construction activities may impact soil in the following ways:

- Loss of ground cover due to clearance and compaction
- Creation of side drains before construction of scour checks
- Removal and storage of spoil / overburden
- Risk of contamination of existing soils and groundwater by construction activities such as accidental spills.

	There are incidents of vehicles getting stuck in riverbeds due to siltation, as illustrated by Plate 7-2

Plate 7-2: Pickup truck submerged in sediments washed down overnight at River Singata

Mitigation measures

The Contractor to develop an erosion control and revegetation plan to delineate measures to minimize soil loss and reduce sedimentation to protect water quality especially for sections that will interact with water resources. The study recommends the following measures.

- Areas affected by construction related activities and/or susceptible to erosion or landslides must be monitored regularly.
- Design runoff control features especially on the roadside drainage channels to minimize soil erosion.
- Limit cleared areas to project footprint to avoid unnecessary exposure of soil to agents of erosion.
- Line side-drains with concrete or by stone pitching in erosion prone soils to avoid gully formation
- The contractor should adhere to specified cut and fill gradients and planting embankments with shrubs and grass to reduce erosion and take care of stability problems of road embankments. Areas cleared for improving sight distance should be planted with grass to reduce erosion (where possible)
- Excavated materials and excess earth should be kept at appropriate sites approved by the Supervising Engineer.

Operational Phase:

Soil erosion arising from road construction and related activities can be a long-term impact depending on whether measures are put in place to arrest it. The rate of soil erosion tends to increase with time. Initially soil erosion will have a small effect, but once gully erosion has been initiated then the impact will have a progressively larger magnitude effect following repeated episodes of rains. Consequently, measures to control soil erosion should be undertaken to reduce the occurrences and control the incidences already experienced. The success of controlling soil erosion impacts is largely dependent on the design of the road drainage, stabilization of the soil along the roadside and the reserve area as well as cooperation and participation of the community. Trimming/ cutting of trees for fuel was evident along the road as shown in Plate 7-3.



Plate 7-3: Fuelwood harvesting adjacent to the road

The community living adjacent to the road can indirectly contribute to de-vegetation of areas within close proximity to the road. For example the road is expected to link the project area to bigger markets such as Juba and this will be a great incentive to cut trees for charcoal production and firewood targeting these big markets. The most easily accessible woody vegetation are those within proximity of road reserve.

Such deforestation will lead to enhanced run-off and soil erosion within the corridor. Furthermore the predicted climate change related increase in run-off in the short term could exacerbate soil erosion in an already degraded landscape (See Section on Climate Resilience).

Proposed Mitigation measures

Physical impacts on soil is highly dependent on hydrology and ground cover. The import of this is that construction activities should minimize vegetation clearance by restricting works to the project footprint.

Where this is not possible then cleared sites should be revegetated as soon as possible to reduce chances of soil erosion and improve water conservation in the long term. Other proposed measures include.

- All earth cuttings need to be at a gentle angle, wherever possible, in order to allow vegetation to establish. Steep side-slopes tend to result in seeds washing away rather than having a chance to become established.
- To minimize potential soil erosion along embankments, back slope, other cleared areas, road verges, etc. immediate landscaping will be required. The contractor should consider planting of appropriate grass such as the indigenous couch grass.
- Areas susceptible to severe erosion should be protected by installing necessary temporary and permanent drainage works.
- Clearing the road reserve should be cognizant of the importance of maintaining minimum ground cover to stabilize soil that can potentially be eroded away.
- Promote planting of avenue trees along the edges of the road reserve.

Impact Significance

The impacts on soil resources are both direct and indirect and can be rated as medium and localized. Direct impacts relate to earthworks such as excavations thereby exposing the soil to erosion agents. The impacts are indirect in the sense that vegetation clearance can also expose soil to erosion agents. Some aspects like gullies can be rehabilitated hence partially reversible, while soil loss may not be reversible.

Table 7-10: Impact Significance – Geology & Soils

TYPE	Beneficial (+ve) Adverse (-ve)	☐ ☒	NATURE	Reversible Irreversible	☒ ☐	Reversibility Score		2	
CATEGORY	Direct	☒	Indirect	☐	Cumulative	☐			
MAGNITUDE									
Extent	Frequency	Duration	Intensity	Likelihood	Score			RATING	
1	2	1	2	2	10			Medium	
RECEPTORS	Ecological ☒		Human ☐		Physical ☒				
Presence	Resilience	Receptor Sensitivity	**Receptor Sensitivity Ranking**		**Impact Significance**				
2	2	4	Medium		MODERATE				

7.4.4 Water Resources

Construction Phases:

The construction phase is expected to have some impacts on water quality of some water sources especially streams and rivers. Key impacts include: surface water contamination may result from increased sedimentation and runoff during construction activities, particularly in the rainy season, degrading water quality in rivers and wetlands. The mobilization of fine particles, oil, and other pollutants could negatively impact aquatic ecosystems. Additionally, groundwater over-extraction from boreholes for construction purposes could potentially lower the water table and reduce water availability for local communities and wildlife. This scarcity could lead to conflicts over water resources, especially during dry periods. Moreover, the construction of cross drainage structures and embankments might alter natural drainage patterns, affecting wetlands and increasing the risk of flooding in certain areas. The design team must ensure that flooding mitigation strategies and sustainable infrastructure are considered at all locations where waterways intersect the road alignment. Key sections requiring attention have been identified in the baseline section of this report.

Where the contractor identifies need for additional sources of water for construction works (such as sinking boreholes), this could have additional impacts on ground water resources. At this stage water sources that will be used by the Contractor are not known and therefore the risks associated with them could not be assessed. That said, it is important that the contractor undertakes independent environmental and social assessment for water sources that he may develop for use during construction.

Mitigation Measures:

- The Contractor should avoid use of community boreholes and instead sink his own boreholes. Any abstraction from rivers must be preceded with proper consent from the water resource users and authorization from authorities

- Implement sedimentation control measures (e.g., silt fences, sediment basins) to reduce runoff into nearby rivers and wetlands.
- Establish designated storage areas for hazardous materials (e.g., oil, chemicals) away from water bodies, ensuring containment in case of spills.
- Use alternative water sources, such as sinking new boreholes for construction needs, ensuring they are not close to community boreholes to prevent over-extraction.
- Construct and maintain proper drainage structures to ensure water flow is not obstructed and wetlands are protected.
- project to maintain water usage/consumption records and obtain abstraction permits as applicable.

Operational Phase:

During the operational phase, the road may contribute to increased surface runoff due to the impervous layer of the pavement, potentially impacting water bodies through erosion and sediment transport. Long-term impacts could also include pollution from vehicular emissions, oils, and chemicals, which may be washed into water bodies during rainfall.

Further, the drainage structure will also be prone to siltation which reduces their capacity to convey the expeted discharge. This will pose a risk to the road as flood build up on the upstream may result in overtopping of the structures causing damage to the road especially the embankments/cutting of the road as well as the structures being washed away.

Mitigation Measures:

- Regular maintenance of drainage systems to prevent blockage and erosion.
- Implement pollution control measures, such as oil and chemical containment systems for vehicles, especially near water crossings.
- Monitor water quality at critical points along the road to ensure compliance with WHO and national standards.

Impact Significance

The project's impact on water resources is assessed as moderate as shown in Table 7-11. This impact could be reduced to minor with effective implementation and monitoring of proposed measures.

Table 7-11: Impact Significance – Water & Hydrology

TPYE	Beneficial (+ve)	☐	NATURE	Reversible	☒	Reversibility Score	1	
	Adverse (-ve)	☒		Irreversible	☐			
CATEGORY	Direct	☒	Indirect	☐	Cumulative	☒		
MAGNITUDE								
Extent	Frequency	Duration	Intensity	Likelihood	Score	RATING		
1	2	2	2	2	10	Medium		
RECEPTORS	Ecological ☒		Human ☒		Physical ☐			
Presence	Resilience	Receptor Sensitivity	**Receptor Sensitivity Ranking**		**Impact Significance**			
2	1	3	Medium		MODERATE			

7.4.5 Resource Use Efficiency and Pollution

Construction Phase:

Resources here refer to inputs from natural sources that include gravel materials, aggregates, water and sand and energy use. The project is expected to use large quantities of these materials, of which a side from energy, will all be sourced locally. Water is a scarce resource in the project area and this is particularly critical during the dry season. There are only three permanent rivers in the project area that are complemented by community boreholes as the only water sources for the communities' domestic water requirements and livestock. Construction will require large quantities of water and some of the water sources that could be used are the permanent rivers, aside from boreholes that the contractor may develop. Due to scarcity, it is important that the Contractor practices utmost efficiency in the use of water to avoid jeopardizing community access to water.

Gravel and hrdstone materials will also be sourced locally. It is not expected that the Contractor will be wasteful with these materials since wastage will directly affect the construction cost. However, in order to promote sustainability, it is important that material sources are spread out by not sourcing from a limited number of borrow pits that that could lead to localized depletion of materials.

Diesel will be the most common energy source during construction. Since this is one of the costly inputs, it is expected that the contractor will optimize use of diesel and avoid wastage as it would undermine his profits. However use of diesel is one of the main air pollutants through emissions.

Effluent from camps, if not properly managed can lead to pollution of the environment including water sources and soil. Similarly, poor handling and storage of chemicals including bitumen can spill and pollute the environment

Construction workers from outside the project area will be housed in camps and they may depend on woodfuel for cooking. These may be sourced directly by harvesting trees which may cause local loss of tree cover around the camps or they may buy from local vendors. In all cases burning of fuelwood do cause some degree of pollution, though this is likely to be insignificant.

Mitigation Measures:

The Contractor should develop his own water sources, such as boreholes, to be the primary sources for construction and for use in the camps so as not to locally strain coomunity water sources

To the extent possible the Contractor should harvest roof water during the wet season with sufficient storage for use at the camp

Material sources should be spread out across the project length with the aim of not depleteing materials at only a few areas. This is important in safeguarding materials for future use in maintenance

Diesel powered equipment and trucks should be maintained so as to work optimally to minimize emissions

Use of fuelwood for cooking by the contractor staff should be controlled by promoting harvesting of woodfuel from debris from cleared sites

Proper storage and handling of chemicals and other potential pollutants should follow standard operating procedures. All chemicals should be stored in a bunded area to contain any spill.

Operation Phase:

Resource us during operation will be limited to emissions from increased traffic ince the road is paved. Mostly traffic on the road are expected to be diverted traffic hence the road is unlikely to generate new traffic. Diverted traffic means total emission will remain the same or lower since some of the roads from where traffic will be diverted are in poor condition leading to high emissions as vehicles use lower gears. The range of resources for road maintenance will be similar to those during construction, only that quantities will be lower, so measures proposed during construction will apply.

Mitigation measures

For material usage, the measures proposed during construction should apply

During operation, the road should be maintained so as to enable vehicle speeds that use least fuel.

Impact Significance

Impact significance of resource use and pollution is regarded as low as shown in Table 7-12, since their occurrence is largely linked to thecontractor's practices and not the project itself.

Table 7-12: Impact Significance – Resource use efficiency and pollution

TPYE	Beneficial (+ve)	☐	NATURE	Reversible	☒	Reversibility Score	1
	Adverse (-ve)	☒		Irreversible	☐		
CATEGORY	Direct	☒	Indirect	☐	Cumulative	☒	
MAGNITUDE							
Extent	Frequency	Duration	Intensity	Likelihood	Score	RATING	
1	2	2	1	1	8	Low	
RECEPTORS	Ecological ☐		Human ☒		Physical ☒		
Presence	Resilience	Receptor Sensitivity	**Receptor Sensitivity Ranking**		**Impact Significance**		
1	1	2	Low		Low		

7.4.6 Waste Generation and Management

Construction Phase:

The construction of the Juba-Torit-Kapoeta-Nadapal road to bitumen standards will lead to the generation and management of both solid and liquid waste in the region.

Road construction activities will produce significant amounts of solid waste, including construction debris, packaging materials, and other non-biodegradable materials (plastics, metals). With the lack of adequate disposal facilities, there is a risk that construction waste will be dumped in open areas, leading to environmental pollution and degradation. Communities along the road corridor may face health risks due to improper disposal of solid waste, which could attract vermin and pests, potentially spreading diseases.

Construction camps will generate liquid waste in the form of sewage and wastewater from activities like washing and sanitation. Inadequate handling of liquid waste could lead to contamination of nearby water bodies, impacting local water sources used for drinking and agricultural purposes.

Proposed Mitigation Measures

- Proper waste management plans, including waste segregation, reuse of materials, and regular collection, should be implemented.
- Contractors should establish temporary waste disposal sites.
- Contractor to develop specific measures on storage, use and disposal of hazardous waste within the project.
- To mitigate the impacts of liquid waste, proper sanitation facilities should be established at construction sites, including septic tanks or temporary wastewater treatment systems.
- Effluent discharge should be managed to avoid contamination of rivers and streams in the area.
- Maintain records for quantities generated; recovered/ re-used and disposed at designated disposal sites.

Operational Phase:

Operation of the proposed road project will not generate its own waste. However, increased traffic on the road may ultimately attract unwarranted littering from motorists. The resulting littering and poor waste management around the area may lead to a cumulative impact.

Mitigation Measures

- Road signages on the importance of disposing waste in designated areas should be considered
- Waste collection bins should be made available at all truck rest-stops and bus stops.

Impact Significance

The projects impact/ risks on waste generation is assessed as Moderate as shown in Table 7-13.

Table 7-13: Impact Significance – Waste Management

TPYE	Beneficial (+ve)	☐	NATURE	Reversible	☒	Reversibility Score	1
	Adverse (-ve)	☒		Irreversible	☐		
CATEGORY	Direct	☒	Indirect	☐	Cumulative	☐	
MAGNITUDE							
Extent	Frequency	Duration	Intensity	Likelihood	Score	RATING	
1	2	2	2	2	10	Medium	
RECEPTORS	Ecological ☒		Human ☒		Physical ☐		
Presence	Resilience	Receptor Sensitivity	**Receptor Sensitivity Ranking**		**Impact Significance**		
2	2	4	Medium		MODERATE		

With proper controls, impact significance during operations is assessed as Minor.

7.4.7 Ambient Noise

Pre-construction and Construction Phases:

As mentioned, and indicated in baseline chapter, the baseline ambient noise data collected along the proposed Juba-Torit-Kapoeta-Nadapal Road in September 2024 reflects normal existing conditions. The identified noise levels ranged from 29.1dB(A), with a standard deviation of 7.17dB(A), to most measurements exceeding 55Db(A) (as per the World Bank General EHS Guidelines for residential, institutional, educational, industrial, and commercial areas).

The proximity of educational institutions like Sherikat SDA Sabbath School (Chainage 1+500), Green Belt Secondary School (Chainage 2+500), and Promised Land Secondary School (Chainage 4+000) means these areas are highly vulnerable to noise pollution. Construction activities such as heavy machinery operation, vehicle movement, and possible blasting will significantly increase noise levels, potentially disrupting learning environments, causing stress, and affecting student concentration. Similarly, healthcare facilities like Illiangari Health Centre (Chainage 56+250) and Tirangore Health Care Unit (Chainage 157+500) are sensitive to noise pollution, as excessive noise can impact patient recovery and the overall functionality of these centers.

Main Sources of Impact and Anticipated Effects: The proposed project includes pre-construction and construction phase activities that may impact ambient noise levels, including:

- Movement and operation of heavy vehicles and machinery used to set up temporary construction facilities and prepare the site.
- Operation of borrow pits and quarries (extraction sites).
- Construction of structural works such as bridges, culverts, viaducts, and bypass sections.

Given that noise levels already exceed World Bank EHS criteria for most of the proposed road sections, this can be attributed to the community setup along the road alignment. The Payam and Boma structure clusters social amenities such as marketplaces, schools, churches, and settlements in central locations to ensure the safety of community members and their livestock. These centres share similar characteristics, explaining the consistent noise levels recorded at major centres.

During pre-construction and construction, noise from heavy equipment and machinery will primarily be perceptible in localized areas around the proposed road and extraction sites. As construction progresses, the noise sources will shift, limiting the duration of exposure at any given point. Extraction sites, in particular, will be in full operation during the early construction stages to supply granular materials, then switch to intermittent activity as base layers are completed.

Proposed Mitigation Measures during pre-construction and construction phase.

At this stage of the project, accurately estimating noise levels that may not be perceived in the vicinity of the construction sites remains challenging. Variability in construction activities, equipment, and site-specific factors make it difficult to provide precise noise predictions. These levels can vary based on several factors, such as the distance between noisy equipment and sensitive areas, the duration of noise emissions, and the type and quantity of equipment in operation at the same time. Furthermore, the specific construction methods, machinery, and equipment to be used have not yet been determined.

However, monitoring and adaptive management will be crucial throughout the project phases to ensure compliance with acceptable noise levels and mitigate any significant impacts on the surrounding community. Outlined are proposed mitigation measures during pre-construction and construction phases.

- Maintain equipment and machinery, including brakes, mufflers, catalyzers, and silencers, in good running condition, ensuring they are clean (power washed), free of leaks, excess oil, and grease.
- Prohibit idling of vehicles on-site or near sensitive receptors. Generators and machinery should be shut down when not in use.
- Instruct drivers to limit speed in sensitive areas and minimize noise from the rear panel of dumper trucks.
- Sensitize drivers on noise reduction measures through an eco-driving attitude program.
- Equip compressors and generators used on-site with an acoustic enclosure, a noise barrier, or place them in a soundproof box. This is particularly important for equipment that requires round-the-clock operation in areas with sensitive receptors.
- If blasting is required at quarry sites, ensure noise and vibration mapping is conducted, limit the load of explosives accordingly, and advise the local population in advance to prevent nuisances.

Impacts Significance

Due to the nature of the construction works (linear in nature), receptors of project noise will not be exposed to noise levels continuously for the construction phase. The impact of exposure to project generated noise is assessed as to be Moderate.

TYPE	Beneficial (+ve)	☐	NATURE	Reversible	☒	Reversibility Score	1
	Adverse (-ve)	☒		Irreversible	☐		
CATEGORY	Direct	☒	Indirect	☐	Cumulative	☐	
MAGNITUDE							
Extent	Frequency	Duration	Intensity	Likelihood	Score		RATING
1	2	2	2	2	10		Medium
RECEPTORS	Ecological ☒		Human ☒		Physical ☐		
Presence	Resilience	Receptor Sensitivity	**Receptor Sensitivity Ranking**		**Impact Significance**		
2	2	4	Medium		MODERATE		

Operation Phase:

The main source of impact is associated with the use of the proposed road will be routine maintenance and increased traffic. Routine maintenance work could also generate increased noise levels temporarily and in limited areas of the Highway (Juba - Torit – Kapoeta - Nadapal). The impact analysis will essentially be considering the use of the Highway although mitigation measures will be proposed to help and reduce potential noise increases associated with sporadic routine maintenance work.

The improved road is expected to attract increased traffic as it will shorten travel times to key towns such as Torit, Kapoeta, and Nadapal, which are currently difficult to access due to poor road conditions. A well-constructed road typically leads to economic growth, potentially spurring the establishment of commercial and industrial activities along the alignment. This increase in traffic and economic development could result in a cumulative impact on overall noise levels during the operational phase of the proposed project. Therefore, long-term monitoring and mitigation measures will be essential to manage the rise in noise levels and ensure compliance with acceptable standards.

Proposed Mitigation Measures

The following targeted measures have been proposed towards mitigating noise risks and ensuring compliance with acceptable environmental standards. The measures are designed to manage noise generated both by maintenance work and increased vehicular traffic, while also promoting community well-being and sustainable development along the highway corridor.

- Implement regular noise level monitoring along the highway to assess compliance with international/local noise regulations and standards.
- Enforce speed limits and create designated areas for trucks and heavy vehicles to minimize noise from traffic.
- Plan routine maintenance during non-peak hours or night-time to limit disturbance to surrounding communities.
- Install noise barriers, such as sound walls or vegetation buffers, in areas near residential zones and sensitive receptors to reduce noise propagation.
- Ensure the use of modern, well-maintained, and quieter machinery and equipment during maintenance activities to reduce noise pollution.
- Communicate maintenance schedules and expected noise impacts to nearby communities in advance to manage expectations and minimize inconvenience.

Impact Significance

Risk of noise from increase traffic using improved road and occasional maintenance activities is assesed as moderate.

Table 7-14: Impact Significance – Exposure to Noise

TYPE	Beneficial (+ve)	☐	NATURE	Reversible	☒	Reversibility Score	1
	Adverse (-ve)	☒		Irreversible	☐		
CATEGORY	Direct	☐	Indirect	☒	Cumulative	☒	
MAGNITUDE							
Extent	Frequency	Duration	Intensity	Likelihood	Score		RATING
1	2	2	2	2	10		Medium
RECEPTORS	Ecological ☐		Human ☒		Physical ☐		

Presence	Resilience	Receptor Sensitivity	Receptor Sensitivity Ranking	Impact Significance
2	2	4	Medium	MODERATE

7.4.8 Flora

Construction Phase:

Loss of Vegetation is one of the major unavoidable impacts of road works especially its effects on the terrestrial vegetation in the vicinity of the construction works. The impacts on natural vegetation is normally associated with the general construction works including those of carriageway width, bridges and other drainage structures, quarries and borrow areas, and the construction of access roads to quarries and borrow sites.

General clearing vegetation will affect natural vegetation along the road project. The effect will take place during preparation of sites (camp, workshops, and offices) by clearing during the construction phase. It will be confined to proposed sites (road coridor; auxilliry facilities; access roads etc).

In general, potential impacts of vegetation is considered medium. The most important aspect of the project that may impact on vegetation are the realignment and the bypass at Torit that will demand clearing of established vegetation for the new road corridor. Aditionally, other facilities like detours, material sites, camp and plant sites may also lead to loss of vegetation. Based on the engineering design the ESIA team estimates that realignments and the bypass will take up a total of 100 ha. of vegetated land. The 100Ha was derived from Table 2-1 that details the lengths of proposed realignments and bypasses. From the Table the total length of realignments and bypasses is slightly over 50km but we rounded it off to 50 Km. We adopted a conservative construction width requirement of 20 m along the 50 Kms meaning a total of 1 Km^2 , equivalent to 100 ha. will be cleared outside the existing corridor (this does not include clearances needed for material sites and ancillary facilities). Further, we estimated from remote assessments that tree density averages 360 mature trees per hectare implying that in total about 36,000 trees will be lost to these realignments and the bypasses alone. This is a significant loss.

An indirect impact is the need for cooking energy by the construction workers as opposed to clearing during construction. Considering the lack of housing in the project area, the Contractor will most likely house a majority of his workers within camps. Workers will cut down trees for firewood within the neighborhood of the camps. The predominantly sub-humid environment, especially to the west beyond Kapoeta is not conducive for plant growth, hence the tree growth is extremely slow. The critical impact, therefore relates to the inability of the area to naturally regenerate after harvesting of the mature trees.

On the other hand, the workers by themselves may not harvest trees but the locals may see an opportunity for income generation by selling firewood and/or charcoal to the contractors. Charcoal may be preferable to the workers since it is easier to use indoors. Estimates by ACTS 2005[23] indicate that in the woodlands of arid environment, it takes about 0.1Ha to produce 1 ton of charcoal. Given the highly degraded tree population in the natural woodlands of the area, the depletion rate is likely to be even higher than these estimates.

If we base our estimation of consumption of wood products in charcoal form by the contractors, the following scenario (Table 7-15) emerges:

Table 7-15: Estimated Vegetation Loss attributable to Workers' Energy Demands

Total number of employees at the camp	Consumption rate of charcoal	Total consumption per year (Kg)	Total estimated woodland lost per year (based on 0.1 ha per ton of charcoal)	Estimated lost woodland over a 3-year construction period (Ha)
50	2 Kg/day	36,500	3.6	10.8
100		71,200	7.1	21.0
200		142,400	14.2	39.6
500		356,000	36.0	108.0
1000		712,000	72.0	216.0

These figures are conservative since they are based on relatively more dense woodlands. However, a scenario of a possible loss of tree cover over 100Ha of land in the fragile environments is substantial if this clearance is localized to around the camps only. A more realistic situation is that both firewood and charcoal

23 African Centre for Technology Studies, 2015

could originate from diverse sources within the expansive hinterland of the road. There is likely to be several camps noting the planned implementation arrangement i.e. five lots.

Proposed Mitigation Measures

To avoid and/or minimize excessive destruction of vegetation and further disturbance of the existing vegetation, it is recommended that:

- Avoid excessive destruction of trees and other vegetation and follow only the proposed Right of Way (ROW);
- Consider the location of mature trees during route selection for the construction of access road to the borrow areas and quarry sites and land clearing for quarry and borrow sites;
- Compensate the loss of privately-owned mature trees, Mango and Pawpaw trees and replant natural vegetation as appropriate;
- Prohibit quarrying, borrowing, spoil disposal and camping within the boundaries of existing dense vegetation site and productive farmland; and
- The project should purpose compensatory planting of at least 360,000 trees within the project area or dedicate a total of 1000Ha for trees as compensation or the loss attributed to realignments and the bypass.

Operational Phase:

During operation large-scale degradation of the natural environment can occur as people exploit these resources without controls. This is because it will improve physical access to natural resources across the landscape and along the project road.

During the operations phase, it is also a potentially significant issue since traffic will increase on these roads, improving access to resources by a growing number of people. Uncontrolled hunting, fishing, and mining of other natural resources, including wood for charcoal, poles for use in construction and for brick making, and harvesting of non-timber forest products are among the concerns.

There is progressive invasion of *Prosopis juliflora* from Kapoeta to Nadapal. Another potential long term impact relates to the advancement of the invasive weed, *Prosopis juliflora*. Prosopis is a very prolific seeder whose seeds are dispersed through the gut of livestock with a preference to invade freshly disturbed sites. Further the paved road will act as an impervious layer channeling run-off to the roadside which will readily support proliferation of Prosopis on the roadside. Such proliferation will spread and pose visibility challenges to motorists as well as suppressing other native species. The impact of *Prosopis* will be rampant at all disturbed sites, roadsides and borrow areas.

Proposed Mitigation Measures

There will be need to strengthen regulatory policies and laws/regulations controlling use of natural resources. For example, there could be an increase in charcoal burning and firewood cutting if this is not properly regulated. The following mitigation measures are suggested:

- Avoid clearing protected species at all cost, including those listed under CITES appendix II and III, and species of particular ecological importance such as the Baobab trees;
- The location of camping sites and access road should strictly avoid further loss of any of the protected species by limiting clearance to right of way;
- Part of the road reserve that will not be required for construction purposes during site preparation stage should be left intact particularly along the wildlife corridors;
- Clearing of vegetation will be done in close collaboration with respective local government authority along the corridor;
- Construction activities should not exceed the proposed construction boundaries by more than 15m to avoid the secondary impact of construction and increasing the areas that would require clearing and rehabilitation;
- No new access roads should be created where a well-established road is available;
- Siting for opening of access roads and camp construction should, where possible, target open spaces or areas with less vegetation cover;
- Movement of exotic tree species through vehicles and other use into the KBAs should be well monitored and discouraged at all costs;
- Areas scheduled for vegetation clearance shall be demarcated and activities outside the designated areas (spill-over effects) shall be strictly forbidden;
- Environmentally sensitive areas (e.g. dispersal areas, water points, wetlands, steep slopes, riparian vegetation, breeding and nesting sites) shall be clearly marked and mapped as “No Go Areas”;

- Herbicide and fire shall not be permitted as a means to clear vegetation to ensure a minimal impact footprint during habitat clearance and to reduce the risk of mortality and injury to wildlife; and
- Vehicle traffic shall be slowed at the wildlife crossing point. This reduction in speed limit shall be signposted.

The institutions mandated to regulate and control environmentally sensitive socio-economic activities, and the natural resources-based livelihoods should be strengthened, and building of staff technical capacity to implement the regulatory policies and enforce the laws for protection of the environment and the natural resources.

Impact Significance

That this impact may be spread within about 1km radius of any given camp makes its potential impact moderate in most cases, but could be high around larger camps. It is important to also note that this impact will be highly localized. The impact/ risk significance is assesed as moderate, as shown in Table 7-16.

Table 7-16: Impact Significance – Flora

TYPE	Beneficial (+ve)	☐	NATURE	Reversible	☒	Reversibility Score	1		
	Adverse (-ve)	☒		Irreversible	☐				
CATEGORY	Direct	☒	Indirect	☐	Cumulative	☒			
MAGNITUDE									
Extent	Frequency	Duration	Intensity	Likelihood	Score	RATING			
1	2	2	2	2	10	Medium			
RECEPTORS	Ecological ☒		Human ☐		Physical ☐				
Presence	Resilience	Receptor Sensitivity	**Receptor Sensitivity Ranking**		**Impact Significance**				
2	1	3	Medium		MODERATE				

7.4.9 Terrestrial Fauna

Construction Phase:

The road construction activities may affect wildlife along the road corridor. The presence of workers at the established wildlife crossing points, if not well planned and controlled, will affect wildlife migration and general welfare in the area, for example through accidental bush fires and traffic accidents. For example, Kidepo Bridge is located in the Valley of Kidepo River which is within a wildlife corridor. The construction activities for Kidepo Bridge will threaten the migration of animals in the area through Habitat fragmentation. Mitigation measures during Construction and Operation phases will include restore surrounding habitats to cleared areas to compensate habitat loss where possible; and recreate connectivity between habitat patches in the vicinity to cleared areas where possible.

To minimize road kills and disruptions of animal movements, it is recommended that underpasses or overpasses can be constructed for use by animals. The proponent will construct underpasses and overpasses at strategic points for animal crossing. The public will also be educated to ensure the crossing provisions are used.

One of the ways that will allow free movement of wildlife is to leave the road corridors open to movements of wildlife. In addition, sign posts written “Beware of Wildlife Crossing” will be erected to warn drivers as they approach these wildlife crossings. The other way to reduce road-kills, is a combination of fencing that directs animals to the designated crossing points and over-passes (see Plate 7-4 below) and underpasses and tunnels (see Plate 75) to allow small animals (including small mammals, frogs, toads) cross the road safely. These mitigation measures and constructions of these structures should be supervised closely by MWCT (Ministry of Wildlife Conservation and Tourism).



Plate 7-4: Images of a typical overland crossing bridge (should have fencing that serves to funnel wildlife toward passage structures) typical underpass (in Kenya) that allows animals to pass through

In summary the following mitigation measures are suggested:

- Avoid habitat fragmentation outside the project footprint, this will help to maintain buffer zones in between areas adjacent the proposed project area and peripheral zones;
- Do not undertake construction activities at night to avoid disturbance to nocturnal fauna from increased noise and vibration;
- Undertake pre-clearance checks of trees to support roosting of fauna species;
- Night working and the use of artificial lighting shall not be permitted to avoid adverse impacts to priority nocturnal fauna;
- Project vehicles shall not be used at night within the project area to avoid adverse impacts to priority nocturnal fauna;
- Avoid accidental machinery and vehicle collisions with wildlife: Vehicle operation shall be restricted to daylight hours to minimize the risk of vehicle collisions with wildlife
- Avoid spills of hydrocarbon, oil, chemicals and other hazardous materials; and
- Avoid introduction of invasive species and pests.
- Reduced speed limits shall be signposted to minimize the risk of accidental injury and mortality to fauna, including the construction of speed bumps;
- Design and implement Road Kill Management and Monitoring Plan (RMMP) in all sensitive habitats (identified wildlife corridors crossing the proposed road) which may include reduced speed limits, removal of roadside vegetation to reduce proximity of habitat to road; use of light-coloured pavement in the road surface to improve visibility; installation of wildlife warning signs; regular monitoring and removal of road kill to prevent other scavenger animals being attracted to the road; and installation of virtual fencing;
- As mitigation measures to the environmental sensitive areas entire section between Illeu and Kidepo Valley the road will be constructed on low level embankment and use of drift structures, and box culverts in all areas streams to allow smooth movement of wildlife to cross from one side of the road to another;
- Ensure minimum noise emission from construction activities and machinery through implementation of noise control measures presented in ESIA;
- Consider, during detailed construction planning, allowance for buffer distances between construction activities and areas where protected species have been identified (including vehicle movement routes);
- Minimize preventable noise from equipment through measures such as keeping both stationary and mobile plant and equipment in good working condition (including mufflers, enclosures etc.), and avoiding leaving engines running on standby for extended periods;
- Select equipment with the lowest noise rating that meets task requirements;
- Construction equipment not to exceed acceptable noise level;
- Construction activities should be scheduled to minimize disturbances during critical breeding seasons for local bird populations; and
- Integrate understanding of local knowledge on wildlife with local conservation practices into the country's wildlife conservation policies and strategies as this will help promote conflict-sensitive and sustainable conservation. Please also refer to Appendix J - Biodiversity Management Plan.

The risk of wildlife poaching and trade in game meat which has been reported in the area may also increase due to construction activities if not well managed. The effect on wildlife may be deleterious and will occur during construction and operation phases.

Managing Construction works across the wildlife crossing points: Migratory animals, especially large mammal species, are particularly vulnerable to linear developments such as roads because a physical barrier can cut off their migration path, while also exposing them to poaching and road kills. There are four known wildlife crossing points where special attention is needed during construction.

Suggestions on measures needed at these points are presented in Table 7-17.

Table 7-17: Measures for Wildlife and Livestock Crossing Corridors

Crossing Areas/Zone. Chainage	Wildlife species spotted	Brief description of the area.	Potential implications of the road	Field Observations
Abilingwa near the bridge. 44+000 – 47+000	Elephants, Antelopes	African elephants and antelopes are often found in different range of habitats from savannah grassland to forests but they generally prefer plains. The area is generally flat with a hamlet in an adjacent area. The residents in the hamlet practice shifting cultivation of cereal crops. The generally woody landscape is favourable for the browsing animals. The relatively flat landscape, presence of a river and availability of forage make it a suitable migration corridor.	Avoid construction works in the area between January and June when animals cross. Avoid siting material sites, quarries and camps within this area or else seek special license from the Ministry of Wildlife and Tourism	Elephants, Antelopes
Pass between the two hills in Illiangari. 57+000 - 61+500	Monkeys	The corridor is a pass between hills covered in trees. Monkeys being tropical primates thrive in hilly terrain with lots of trees. The trees act as sources of food and shelter for the primates.	Take special care of waste by avoiding careless disposal especially food waste. Avoid siting workers camp in the vicinity.	Pass between the two hills in Illiangari. 57+000 - 61+500
Khor Lakabata. 120+000 - 122+000.	Antelopes	The area is relatively flat, with few human settlements. There is a river that crosses the area, occasionally creating seasonal floods suitable for seasonal crop cultivation area enabling those who have settled to cultivate crops along the riverbanks. Most of the residents practice shifting cultivation leading to degradation of natural habitat.	Ensure all workers understand that killing of antelopes for game meat is strictly prohibited. Stop works immediately and report to the RE in the event that large herds of antelopes are spotted in the area during construction in the section.	Khor Lakabata. 120+000 - 122+000.
Mt Oduniarik -Lotoba-Langior-Kidepo valley (Entire section between Illeu and Kidepo Valley). 176+000 - 216+000	Elephants, Hyenas, Leopard, Cheetah, Lions, Monkey, Buffalos, Antelopes, Gazal, Dikdik	The area is a wetland making it rich in species abundance due to availability of fodder for forage and trees and shrubs for the browsers. The area is also a wildlife dispersal area for animals from Kidepo Game reserve and Boma National Reserve.	Mt Oduniarik -Lotoba-Langior- Kidepo valley (Entire section between Illeu and Kidepo Valley). 176+000 - 216+000	Elephants, Hyenas, Leopard, Cheetah, Lions, Monkey, Buffalos, Antelopes, Gazal, Dikdik
Nakodok (1 and 2)	Elephants, Buffalos	The area is located in-between Kidepo National Park in Northern Uganda and Boma National Reserve in South Sudan. Elephants often use a specified migratory route which may explain the seasonality of the elephants passing the area.	Nakodok (1 and 2)	Elephants, Buffalos

Due to the uniqueness of the ecosystem of the areas, construction and operation activities may cause animal kills from road accidents and ecosystem disturbances from soil grabbing and vegetation clearance.

The risks to wildlife also partly apply to livestock. The communities living in the project area keep livestock as a major source of livelihood. Often herders move livestock freely across the project area and in some cases cross the project road. During construction and operation, fast moving traffic can collide with livestock as they cross the road. This is potentially significant at sections close to settlements.

Design of Wildlife and Livestock Crossing:

Wildlife crossing structures are designed to allow movement of wildlife above or below road, either exclusively for wildlife use, mixed wildlife–livestock-human use, or as part of other infrastructure, e.g., culverts and bridges. Wildlife crossing structures come in a variety of shapes and sizes, depending on their specific objective.

Spacing of wildlife crossings on a given section of roadway will depend largely on the variability of landscape, terrain, population densities, the juxtaposition of critical wildlife habitat that intersects the roadway and the connectivity requirements for different species.

South Sudan does not have standard specifications for WLC structures. Indeed, very few countries seem to have developed these standards, African countries in particular seem not to have developed these standards. For the few countries in the west who have developed guidelines or manuals, the standards mainly define minimum sizes or a range of sizes meaning there is a great deal of flexibility.

With the lifespan of wildlife crossing structures, the location and design of the crossings need to accommodate the changing dynamics of habitat and climatic conditions and their wildlife populations over time.

The type of structure, therefore, should be determined by a multi-criteria analysis that considers at least three aspects:

- The importance of the road section for ecological connectivity in general and wildlife movements in particular.
- The relief of the area in the sector where the wildlife crossing is to be installed
- The reference species or taxonomic groups

Overpasses (OP)

- Wildlife overpass—Smaller than landscape bridges, and designed exclusively to meet needs of a wide range of wildlife from small to large.
- Multi-use overpass—Generally the smallest of the wildlife overpasses. Designed for mixed wildlife–livestock-human use. This wildlife crossing type is best adapted in human disturbed environments and will benefit generalist type species adapted to regular amounts of human activity and disturbance.

Underpasses (UP)

- Large mammal underpass—the largest of underpass structures designed specifically for wildlife use. Designed for large mammals but also readily used by small- and medium-sized mammals.
- Multi-use underpass—Design similar to large mammal underpass, however management objective is co-use between wildlife and humans. Design is generally smaller than a large mammal underpass because of type of wildlife using the structures along with human use.

Table 7-18 highlights comparative design considerations and proposals for the road.

Table 7-18: Comparative Design Considerations and Proposals for the Road

Usage	Type of WLC	Existing standards / manuals		Proposal for the road
		US (Federal Highways Authority)	Spanish Manual	
Large mammals	UP	Min. W 7m / H 4m	W7 / H3.5m	W 7m / H3.5 (4.5m Kidepo Valley to accommodate elephants)
Multi use	UP	W 5m / H 2.5m	W7m /H3.5m	W5-7m x H3.5

Large mammals / livestock trails multi-use	OP	Width minimum 10m, recommended 15 – 40m.	Minimum 10m	W10m x 4m

It is therefore recommended that, due to costs and practicability, the project should adopt an underpass crossing that can accommodate a wide range of animal sizes from large mammals to livestock at the wildlife crossing points. The recommended dimensions are 5-7m wide and 3.5 m high.

The dimensions of cross drainage structures, especially culverts, that are located within sections where wildlife are known to cross could be enhanced to accomodate large mammals by adopting the dimensions proposed in the Table above.

Additional measures include speed calming features such as humps at sections close to settlements to mitigate against traffic colliding with livestock.

Livestock crossing signs should also be erected at approaches to sections close to human settlements.

Operational Phase:

The risk of wildlife poaching and trade in game meat which has been reported in the area may also increase after road construction if not well managed. The effect on wildlife may be deleterious.

After upgrading of the road, the speeding vehicles may kill or injure wildlife animals within the area. Particular large mammals at risk from road kills include the elephants, giraffes, and antelopes. Less mobile animals including amphibians, small mammals and reptiles will be more susceptible to road kills. Birds such as the Guinea fowls are similarly at risk of road kills.

Proposed Mitigation Measures

To minimize animal kills, signages will be erected at all animal (wildlife and livestock) crossing points. At Kidepo Valley wildlife crossing points, rumbles can be added to slow down vehicles and reduce speeding.

The project shall carry out Road Safety Campaigns (awareness and educational campaigns) on road safety. The MRB shall ensure that all road users and operators are educated about the road use and behaviour on the road both during construction and operation. Of importance is adequate signage especially during construction which will have to be emphasized in the traffic management plan and use of diversions and alternative routes by motorists. Pedestrians will have to be educated about the importance of crossing roads at designated crossing points and use of foot bridges to avoid accidents. Particular sensitization programmes will be for schools along the road corridor and motor cyclists.

Impact Significance

The project traverses through sensitive fauna habitats and risk of kills is assessed as moderate during the construction phase and key (major) concern during operational phase-attributable to higher speeds. However, with effective implementation of measures presented herein, the overall risk is assessed major.

Table 7-19: Impact Significance - Terrestrial Fauna

TYPE	Beneficial (+ve)	☐	NATURE	Reversible	☐	Reversibility Score	3		
	Adverse (-ve)	☒		Irreversible	☒				
CATEGORY	Direct	☒	Indirect	☐	Cumulative	☒			
MAGNITUDE									
Extent	Frequency	Duration	Intensity	Likelihood	Score	RATING			
1	2	3	2	2	13	High			
RECEPTORS	Ecological ☒		Human ☐		Physical ☐				
Presence	Resilience	Receptor Sensitivity	**Receptor Sensitivity Ranking**		**Impact Significance**				
2	2	4	Medium		MAJOR				

7.4.10 Aquatic Fauna

Construction Phase:

Uncontrolled fishing: Uncontrolled fishing in major rivers is a major concern. There is limited capacity at Ministry level and less at local levels to regulate the use and management of resources. Markets for goods will follow the improved roads as increased traffic will bring consumers, and income generated from the employment opportunities (from road works and from new enterprises) will create a demand for fish and bush meat.

Siltation: During Construction Phase, soil disturbance will result in siltation of major rivers and streams especially during the rain seasons. This may negatively affect aquatic fauna, for example by clogging fish gills that may result in reduced oxygen uptake.

Proposed Mitigation Measures

The following measures have been proposed for uncontrolled fishing and pollution through siltation/ pollutants.

- There will be a need to strengthen regulatory policies and laws/regulations controlling use of natural resources. For example, there could be overfishing due to enhanced demand if not properly regulated.
- Create formal markets along the road for ease of accessing regulated fish hence discouraging markets for bush meat and un-regulated fish.
- Avoid soil disturbances as much as possible near water bodies.
- Channel all runoff away from nearby water bodies.
- Measures to ensure pollutants such as hydrocarbons do not enter water courses (aquatic habitants)

Impact Significance:

The projects impact/ risk on aquatic fauna (increased fishing/fish demand) is assessed moderate.

Table 7-20: Impact Significance - Aquatic Fauna

TYPE	Beneficial (+ve) ☐ Adverse (-ve) ☒	NATURE	Reversible ☐ Irreversible ☐	Reversibility Score	2	
CATEGORY	Direct ☐	Indirect ☒	Cumulative ☒			
MAGNITUDE						
Extent	Frequency	Duration	Intensity	Likelihood	Score	RATING
1	2	3	1	2	11	Medium
RECEPTORS	Ecological ☒	Human ☐	Physical ☐			
Presence	Resilience	Receptor Sensitivity	**Receptor Sensitivity Ranking**	**Impact Significance**		
2	1	3	Medium	MODERATE		

7.4.11 Avifauna

Construction Phase:

The construction phase of upgrading the Juba-Torit-Kapoeta-Nadapal Road to a bitumen standard will result in significant habitat disturbances in some areas after Kapoeta. During this phase, the removal of vegetation for road widening, detours, construction camps, and material storage will lead to the loss of avifauna habitats, particularly those in forested and riparian zones. Vegetation clearance will displace bird species, especially ground-nesting birds and those relying on riparian and woodland areas. The increase in human activities, machinery, and noise will cause displacement, forcing birds to relocate to less optimal habitats. During clearing and earthworks, nest destruction and accidental killing of birds, especially fledglings, are likely to occur. Migratory species may experience disruption in their usual stopover sites due to habitat alteration and increased human presence.

Proposed Mitigation Measure: keep wholesale vegetation clearance to a necessary minimum especially where birds are commonly found.

Operation Phase:

Once operational, the road will present continued environmental challenges for avifauna. Birds foraging or moving across the road may be at risk of collisions with vehicles, particularly during the night or early morning when visibility is low. The road may act as a barrier to the movement of species, particularly those with specific habitat preferences such as woodland or riparian areas. This may reduce gene flow between bird populations. Runoff from the road surface, including oil, fuel, and other pollutants, can affect nearby habitats, particularly wetland areas that support a variety of bird species. The road will increase access to previously remote areas, potentially leading to poaching or illegal bushmeat hunting of birds, further stressing populations. Uncontrolled hunting for bush meat is a major concern. There is limited capacity at Ministry levels and less at local levels to regulate the use and management of resources.

Proposed Mitigation Measures

The following measures have been proposed.

- Potential alteration of wetland ecology by the road acting as a barrier to natural water flow could indirectly affect habitats of waterfowls.
- Replanting of vegetation along the road corridor, particularly native trees, can help mitigate habitat loss for species such as the Crowned Eagle and woodland birds.
- Installing signage and creating wildlife corridors to facilitate the safe crossing of birds and other wildlife could reduce road mortality.
- There will be need to strengthen regulatory policies and laws/regulations controlling use of natural resources. For example, there could be increase in charcoal burning and firewood cutting if this is not properly regulated.

Impact Significance

The study advocates for preservation of trees (especially those for nesting) whenever possible. Disturbance from construction activities will be localized and limited due to linear nature of the works. The risk is assessed as moderate.

Table 7-21: Impact Significance - Avifauna

TYPE	Beneficial (+ve) ☐		NATURE	Reversible ☒		Reversibility Score	1
	Adverse (-ve) ☒			Irreversible ☐			
CATEGORY	Direct ☐		Indirect ☒		Cumulative ☒		
MAGNITUDE							
Extent	Frequency	Duration	Intensity	Likelihood	Score		RATING
1	1	2	1	2	8		Medium
RECEPTORS	Ecological ☒		Human ☐		Physical ☐		
Presence	Resilience	Receptor Sensitivity	**Receptor Sensitivity Ranking**		**Impact Significance**		
1	2	3	Medium		MODERATE		

7.4.12 Water Use/ Sources

Construction Phase:

In the project area the common sources of water were rivers and boreholes. There is generally low access to water, and it is unreliable therefore not enough for livestock and human beings. Most of the water is provided by NGOs and many boreholes are not in use. The Ministry responsible for water has no capacity to provide nor regulate water supply. The urban water authority is only concentrated in a small section of Torit town.

The sensitive receptors like human settlements, learning and health institutions along the project corridor will be affected by the high demand for the limited resource during the construction phase and due to issues such as possibility of water contamination from construction materials. In addition, there is likely to be high demand for the water resource by humans and livestock especially during the period of drought and famine.In this scenario there is possible resource use conflicts between the contractor and the communities in case the contractor opts to abstract water from community water sources such as rivers.

Baseline assessments and secondary data reviews show that the region has only one permanent river, R. Kineti (121+00km), which is the most reliable water source, especially for construction purposes. Other rivers in the area are seasonal and cannot be fully relied upon during the construction phase, although they may be utilized during the rainy seasons. Groundwater is the other major water resource in the region.

Field studies conducted in September 2024 identified many boreholes in the area. While some are functional, others have stalled and others have been drilled but are not functional as they remain complete.

Community engagement revealed that most of these boreholes were developed by NGOs, the government, and some Civil Society Organizations (CSOs). Boreholes remain the primary source of water for domestic use; however, water scarcity persists in the region. For instance, at Napotpot, the community reported that a borehole located at (600174.40 m E 511327.22 m N) was drilled by an NGO but it is yet to be completed as shown in the image below. Meanwhile the community continues to experience the water challenge. The completion of the borehole can help reduce the potential conflict between the contractor and the locals sourcing for the water because the community can use the borehole to source for water throughout the year while the contractor relies on the rivers.

Abandoned borrow pits, which were identified during the field study, have been found to collect water as shown in the image below. The community indicated that some of these pits retain water year-round, though water levels tend to drop during the dry season without fully depleting. Such borrow pit, has been identified as holding water, which could provide temporary relief during the dry season but requires implementation of safety and management measures to prevent further scarcity and conflict.

During the dry season the community may forcefully use water meant for use in road construction for livestock and in the process lead to delay or stoppage of road works and conflict. One of the existing borrow pit is illustrated in Plate 7-5.



Plate 7-5: Sampled Borrow pit with collected water and an incomplete drilled borehole

Operation Phase:

There is possibility of the emergence of a water market with competing informal players which may lead to conflict in control of the water market.

Proposed Mitigation Measures

The following measures have been proposed.

- Contractor to avoid sourcing water from community water sources.
- The contractor shares water from own sources with community members whenever need arises.
- The contractor to develop a water sharing agreement with the community with the community whenever necessary. In addition, the community liaison officer to actively engage with the community in order to forestall disorderly engagement with the contractor.
- A comprehensive water resource management plan should be developed to regulate water usage during construction. This plan should prioritize the use of the permanent Kineti River (121+00 km) and rain-fed seasonal rivers during the rainy season while minimizing reliance on groundwater.
- Borehole water extraction should be carefully monitored to prevent over-extraction. Regular assessments of groundwater levels should be conducted to ensure sustainable use and avoid depleting the water table, which is critical for local communities and wildlife.
- Utilize the abandoned borrow pits that collect water as alternative water sources, particularly during the dry season. Ensure these pits are properly managed to avoid overuse and contamination, and supplement them with rainwater harvesting systems during the rainy season to extend their utility.
- Establish a clear conflict resolution mechanism through community engagement, ensuring that any disputes over water resources are managed transparently. Regular stakeholder meetings should be held to address concerns and ensure equitable water distribution between construction activities and community needs.

- Implement water-saving technologies and practices during construction, such as using water recycling systems for activities like dust suppression and equipment washing, to minimize the overall water demand.
- In collaboration with local NGOs and the government, initiate a borehole rehabilitation program to restore stalled boreholes, improving the community's water supply and reducing competition for water resources during the construction period.
- Ensure that construction activities near water bodies, especially the Kineti River, include sediment and erosion control measures (e.g., silt fences, riparian buffer zones) to prevent contamination and degradation of water quality.
- Develop and implement awareness campaigns that educate both the local population and construction workers on the sustainable use of water resources and the importance of conserving water for future needs.

Impact Significance

The project's socio-economic impact/risk on water use and sources is assessed as Moderate.

Table 7-22: Impact Significance – Water Use/Sources

TYPE	Beneficial (+ve)	☐	NATURE	Reversible	☐	Reversibility Score	3
	Adverse (-ve)	☒		Irreversible	☒		
CATEGORY	Direct	☒	Indirect	☐	Cumulative	☒	
MAGNITUDE							
Extent	Frequency	Duration	Intensity	Likelihood	Score	RATING	
1	1	1	2	1	9	Medium	
RECEPTORS	Ecological ☐		Human ☒		Physical ☐		
Presence	Resilience	Receptor Sensitivity	**Receptor Sensitivity Ranking**		**Impact Significance**		
2	2	4	Medium		MODERATE		

7.4.13 Land Use and Land Cover

Construction Phase:

The dominant land use along the proposed Juba-Torit-Kapoeta-Nadapal road alignment is shaped by rural and urban activities. In the rural sections, the primary land uses include small-scale farming, pastoralism, and Agro pastoralism (mixed farming). These practices are primarily subsistence-based, with communal land management still prevailing. In these areas, fencing is minimal and typically used only to protect cultivated areas from animals.

In the urban centers of Juba, Torit, and Kapoeta, land use is predominantly dedicated to residential, commercial, and institutional purposes. As these towns expand, there is a noticeable trend of increased land fencing, reflecting the growth in privatization and urbanization. These towns serve as business and service hubs, offering a more structured urban landscape compared to the surrounding rural areas.

The development of the road to bitumen standards is expected to have significant impacts on land use and livelihoods in the project area. Construction of the road will inevitably lead to the loss of land, including important sources of livelihood such as mango trees and other valuable trees that provide food and income for local communities. The movement of heavy machinery during road construction will generate significant dust, which may render sections of land temporarily unusable. Furthermore, contractor vehicles may damage crops, particularly where farming activities are close to the road alignment. The road project is likely to spur the growth of new settlements near contractor campsites as workers and businesses seek opportunities. This could result in increased land pressure and unsustainable development along the road corridor. The establishment of borrow pits for sourcing construction materials may result in further land loss. Blasting in quarries poses additional risks, potentially causing damage to nearby houses and endangering human safety.

Operation Phase:

Although the current settlement and land use is influenced by the current road, it is highly likely to change in the operation phase. Areas close to army barracks, Torit, Kapoeta and Nadapal towns are more likely to attract migrants from the adjacent rural areas. Towns and the existing settlements along the road will experience a surge in population hence heightening the urbanization process. The safety found in towns

and around army barracks will make such areas centres of attraction and are likely to experience changes in land use from communal to private and increased fencing. There is likely expansion of existing gold mining activity, opening up of new mines, more people joining the mining and even corporate mining ventures are likely to emerge. This is likely to lead to the strong desire for privatization effected by fencing to claim exclusive access. Large sections currently used for pastoralism may be fenced off thereby depriving others of access to pasture and water. This has the potential to ignite conflict. Existing towns and settlements along the road are likely to experience an influx of rural-urban migrants following new business opportunities brought by the improved road. Rest Stops in Torit, Kapoeta and Nadapal will be attractive places for new business and migrants. Hawkers and employment seekers are likely to flood the area adjacent rest stops. There is also a likelihood of scramble for plots and land brokers in land adjacent to towns, near rest stops and general roadside areas. Changes in land use will be inevitable.

There is a high possibility of changes in land use especially the sections bordering the road. The possible emergence of informal urban centres and expansion of the existing towns is likely to further accelerate land use changes. In addition there is inevitable land sub division, land speculation and land brokers in this period.

Proposed Mitigation Measures:

To minimize the adverse effects on land use and land cover during both the construction and operational phases of the proposed Juba-Torit-Kapoeta-Nadapal road project, the following harmonized mitigation measures are proposed:

- Landowners affected by the project should be identified and compensated for any losses before construction begins. This includes compensation for lost land and livelihoods, such as trees that provide food and income. Provisions for tree planting should be implemented to replace any trees that are cut down due to construction activities.
- Efforts should be made to avoid cutting down trees wherever possible. If tree removal is unavoidable, there must be a commitment to replant trees to restore the affected areas. Tree-planting campaigns involving community participation can help mitigate deforestation.
- Borrow pits should be carefully managed to minimize their environmental impact and ensure that land restoration measures are in place after the construction phase.
- Contractor vehicles and machinery should operate only within designated areas to minimize disturbance to surrounding land and avoid unnecessary destruction of farmland or natural vegetation.
- To prevent over-exploitation of land, sustainable agricultural practices should be promoted. This includes providing training and resources to local farmers to enhance farming efficiency, reduce land degradation, and encourage crop rotation and soil conservation.
- In areas where land clearing is required, mitigation measures such as terracing, maintaining buffer zones of vegetation, and implementing erosion-control structures should be put in place to prevent soil degradation and loss of agricultural productivity.
- Buffer zones should be established along critical ecosystems, such as savannas and woodlands, to maintain biodiversity. Wildlife corridors should be integrated into the landscape to prevent habitat fragmentation, particularly in areas important for pastoral communities, like those near Kapoeta.

The likely project impact significance on land use is assessed to be Moderate, especially in areas near town and project camp sites.

Table 7-23: Impact Significance – Land Use

TYPE	Beneficial (+ve) ☐	NATURE	Reversible ☒	Reversibility Score	2
	Adverse (-ve) ☒		Irreversible ☐		
CATEGORY	Direct ☒	Indirect ☐	Cumulative ☒		
MAGNITUDE					

Extent	Frequency	Duration	Intensity	Likelihood	Score	RATING
2	1	3	2	2	12	Medium

RECEPTORS	Ecological ☐	Human ☐	Physical ☒

Presence	Resilience	Receptor Sensitivity	**Receptor Sensitivity Ranking**	**Impact Significance**
2	2	4	Medium	MODERATE

7.4.14 Land Tenure

Construction Phase:

The baseline findings show that the land is communally owned in the rural sections of the road but in urban areas there is private ownership and increased scope of fencing. Each ethnic group has its own defined boundaries from others. In the towns there is private land as plot owners have letters of ownership/allocation but that is not widespread.

Given this, in the construction face there is likely to be increased privatization of communally owned land as personal/private interests supersede collective interests. This will be accompanied by increased fencing to stake claims. In this scenario, there is a high possibility of increased competition over land leading to conflict between opposed groups. Some community groups may try to extent their land or some individuals lay claim to land that belongs to others.

Operation Phase:

Increased privatization and/or selling of communal land and resale to investors including foreigners. This will be accompanied by competition and frenzied fencing of land with road frontage. There is a high possibility of changes in land ownership from communal to private as well as enhanced propensity for land speculation. This is likely to be in the rural areas adjacent to towns, in the vicinity of rest stops, area adjacent to army barracks and existing rural settlements. Such areas will be most affected. The potential to fence all land along the road is high.

Proposed Mitigation Measures:

The State and Local Governments as well community leaders to spearhead land related matters.
"Aboloni (landlord) for communities between Juba to Lobira and Ikatikowot (landlord) for Didinga and Toposa communities. The Landlord play a pivotal in the community. They lead prayers, cast away bad omen like disease, bad luck from the community. They bless the land before construction of any structure within their jurisdiction. They conduct swearing rituals in cases of boundary or land disputes. They will be critical points of engagement for the contractors in cases of borrow pits, contractor camp and commencement of road civil works.

Impact Significance

The impact significance of the road on land tenure has been assessed as Moderate, especially in areas near town and settlements. The impact could be minor in rural/ countryside sections.

Table 7-24: Impact Significance – Land Tenure

TYPE	Beneficial (+ve)	☒	NATURE	Reversible	☒	Reversibility Score	2
	Adverse (-ve)	☐		Irreversible	☐		
CATEGORY	Direct	☒	Indirect	☐	Cumulative	☒	
MAGNITUDE							
Extent	Frequency	Duration	Intensity	Likelihood	Score	RATING	
1	1	2	2	2	10	Medium	
RECEPTORS	Ecological ☐		Human ☐		Physical ☒		
Presence	Resilience	Receptor Sensitivity	**Receptor Sensitivity Ranking**		**Impact Significance**		
2	1	3	Medium		MODERATE		

7.4.15 Demography and Ethnicity

Construction Phase:

The project area is multi-ethnic. Different sections of the road project are settled/occupied by different ethnic groups. The Toposa are pastoralists while the Didinga, Bari, Lotuko, Lokoya practice agro-pastoralism/ mixed farming. The ethnic groups have a generally conflictual relationship. Agropastoralism and pastoralism are the dominant forms of life. The Toposa are predominantly pastoralists while the Boya and Didinga combine livestock with small scale farming. The three communities practice cattle rustling. The scope of livestock commercialization is low, and livestock is mainly for social recognition. The scope of pastoralism and agropastoralism may not change much. But due to anticipated improvements in road transport there is potential for commercialization of livestock. As new people interact with the communities, they may expose them to new ideas about commercial livestock keeping.

In this phase there is likely to be increased population concentration along the road corridor as well as Increased inter-ethnic movement along the road which could potentially result in inter-ethnic conflicts.

The influx of migrant workers into the different road sections has potential for conflict with the host communities. There is likely to begin inter-ethnic marriages which again has potential for conflict especially between South Sudan communities against migrant communities.

Operation Phase:

In this phase there is envisaged increased inter-ethnic movement across the region. Increase in migrants both regional and international, is envisioned as well as inter-ethnic marriage which is likely to lead to inter-ethnic conflict The communities are not expected to change their ways of life and the conflictual relationship is likely to persist. The population of migrants from the East African region and other parts of South Sudan is likely to begin entering the project area due to improved road transport.

Proposed Mitigation Measures:

The following measures are proposed

- There will be need to create awareness on cultural diversity and respect for other cultures during stakeholder engagement meetings.
- In addition, it will be advisable to Invest in peace building initiatives in anticipation of increased inter-ethnic movement.
- Similarly, it will be useful to create awareness on the spirit of East African Cooperation and on the benefits and consequences of an international link road to communities.
- The Ministry responsible for security to increase surveillance points in the project area towards Nadapal and in sections that are potential for community conflicts.

Impact Significance:

The anticipated project impact significance on ethnicity and demography is positive assessed to be Major.

Table 7-25: Impact Significance – Demography & Ethnicity

TYPE	Beneficial (+ve)	☒	NATURE	Reversible	☒	Reversibility Score: 2
	Adverse (-ve)	☐		Irreversible	☐	
CATEGORY	Direct	☐	Indirect	☒	Cumulative	☒
MAGNITUDE						
Extent	Frequency	Duration	Intensity	Likelihood	Score	RATING
2	2	3	2	3	14	High
RECEPTORS	Ecological ☐		Human ☒		Physical ☐	
Presence	Resilience	Receptor Sensitivity	**Receptor Sensitivity Ranking**		**Impact Significance**	
3	2	5	High		MAJOR	

7.4.16 Livelihood Activities

Construction Phase:

In the project area the dominant sources of livelihood are small scale mixed farming, agro-pastoralism and pastoralism. Charcoal burning and trade as well as sale of grass for roofing houses is common. Selling of bush meat is also common. Business activities are concentrated in the towns and the rural settlements. In Budi County and the entirety of Toposa region there is small scale gold prospecting in the riverbeds and hillsides. An increasing number of households make a livelihood out of it. The gold is sold to brokers at Kapoeta town.

During construction phase some of the sources of livelihoods are likely to be negatively affected especially those in road wayleave or where road construction materials will be procured. Pasture may be destroyed and loss of livelihood. There will be loss of land to borrow pits which may negatively affect livelihoods. In addition the blasting may cause damage to crops, houses and businesses which may negatively affect livelihoods. The scope of gold mining is likely to increase because of the presence of foreigners in the community. More people are likely to enter the trade, and this is likely to create conflict as some people may lay claim to certain areas.

For agriculture-based livelihood affected, it would be easy to procure another land in the community. For traders, they are likely to reconstruct their structures and move away from road construction activities while livestock keepers will continue unaffected as the grazing territory will largely remain intact. Gold prospectors affected are likely to continue with their activities in the adjacent areas. Generally, the effect on livelihoods will not be significant.

Operation Phase

Some sources of livelihood may be lost or constrained due to the new restrictions due to increased private claims to land. Increased fencing may also diminish or reduce reliance on certain sources of livelihood. Because of increased mobility in the area the scope of mining will increase and claims to certain territories may emerge. Corporations are likely to enter the mining business, therefore edging out the small-scale miners. This may lead to loss of livelihoods to small scale miners. High level brokers are likely to enter the area to control the gold market. Privatization of land is likely to take place as groups and individuals try to secure areas.

Proposed Mitigation Measures:

The study proposes the following measures on potential impact on livelihoods.

- There will be need to Implement the livelihood restoration plan activities for the project. All land losses need to be compensated. All road construction activities should be done in full compliance with ESS 5 on Land Acquisition, Restrictions on Land Use. Every effort to be made by the project to ensure that communities are not left worse off than they were. The proponent is carrying out a RAP for the project.
- The Ministry responsible for mining regulates the entry of new miners and mining activities within the area.
- Consideration for construction of roadside markets adjacent to villages to help diversify and improve livelihoods. Also include livestock markets within the section between Kapoeta and Nadapal.

Impact Significance:

The project's potential impact significance on livelihoods is assessed as Moderate.

Table 7-26: Impact Significance - Livelihoods

TYPE	Beneficial (+ve) ☐ Adverse (-ve) ☒	NATURE	Reversible ☐ Irreversible ☐	Reversibility Score	2	
CATEGORY	Direct ☒	Indirect ☐	Cumulative ☒			
MAGNITUDE						
Extent	Frequency	Duration	Intensity	Likelihood	Score	RATING
2	2	2	2	2	12	Medium
RECEPTORS	Ecological ☐	Human ☒	Physical ☐			
Presence	Resilience	Receptor Sensitivity	**Receptor Sensitivity Ranking**	**Impact Significance Medium**		
2	2	5	Medium	MODERATE		

7.4.17 Socio-economic Development

Construction Phase:

In the project area there is low population and services for development are too low, inaccessible or virtually absent. For instance, access to formal education or health services is too low or non-existence. There was no industry observed or other value addition ventures. The road network in the whole project area of influence is in deplorable state and many areas are not connected to the major artery road or towns.

Agriculture is traditional and dominated by slash and burn type of farming. There are no cash crops and little business is confined to sorghum which is the staple food. The sources of employment are few if any. Hence the general level of socio-economic development is still very low. There were no planned interventions noticeable to ameliorate the situation.

During construction access to the social services may remain difficult due to the increased risks associated with increased movement of vehicles. Access to social services is likely to remain low. The emergence of informal settlements along the road without services may still contribute to low socio economic development. One likely result is increased rate of crime.

Operation Phase:

Social services are likely to remain out of reach for most community members. However, in health there is likely to be increased congestion at the primary health care centres and the scarcity of drugs may be

increased. In the health sector the increased population of project workers will create a strain on the available health facilities. Increased population may lead to the increase in informal settlements.

Proposed Mitigation Measures

The following measures are proposed towards enhancing socio-economic benefits/ development.

- Prioritize local communities during employment to promote transfer of skills and knowledge.
- The contractor to develop a skills transfer programme of work to create a pool of skilled people who can employ themselves. In addition, the project to invest in community social amenities to improve the access and quality of services.
- Contractor to improve access roads to social infrastructure/social service centres within the project zone of influence.
- Contractor to support and invest in corporate social responsibility projects that have multiplier effects in the community such as rest stops, market stalls, ICT Centres etc.
- Awareness creation on the dangers of alcohol and substance abuse.
- Outside of towns, settlements are concentrated in isolated villages. The project should consider construction of roadside markets close to the villages and army barracks to reduce distances to markets and spur local economy.

Impact Significance:

The project will improve access to services and by extension socio-economic development. The impact significance is assessed to be Moderate.

Table 7-27: Impact Significance – Improved Access to Services/ Development

TYPE	Beneficial (+ve) ☐ Adverse (-ve) ☒	NATURE	Reversible ☒ Irreversible ☐	Reversibility Score	2	
CATEGORY	Direct ☐	Indirect ☒	Cumulative ☒			
MAGNITUDE						
Extent	Frequency	Duration	Intensity	Likelihood	Score	RATING
1	2	2	2	3	12	Medium
RECEPTORS	Ecological ☐	Human ☒	Physical ☐			
Presence	Resilience	Receptor Sensitivity	**Receptor Sensitivity Ranking**	**Impact Significance**		
2	2	4	Medium	MODERATE		

7.4.18 Education Sector

Construction Phase:

There are very few functioning schools in the project area. There is low enrolment and the school learning environment is unattractive to learners. Many schools are closed and the motivation to learn is low. Most schools are incomplete and the learning environment is largely unsafe. Schools are not fenced.

Therefore, in this phase learning will remain low. But the risk of accidents/incidents for children will be increased due to movement of vehicles in the community.

There is likely to be interference with access to the learning institution especially to early childhood learners.

Operation Phase:

In this phase there is likely to be an increase in risk of road accidents to school children. In addition there is likelihood of increased access to intoxicating substances.

Proposed Mitigation Measures:

- Contractor to put up clear road signages and enhance safety measures around schools.
- Contractor to provide alternative access points or schedule their work programme to work on learning institutions areas during the weekend or when schools are closed to ensure minimal interruptions.
- Conduct road safety campaigns within the institutions.
- Engage with traffic police for road safety education.
- Improve access roads to schools with a reasonable distance/project zone of influence.
- Awareness creation on the dangers of substance abuse.

Impact Significance:

The road will improve access to schools and quality learning overall. The adverse impact/risk on education is expected to be minor. However the risk on safety is important and the significance has been assessed Moderate.

Table 7-28: Impact Significance – Education Sector

TYPE	Beneficial (+ve) ☐ Adverse (-ve) ☒	NATURE	Reversible ☒ Irreversible ☐	Reversibility Score	2	
CATEGORY	Direct ☐	Indirect ☒	Cumulative ☒			
MAGNITUDE						
Extent	Frequency	Duration	Intensity	Likelihood	Score	RATING
1	2	2	1	2	10	Medium
RECEPTORS	Ecological ☐	Human ☒	Physical ☐			
Presence	Resilience	Receptor Sensitivity	**Receptor Sensitivity Ranking**	**Impact Significance**		
2	2	4	Medium	MODERATE		

7.4.19 Community Health, Safety and Security

Construction Phase:

Community health is still an area of concern as observed in the baseline section. The poor access to health facilities and health facilities with no drugs or qualified personnel implies that community health is low Access to health information is low due to low access to health services and qualified personnel. The basic health facilities available are too far apart and more often they do not offer services. Malaria is the most common diseases. HIV/AIDS and STIs may become common during project implementation due to low access to health information. Respiratory diseases are also common. In this phase community health may be further compromised due to increased population movement into the area with exposure to new infections. For instance, prostitution may arise hence leading to spike in STIs, HIV/AIDS and other communicable diseases resulting in school drop outs, early teenage pregnancies. Also, there is likely to be congestion at the limited health facilities due to increased population.

Drug abuse especially smoking of tobacco and alcohol will be on the increase especially with the increased circulation of money arising from creating of job and business opportunities. The use of tobacco begins at a very young age of 5years among the boys who are involved in pastoral activities and by the time they get into teenagehood, they are addicts.

Eastern Equatoria was the epicentre of the independence struggle for many years. The independence civil war was accompanied by placement of landmines in the project area, some of which are still buried in the ground despite demining that has been undertaken over the years. The possible presence of land mines will present a real risk to the contractor personnel and the general community especially when sourcing materials beyond the road corridor, diversions and clearance of re-aligned sections.

Considering the lack of job opportunities in the area, the few job opportunities that will be available during construction will be treasured hence those overlooked for such opportunities may turn hostile especially to the local project staff from communities other than their own.

Insecurity will continue to affect access to the health facilities and existing security risks are likely to persist during the construction phase.

Operation Phase:

In this phase there is likely to be risk of accidents associated with borrow pits, if not rehabilitated.

There is likely to be the risk of high cases of water borne-related diseases and malaria arising from ponded water at un -rehabilitated borrow pits.

In addition increased road accidents arising from speeding vehicles or careless motorists and pedestrians are likely to be observed.

Proposed Mitigation Measures

- Enhance security measures by working closely with the security agencies and the local leaders

- Conduct campaigns on HIV/AIDS prevention and management, spread of STIs and road safety among the locals.
- Conduct a building inspection survey especially in the towns and market centres located within the project's Area of Influence. before construction and in case of any damages, contractor shall be responsible for the repairs.
- Contractor and the GRSS to support health facilities with drugs.
- Contractor and the GRSS to expand health facilities as part of corporate social responsibility.
- Contractor to improve road access to health facilities.
- GOSS to increase surveillance in the road corridor
- The Contractor should strive to proportionately hire local staff from all ethnic communities in the project area
- New access roads, re-aligned sections and diversions should be inspected for any landmines before works begin in those areas.

Impact Significance

The anticipated project impact/risk significance on community health and safety is assessed as Moderate. The effective implementation of measures proposed herein will see significance to moderate or minor during the operational phase.

Table 7-29: Impact Significance – Community Health & Safety

TYPE	Beneficial (+ve) ☐ Adverse (-ve) ☒	NATURE	Reversible ☒ Irreversible ☐	Reversibility Score	2	
CATEGORY	Direct ☒	Indirect ☐	Cumulative ☒			
MAGNITUDE						
Extent	Frequency	Duration	Intensity	Likelihood	Score	RATING
1	2	2	2	2	11	Medium
RECEPTORS	Ecological ☐	Human ☒	Physical ☐			
Presence	Resilience	Receptor Sensitivity	**Receptor Sensitivity Ranking**	**Impact Significance**		
2	2	4	Medium	MODERATE		

7.4.20 Occupational Health and Safety

Construction Phase:

The project activities will involve direct workers that include staff/technical specialists engaged by the project implementation; contracted workers that include workers engaged by civil contractors; and primary supply workers that include workers of construction material suppliers such as sand and gravel and construction material transport services. The number and type of workers required are expected to be large, estimated at more than 200 at any given time during the construction phase. However, regardless of the number of workers, construction activities under the project will expose workers to labor and OHS risks and impacts including injury from misuse of tools and equipment, burns from hot asphalts, traffic accidents, as well as falls from heights. Some of the sections are in the flood-prone zones that also present heightened risks during the rainy season.

Mitigation measures

- The Contractor should prepare an emergency prevention and preparedness plan to include protocols and standard operating procedures (SOPs) to respond to emergency events such as fire, earthquakes, mudslides and sudden outbreak of infectious diseases among workers.
- Trainings on the Standard Operation Procedures (SOPs) and other related procedures should be provided to all categories of project workers.
- Proper and relevant ssignage should be posted in all public spaces mandating hygiene and PPE use and the contractor should ensure availability of adequate supplies of PPEs.
- The Contractor should prepare an OHSP to include procedures on incident investigation and reporting, recording and reporting of non-conformances, emergency preparedness and response procedures, and continuous worker training/awareness. OHS measures applying to the Project should be set out in the bidding documents.

TYPE	Beneficial (+ve)	☐	NATURE	Reversible	☒	Reversibility Score	2
	Adverse (-ve)	☒		Irreversible	☐		
CATEGORY	Direct	☒	Indirect	☐	Cumulative	☐	
MAGNITUDE							
Extent	Frequency	Duration	Intensity	Likelihood	Score	RATING	
1	2	3	2	2	10	Medium	
RECEPTORS	Ecological ☐		Human ☒		Physical ☐		
Presence	Resilience	Receptor Sensitivity	**Receptor Sensitivity Ranking**		**Impact Significance**		
3	2	4	HIGH		HIGH		

7.4.21 Vulnerable and Disadvantaged Groups

Construction Phase:

In there project there is a considerable population of vulnerable and disadvantaged groups including the very elderly, orphans, female headed households, PLWDs, widows and beggars. Most of them had no access to any form of organized social support.

Therefore, there will be limited movement for those with visual and or physical disabilities, limited or absent employment or livelihood activities and therefore more vulnerable to abuse.

There is continued trafficking of girls from Kakuma and Kalobeyei to South Sudan for early marriage and this could involve construction workers as recipients.

Operation Phase:

The more vulnerable will be more at risk of road accidents. The visually impaired will now limit or stop crossing the road on their own. The vulnerable may still suffer lack of suitable employment or other livelihood activity. Child trafficking will likely continue due to low surveillance. Vulnerable groups are likely to suffer continued neglect and discrimination.

Proposed Mitigation Measures

- The State and Local government and the community leaders to enforce laws protecting child rights in line with the national laws on child protection and International Covenant on the Rights of the Child and the African Charter on the Rights and Welfare of the Child.
- Contractor to provide alternative access points for the vulnerable in accessing the road and other infrastructure within the road zone of influence.
- The contractor to accord women, PWDs and other vulnerable groups employment opportunities during construction. The project to implement a Livelihood Restoration Plan and the Project to fully implement the provisions of the ESF.
- The project could consider financing construction of a better border control and surveillance system to deter child trafficking and other illicit activities.
- The project should also consider developing social infrastructure that includes schools and health facilities to reduce distances to these facilities and gain support for the project.

Impact Significance

The road project will have moderate impact on the vulnerable persons during the construction phase. The effective implementation and monitoring of measures including design to include/accommodate vulnerable groups in use of road/ facilities, the significance can be reduced to low during the operation phase.

Table 7-30: Impact Significance – Vulnerable People

TYPE	Beneficial (+ve)	☐	NATURE	Reversible	☒	Reversibility Score	2
	Adverse (-ve)	☒		Irreversible	☐		
CATEGORY	Direct	☒	Indirect	☐	Cumulative	☒	

MAGNITUDE						
Extent	Frequency	Duration	Intensity	Likelihood	Score	RATING
1	1	2	2	2	10	Medium
RECEPTORS	Ecological ☐		Human ☒			Physical ☐
Presence	Resilience	Receptor Sensitivity	**Receptor Sensitivity Ranking**			**Impact Significance**
2	2	4	Medium			MODERATE

7.4.22 Road Traffic and Safety

Construction Phase:

In the project area the condition of roads is poor and risky for road users. Public transport is poor, unreliable and very expensive. The roads are usually impassable during rain and most rivers have no bridges. During the rainy season there is a lot of time lost as people are forces to wait for flood levels to reduce and often vehicles are swept away by floods. Closure of roads is common due to insecurity and flooding. There will be needed considerable road improvements in order to accommodate project machinery.

In this phase there is likely to be experienced Traffic flow interruptions especially in the urban centres of Torit and Kapoeta. In addition, access to residential properties may be difficult due to ongoing road works. The high cost of transport is likely to continue.

Operation Phase:

In this phase there may be increase in road accidents due to increased flow of traffic. There is likely to be increased traffic accidents involving livestock.

Proposed Mitigation Measures

The contractor to:

- Conduct road safety awareness campaigns in the community.
- Collaborate with the traffic police (or equivalent authorities) to assist in management of traffic along the road.
- Project fleet ot be maintained in good condition (road worth) through regular maintenance/ servicing.
- Develop site-specific traffic management plans
- Issue advance notice and signage to the community on road closures and alternative diversion routes. There will need to be a deliberate motivation to target livestock keepers with road safety awareness.

Impact Significance

The project's impact/ risk significance on road traffic and safety is assessed to be Moderate.

Table 7-31: Impact Significance – Road Traffic & Safety

TYPE	Beneficial (+ve)	☐	NATURE	Reversible	☒	Reversibility Score	2
	Adverse (-ve)	☒		Irreversible	☐		
CATEGORY	Direct	☒	Indirect	☐	Cumulative	☒	
MAGNITUDE							
Extent	Frequency	Duration	Intensity	Likelihood	Score	RATING	
1	2	2	2	2	11	Medium	
RECEPTORS	Ecological ☐		Human ☒			Physical ☐	
Presence	Resilience	Receptor Sensitivity	**Receptor Sensitivity Ranking**			**Impact Significance**	
2	2	4	Medium			MODERATE	

7.4.23 Child Trafficking and Incidents of GBV/SEAH

Construction Phase:

In the project area child trafficking (girl child) from Kakuma and Kalobeyei refugee camps in Kenya) to South Sudan is common. Such children are trafficked for child marriage. In addition child marriage is also widely practiced.

In this phase the increased movement of project vehicles is likely to exacerbate child trafficking across the border. There is potential for Gender Based Violence (GBV) and Sexual Exploitation, Abuse and Harassment (SEAH) among workers and the community members to perpetuate.

As well Violence related GBV and SEAH between community members and project workers may arise.

Operation Phase:

Potential cases of GBV and SEAH among workers and the community members may arise. Child trafficking is likely to increase due to rapid and fast movement between refugee camps and South Sudan.

General Mitigation Measures

- Sensitize community, project staff on gender-based violence
- The project to have all staff sign a Code of Conduct.
- The project to develop a GBV and SEAH Prevention & Response Action Plan. The plan should be developed by the client prior construction phase.

Impact Significance

The road project will have a major impact on child trafficking and incidents of GBV/SEAH. The effective implementation of measures and other bold interventions, the risks can be maintained as medium.

Table 7-32: Impact Significance

TYPE	Beneficial (+ve) ☐ Adverse (-ve) ☒		NATURE	Reversible ☐ Irreversible ☒		Reversibility Score 3
CATEGORY	Direct ☐		Indirect ☒		Cumulative ☐	
MAGNITUDE						
Extent	Frequency	Duration	Intensity	Likelihood	Score	RATING
2	2	3	3	2	15	High
RECEPTORS	Ecological ☐		Human ☒		Physical ☐	
Presence	Resilience	Receptor Sensitivity	**Receptor Sensitivity Ranking**			**Impact Significance**
3	2	5	High			HIGH

7.4.24 Cultural Heritage

Construction Phase:

In the project area there were tangible and intangible cultural heritage. They included cultural practices and trees of social significance. Other physical cultural resources can be burial sites, churches, mosques, artifacts and chance-finds.

In this phase there is potential for destruction of trees with cultural value especially trees that may be in the road reserve or borrow pits. Also places where ceremonies are traditionally held may be curtailed. Some people especially project workers may not be allowed to participate in annual celebrations.

Operation Phase:

Trafficking of artefacts of cultural value remains a risk in this phase especially those that have not yet been identified. Increased flow and movement of people remains a threat to cultural heritage. Cutting down trees of cultural value and trafficking remains a potential risk.

General Mitigation Measures

- Develop a Chance Finds Procedure. The procedures should be in line with the provisions of ESS8 on cultural heritage.

- Sensitize project workers on the importance of cultural heritage.

Impact Significance

The road project impact on cultural heritage is assessed to be Moderate. However, with effective implementation of measures herein would see the risk maintained as minor.

Table 7-33: Impact Significance – Cultural Heritage

TYPE	Beneficial (+ve)	☐	NATURE	Reversible	☐	Reversibility Score	3
	Adverse (-ve)	☒		Irreversible	☒		
CATEGORY	Direct	☒	Indirect	☐	Cumulative	☐	
MAGNITUDE							
Extent	Frequency	Duration	Intensity	Likelihood	Score	RATING	
1	1	2	2	1	10	Medium	
RECEPTORS	Ecological ☐		Human ☒			Physical ☐	
Presence	Resilience	Receptor Sensitivity	**Receptor Sensitivity Ranking**			**Impact Significance**	
2	2	4	Medium			MODERATE	

7.5 Quarries, Borrow Pits and Water Sources

The road project will require hardstone and gravel materials for different pavement layers. These materials will have to be mined and processed locally. There are many complaints of previous projects which have abandoned material sites and quarries after exploitation and this has had both positive and adverse effects. In some cases the abandoned borrow pits have accumulated water which the local residents use as source of water for both domestic use and also watering their animals. In others they pose serious risk to the community due to safety concerns and as breeding ground for disease vectors such as mosquitoes.

7.5.1 Hardstone Quarries

Quarrying is one of the areas that can lead to substantial impacts on the environment. Nine (9) potential sources of aggregates for construction were identified along the road. These are mainly rock outcrops which were sampled to establish the suitability of rock as a source of aggregates for both pavement and concrete works for the road.

Table 7-34: Potential Sources of Aggregates

S/No.	Chainage (Km)		
1	49+70		Outcrop, but mine danger
2	69+10	LHS	Outcrop, 272m off-road. Large and wide Potential quarry site
3	85+20	RHS	Outcrop, but mine danger
4	166+75		outcrop, 60m off-road. Large & wide potential quarry site
5	177+80		outcrops, 50m off-road. Large and wide potential, quarry site
6	221+66	RHS	outcrop at 1 km off-road. A Potential quarry site
7	227+80	LHS	outcrop at 100m off-road
8	285+60	RHS	Outcrop; 50m off-road
9	330+40	LHS	Outcrop; 60m off-road

It is noted that other new sites may be identified by the contractor(s) at commencement of works. Below are some negative impacts that are associated with the quarries and broad guidelines for managing them.

Potential negative impacts

- Land take and associated conflicts
- Vegetation loss at the site and along created access roads.
- Blasting could have substantial impacts as follows:
- The workers are exposed to risks of scattering rocks, dust and deafening noise during blasting.
- Ground vibrations associated with blasting can undermine structures such as houses within the vicinity,
- As some quarries may be close to the main road, motorists, although few, could be affected by sudden nearby blasts, which could lead to accidents.

- Large quantities of dust and noise can be generated during blasting, which could affect the workers.
- Blasting can adversely affect wildlife by scaring them, which in turn can affect their behavioural patterns, breeding patterns, and in some cases can even cause death.
- Water ponding at the sites thus creating conducive habitats for malaria causing mosquitoes and other water dependent disease vectors in a malaria endemic area
- Safety concerns especially of the general public during operation.

Suggested mitigation measures:

- The contractor will be expected to formalize licensing of each quarry used
- Topsoil material resulting from stripping or associated operations should be stockpiled in raised areas, so as to avoid being washed away by any sudden storm. However, particular care is required, along the section between Kapoeta and Nadapal due to the prevalence of strong winds, which could gradually blow away the fines from the stockpiled material.
- The environmental rehabilitation measures needed (after completion of certain works) should be enforceable through provisions in the contract agreement(s) for the construction works.
- Blasting should take place at pre-arranged designated times and the affected public, within approximately 5 km radius, duly informed. Appropriate warning signs on the road will also need to be erected.
- Keep workers a minimum 350 m away from the blast spot to avoid scattering stones. If possible, machinery and other facilities should also be kept at least 200 m from the blast site. These distances will, however, depend upon the charge power. The workers should return to the working zone 10-15 minutes after the explosion.
- The storehouses of explosives should not be kept on the sites, instead they should be delivered to the site as necessary from special storehouses managed by the contractor.
- Only qualified personnel should be allowed to handle explosives.
- Fence off the entire quarry to prevent wildlife and even the public, especially curious herds' boys from accidentally falling over the cliff.
- Development should be oriented so that grading and other site preparation is kept to an absolute minimum. Natural features, landforms, and native vegetation, such as shrubs and occasional trees, should be preserved to the maximum extent feasible.
- Any adjacent water facilities, or structures such as water pans, needs to be protected.
- Due to the scarcity of water and hot conditions in the project area, sprinkling of water as a way of reducing dust may not be a sustainable measure to mitigate the potential dust pollution, which will particularly affect the workers. Whereas it is highly recommended that dust suppressants be used, it may not be very effective, hence it is advisable that the workers be provided with dust masks while in the quarry area.
- An attendant should be stationed at the entrance gate of the access road at all times, when the quarry is open, to control entry to the site. The entrance gate should be locked when the quarry is not in operation.
- Quarrying operations should be conducted in a neat and orderly manner, free from junk, trash, or unnecessary debris. Where in public view, salvageable equipment stored in a non-operating condition should be suitably screened or stored in an enclosed structure.

7.5.2 Material Sites

Details of individual borrow areas were not available to the ESIA team. Most of the mitigation measures for the hardstone quarries are also applicable to borrow areas for other materials. In summary, on completion of operations in a borrow area, the contractor should reinstate the entire area so as to blend with the surrounding area as much as is reasonably possible, and to permit the re-establishment of vegetation.

Criteria for selecting Borrow Pit Sites

(i) A written agreement with the local community must be reached for use of the site

(ii) The BP should preferably be located in areas with minimal vegetation cover or preferably use the existing or decommissioned pits.

(iii) Maximum size should be 1 ha (10,000m^2).

(iv) The site should have an undisturbed buffer of 25m all around the perimeter of the site.

(v) The site should be at a minimum 100m away from the nearest household and water courses.

(vi) Reach an agreement with the community on post-use decommissioning, whether the site should be converted to a water pan or rehabilitated. Avoid conversion to a water pan where the pit is sited at community boundaries so as not to introduce resource use conflicts between communities.

7.5.3 Water Sources

It is suggested that a procedure be used to select water sources that could be handed back to the community at decommissioning, so as not to degrade the immediate vegetation around the water source and avoid causing conflicts between communities. The following criteria should act as a guide to the selection:

Table 7-35: Criteria for selecting water sources to be handed back to community

No.	Site conditions	Suitability
1	Wet season grazing area	Suitable
2	At least 15km from boundary between two or more communities with history of hostility	Suitable
3	Area with sparse wildlife population	Suitable
4	Area of moderate to good range conditions	Suitable
5	Distance to major road > 500 m	Suitable
6	Near urban areas	Suitable
7	Near current permanent water sources	Unsuitable
8	Wildlife migration corridor	Unsuitable
9	Near community boundary	Unsuitable
10	Area with saline soils, hence salty or brackish water	Unsuitable
11	Within 3 – 5 km radius of another pan	Unsuitable
12	Sites already under heavy grazing	Unsuitable
13	Convergence zone for animals from different regions, except for stock routes	Unsuitable
14	Directly on water courses	Unsuitable

Other factors to consider before handing back water sources to the community are as follows:

- Boreholes that are very close to present permanent water source are suitable. The water source will only improve water supply at an already existing water source, hence no new negative impacts associated with presence of a water source such as local overgrazing and reduction of water table.
- Water sources that are within or close to urban centres are suitable. The borehole(s) will provide additional water supply to the urban centres after construction is completed.
- The boreholes should be at least 20km apart. In this way the impact of overgrazing will be spread over a wider area.

The above suggestions on the best way to select suitable and unsuitable water sources are not necessarily mutually exclusive. Wide consultations are required between the various professionals in the region prior to selecting sites. These consultations must also include the community within which the water source is located.

7.5.4 Project Ancillary Facilities

Construction will entail establishment of several support infrastructure that include Camps, Crusher plants, Bitumen plants, Concrete mixing plants, storage areas and others that may be necessary for the successful execution of the works. At this stage it is not possible to identify the location, size, technology and processes that will be adopted, sources of inputs, etc at these facilities, and therefore impossible to assess potential impacts that may be associated with them. However, with the understanding of the environmental and social settings in the project area the following recommendations as to how to site and manage these facilities can be made:

Avoid siting any ancillary facility within wildlife migration corridors that have been identfied and presented in this report

Avoid areas that are too remote and far away from the nearest security establishments and/or settlements. This is because the security risk in the project area is generally high hence siting must be on the advice of security personnel

Consult military personnel on areas that could still be having landmines and such areas must be avoided

Undertake a detailed risk assessment before settling on a site and also identify the most appropriate technology and processes to be adopted . This is critical in order to avoid or minimize the identified risks

Strive to source non-skilled personnel from the local communities where the facilities are located so as to forestall labour based conflicts.

7.6 Cumulative Impacts

The project area is currently devoid of major projects that can lead to significant cumulative impacts. That said, the road has had maintenance works in the past which required use of gravel materials, all of which were sourced from the project area. It is also envisaged that upgrading the road will spur enhanced gold and oil prospecting in Kapoeta region. Below are potential cumulative impacts that could be associated with the project:

7.6.1 Material Sources

As discussed earlier, previous road maintenance works sourced materials in the project area, but left all the borrow pits unrehabilitated. Already most of the borrow pits have been identified as sources of materials for the project and this will most likely lead to the following:

- Expanding the borrow pits will lead to additional land take
- Loss of ground cover due to vegetation clearance for expansion and access road to the sites
- Further depletion of materials
- Landscape disfigurement
- Increasing depth of borrow pits will potentially lead to water ponding that can be breeding grounds for disease vectors, especially mosquitoes
- Deep borrow pits can present public safety

At this stage it is difficult to estimate the extent of cumulative impacts associated with the above mainly because actual material source sites are not known, and this includes borrow pits that were previously exploited.

For all the borrow pits including those that were previously exploited, it is important that detailed decommissioning plans be developed that includes rehabilitation plans and other measures to minimize associated residual impacts. Where communities request such pits to be left as water pans, a detailed assessment of their potential impacts must be done to vet their suitability as water pans.

7.6.2 Mining and Oil Prospecting

The road will open up the area and this may attract gold and crude oil prospectors. Whereas cumulative impacts associated with mining and oil prospecting are not foreseen, it is possible that highly productive gold mines and oil deposits that are located at some distance from the road may require access roads. Construction and maintenance of such access roads may have local E&S impacts that are similar to those presented in this report, only that the impacts are likely to be smaller in magnitude.

The scale and nature of future infrastructure requirements are not known at this stage but it is recommended that in the event that access roads to these resources are needed, then detailed ESIAs should be undertaken for each road.

8 Climate Resilience

8.1 Introduction

Climate change refers to long term shifts in temperatures and weather patterns. These shifts may be natural through variations in the solar system or through human activities such as burning fuel and coal. Due to climate change, extreme weather events like storms and heavy rainfall will increase, and the road transport infrastructure has to be adapted to them. Extreme weather is an important factor that impacts the reliability and safety of the road network. Although there are considerable uncertainties in the projections of future climate change and related socio-economic developments, there is a constant need for decisions and development of the road transport system that is resilient to climate change.

Burning fossil fuels generates greenhouse gas emissions that act like a blanket wrapped around the earth, trapping the sun's heat, and raising temperatures. Examples of greenhouse gas emissions that are causing climate change include carbon dioxide and methane. These come from using gasoline for driving a car or coal for heating a building. Energy, industry, transport, buildings, agriculture, and land use are among the main emitters.

8.1.1 Potential Impacts of Climate Change on Development Projects

The consequences of climate change include, among others, intense droughts, water scarcity, severe fires, rising sea levels, flooding, melting polar ice, catastrophic storms and declining biodiversity. Therefore, there is need for climate change adaptation measures to be incorporated in any development. Climate change adaptation refers to actions that reduce the negative impact of climate change, while taking advantage of potential new opportunities. It involves adjusting policies and actions because of observed or expected changes in climate. The most important impacts anticipated from climate change in the project area are extreme heat events, flooding, droughts and extreme storm events.

8.1.2 Assessing Climate Change Projections and Scenarios of the Project Area

To understand how the road project may be affected by future climatic changes, it is important to develop an understanding of the climate change projections relevant to the project area using specific geographical location to determine key climate change types and existing climate change scenarios and projections where this information does not already exist. Two models were applied. A model, *Think Hazard!* was used to describe an array of hazards that can potentially occur in the region while intergovernmental Panel on Climate Change (IPCC) Model was used to project climate change scenarios for the project area.

8.1.3 Use of Think Hazard to describe Hazards Risks in the Project Area

Think Hazard! provides a general view of the hazards, for a given location, that should be considered in project design and implementation to promote disaster and climate resilience. The tool highlights the likelihood of different natural hazards affecting project areas (very low, low, medium and high), provides guidance on how to reduce the impact of these hazards.

The model was run for the following states, Central Equatoria (Bahr Al Jabal for Juba- Ngangala section) and Eastern Equatoria (Imatong for Ngalangala -Torit and Kapoeta for Torit - Nadapal.

Table 8-1: Climate Risk Screening

Road Route Section	Juba – Ngangala	Ngangala – Torit	Torit-Kapoeta	Kapoeta - Nadapal
Environmental Factors	Risk factors (very low, low, medium and high)			
Wildfire	High	High	High	High
River Flood	High	Medium	Medium	Medium
Earthquakes	Medium	Medium	Medium	Medium
Extreme heat	Medium	Medium	Medium	Medium
Urban Floods	High	Medium	Low	Low

Source: https://thinkhazard.org/en/report/51352-kenya-eastern-East and Central Equitoria

River flood: Juba – Ngangala sections of the road is considered to have a high risk to river flooding as per the modelled information. For the section of the road that runs from Torit – Nadapal the risk of river flooding

is medium, meaning that there is more than 20% chance that potentially damaging and life-threatening river floods may occur in the coming 10 years.

Extreme heat: The road is located in a sub-humid climate with temperatures averaging 25° C and in most cases maximum temperatures exceed 35°C particularly during the dry season (January – April)[24]. The risk of extreme heat is classified as medium meaning that there is more than a 25% chance that at least one period of prolonged exposure to extreme heat that result to heat stress, will occur in the next five years.

Urban Floods: The risk to urban floods is considered high in Juba – Ngangala section of the road, medium in Ngangala-Torit and low in Kapoeta - Nadapal. For the section where urban flooding risk are high, it means that potentially damaging and life-threatening urban floods are expected to occur at least once in the next 10 years.

8.1.4 IPCC Climate Change Projections

For climate change projection for the project area, Intergovernmental Panel for Climate Change (IPCC) approved model was used to predict future climatic conditions. Climate Information Platform developed by the Swedish Meteorological and Hydrological Institute (SMHI) on behalf of the World Meteorological Organization, to predict future climate change. Two Green House Gases emission scenarios were used to project future climatic changes i.e. Representative Concentration Pathway (RCP) 8.5 scenario representing business as usual and CRP 4.5 scenario representing medium level climate change intervention measures. The projections were for short term (year 2011-2040) and medium term (year 2041 – 2070).

Severity of climate change elements are categorized on the basis of potential magnitude of change as depicted in Table 8-2.

Table 8-2: Categorisation of Climate Change Indicator Details

Large	Medium	Small
Change is more than 2°C of the reference period value.	Change is between 1.5 - 2°C of the reference period value.	Change is less than 1.5°C of the reference period value.
Change is more than 75% of the reference period value.	Change is between 25- 75% of the reference period value.	Change is less than 25% of the reference period value.

Source: https://ssr.climateinformation.org/

RCP 8.5 Emission Scenario

The RCP 8.5 emission scenario mean that the anthropogenic activities that result in GHGs emission scenario remain the same without any interventions to mitigate on emissions. Table 8-3 presents the projections of the key climatic indicators for both short term and medium term scenarios.

Table 8-3: RCP 8.5 Scenario

Indicator	2011-2040 (Short Term)				2041-2070 (Long Term)			
	Juba-Ngangala	Ngangala-Torit	Torit-Kapoeta	Kapoeta-Nadapal	Juba-Ngangala	Ngangala-Torit	Torit-Kapoeta	Kapoeta-Nadapal
Temperature	+1°C	+1°C	+1°C	+1°C	+2°C	+2°C	+2°C	+3°C
Precipitation	0 %	0 %	-3 %	0 %	-3%	-3%	-6%	-5%
Water runoff (Annual mean)	+4%	+14%	+1%	0%	-3%	-5%	-17%	-3%
Soil moisture	+1%	-3%	-7%	+3%	-11%	-18%	-23%	-20%
Water discharge	-7%	+15%	+1%	+3%	-13%	-5%	-17%	-2%
Aridity actual	+11%	+12%	-12%	+3%	+20%	-10%	-10%	0%

[24] https://climateknowledgeportal.worldbank.org/country/south-sudan/climate-data-historical#:~:text=South%20Sudan%20experiences%20a%20

Legends[25]

High Medium Low No change

Summary

Without interventions in the short term (2011-2040), temperature is projected to increase by +1°C within the entire road section while there will be no change in precipitation in Juba and Ngangala section. Precipitation in Torit – Kapoeta section will decrease by 3% while Kapoeta–Nadapal will remain constant. There is a projected significant increase in actual aridity by 12%, water run-offs by 15% and water discharge by 14%, in Ngangala-Torit section. Actual aridity in Juba-Ngangala region is projected to increase by 11% and decrease by 12% in Torit-Kapoeta section of the road.

In the medium term (2041-2070), temperatures will increase by 2°C between Juba and Kapoeta, while it is projected to increase by 3°C between Kapoeta and Nadapal section.

Table 8-4 presents the scenario projections of the key climatic indicators for both short term and medium-term scenarios.

Table 8-4: RCP 4.5 Scenario

Indicator	2011-2040				2041-2070			
	Juba-Nangala	Nangala-Torit	Torit-Kapoeta	Kapoeta-Nadapal	Juba-Ngangala	Ngangala-Torit	Torit-Kapoeta	Kapoeta-Nadapal
Temperature	+1°C	+1°C	+1°C	+1°C	+2°C	+2°C	+1°C	+2°C
Precipitation	0 %	0%	-3 %	0 %	+4%	+4%	0%	+3%
Water runoff (Annual mean)	+11%	+1%	-6%	-7%	+5%	+11%	-13%	+1%
Soil moisture	-1%	+3%	-4%	-3%	-1%	-7%	-10%	-6%
Water discharge	+7%	+1%	-6%	-6%	-21%	+11%	-13%	+3%
Aridity actual	-6%	+3%	+13%	+1%	+1%	+10%	+1%	+2%

Legend-Colour Code

High Medium Low No change

Summary

With interventions, temperature is projected to increase by 1°C across the entire alignment in the short term (2011-2040) while in the medium term, it will increase by 2°C along the entire alignment except between Torit and Kapoeta section where the increase will be 1°C. Water run-off is projected to increase by 11% between Juba and Nangala and decrease by 13% between Torit and Kapoeta. Water discharge between Nangala and Torit is projected to increase by 11% and a decrease of 13% and 21% between Torit and Kapoeta, Juba and Nangala respectively in the medium term.

Water run-off between Juba and Nangala is projected to increase by 11% in the short term and a decrease in water run-off by 13% is projected between Torit and Kapoeta.

8.1.5 Potential implications of Climate Change on the Road Project

Increase in temperature, soil moisture and surface run-off are important factors in asphalt concrete road design. It has been reported that temperature above 35°C can affect the structural integrity of roads in the long term26. Juba and its environs all the way to Nangala experience annual mean maximum of 38.9°C. Torit has a mean maximum of 38.3°C, Kapoeta is 37.7°C and Nadapal at 37.6°C27. ThinkHazard categorizes the area as having a medium likelihood of extreme heat and high likelihood of wildfires occurring in the project area.

[25] The colour coding is only applicable to the analysis with respect to the project and do not denote IPCC recommended limits

[26] https://www.topwestasphalt.com/how-does-heat-affect-asphalt/

[27] weatherspark.com and https://climateknowledgeportal.worldbank.org/country/south-sudan/climate-data-projections.

The mean maximum temperature across the entire project area is above 37°C. According to RCP 8.5 scenario mean annual temperature between Juba, and Kapoeta is projected to increase by 2°C in the medium term (2041-2070), while temperature increase across the section between Kapoeta and Nadapal is projected to increase by 3°C, an increase considered high. Likewise, under RCP 4.5 medium term scenario, mean annual temperature is projected to increase by 2°C along the entire road except Torit and Kapoeta where there will be an increase of 1°C. These increases when applied to the already high mean maximum temperatures of more than 37°C imply an ever higher future mean maximum temperature for prolonged periods of time relative to the present.

Some of the factors that can potentially affect asphalt pavements include high temperatures, extreme wind speed, type of asphalt and road design. High temperatures for prolonged period of time can cause pavements to soften and expand28. This may cause asphalt rutting, flushing and bleeding of bituminous surfaces and/or cracking. As the temperature of the asphalt mixture increases, the binder phase loses stiffness and the irreversible deformations caused by static or dynamic traffic loading will accumulate at a faster rate. High temperature can affect the aging of bitumen resulting in an increase in brittle failure. Brittle failure of bitumen will cause the surfaces to crack with a consequent loss of water proofing of the surface seal. This will result into surface water entering the pavements causing potholing hence rapid loss of surface conditions.

Whereas an increase in temperature` of 3°C and below are predicted in both RCP 4.5 and 8.5 scenarios, the incremental effect is not likely to have significant impact on asphalt in the area. Nonetheless, the cumulative effect due to projected extended periods of temperature of above 35°C could have an impact on asphalt in the long term.

Hydrology

The project area mean annual rainfall ranges from 1,145 mm in Juba to 600-800 mm (e.g. Figure 8-1) in the midsection down to about 400 mm in Nadapal. Juba – Torit section of the road is considered to have a high risk of river and urban flooding29. Chances for both river and urban flooding occurring is medium along Nangala-Torit section and low in Kapoeta - Nadapal. The Juba- Torit section is of high flood risk because potentially damaging and life-threatening urban floods have the probability to occur at least once in 10 years. Projected increase in water run-off of 4% and 14% in RCP 8.5 short term scenario for Juba to Torit Section and projected 11% increase under RCP 4.5 scenario for both Juba-Nangala in the short term and Nangala-Torit in the medium term. Enhanced run-off, hence, flooding could have significant hydrological impacts on this section of the road implies potentially more frequent and severe floods in the future. The section between Torit and Nadapal is, however, not expected to be significantly impacted. The mid-term scenario, however, predicts a significant decrease in both run-off and water discharge across the entire project area.

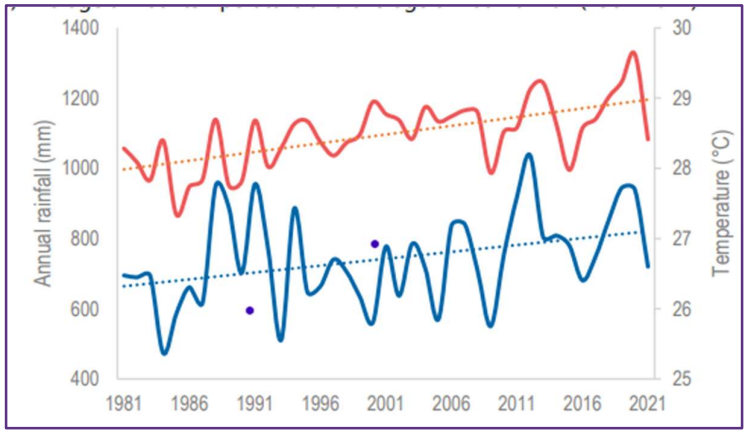


Figure 8-1: Average annual temperature and average annual rainfall for greater Kapoeta region (1981-2021). Note the increasing trajectory.[30]

The projected high river / urban flooding risk, water run-offs and water discharge has the potential of exposing the road to damages such as washing away of the road surface (leading to increased cost of

[28] High temperature hazards and prevention measurements for Asphalt pavement

[29] Think Hazard

[30] Greater Kapoeta Climate Impact & Displacement Profile Eastern Equatoria State, South Sudan, March 2022 (REACH)

maintenance), weakening of the sub-base (scouring of roads) and water logging making the road impassable (translating to economic impacts). It can also overwhelm the cross-drainage structures within the section between Juba and Ngangala as well as carrying significant debris that may lead to blockage of structures such as culverts and other drainage structures.

8.2 Suggested Climate Change Adaptation Measures for the Road

Adaptation Measures During Design and Construction Phase

- It is important to raise the road embankments while factoring in a possible 15% increase in surface run-off between Juba and Torit. Raised embankment being placed in drainage path or depression areas can thus retain water run-off that can be used in surface storage or recharge or in improving soil moisture. This can be used for improving grazing areas or maintaining integrity of adjoining wetlands in the upper catchment.
- The design of cross drainage structures can incorporate debris deflectors specifically for structures in the section between Juba and Torit to prevent damage to road infrastructure when water run-off increases.
- Drainage structures should be designed with a capacity to accommodate an increase of a minimum of 10% of the current levels of run-off for future functionality and long-term resilience to climate change
- Pavement design should consider factoring prolonged periods of high temperatures above 35^0C for the asphalt concrete to withstand future extreme temperatures.
- Consideration for maintaining good ground cover in the upper catchment of the road to promote water infiltration and hold the soil.

Adaptation Measures During Operation Phase

- Regular inspection and repair of debris deflector before the onset of rain to enhance their proficiency
- Plan a maintenance schedule that responds to potential increase in frequency of large storms. Further plan repairs and clearing drainage structures in high-risk areas before the rainy season, especially between KM 0+000 in Juba and Nesitu.

9 Environmental and Social Management Plan

9.1 Introduction

The Environmental and Social Management Plan (ESMP) provides guidelines for use in the implementation of the project. It provides the scope and extent of management programs to be implemented in the execution of the project to ensure that adverse impacts of the project to the biophysical and socio-economic environment are avoided where possible and mitigated where avoidance cannot be achieved.

The ESMP provides the scope upon which the contractor shall be expected to prepare a more elaborate construction environmental management plan having known the equipment that shall be used, the materials, the processes, and the technology to be implemented during upgrading of the road.

9.2 Scope of the ESMP

This ESMP gives a brief description of the nature of the construction work of the project, the expected impacts to the environment, and gives the suggested means of mitigating the impacts. This ESMP is a dynamic document which can be updated whenever new information is received, or site conditions change.

9.3 Objectives of the ESMP

This ESMP aims to provide a framework for environmental and social management of the project site and to ensure that impacts on the environment are minimized; and embrace environmental mainstreaming in the project's design and implementation. The main objective of this ESMP is to ensure environmental and social impacts are identified, avoided, or mitigated during the planning, design, and construction phases of this project.

The objectives of the ESMP are to:

- Bring the project into compliance with applicable national environmental and social legal requirements, social policies and procedures.
- Outline the mitigating, monitoring, consultative and institutional measures required to enhance the project.
- Ensure that the upgrading works are carried out in accordance with appropriate environmental statutory requirements and in an environmentally and socially friendly manner.
- Prescribe procedures that promote minimum potential environmental degradation, especially implementation of best environmental practice.
- Spell out practices that ensure all personnel engaged in the works comply with the prescriptions of the ESMP.
- Ensure that no change is made to the ESMP without the written permission of the Proponent and/or regulatory/mandated authorities.
- Respond to changes in environmental and social conditions during the proposed upgrading works through review and monitoring and control programmes in consultation with the employers representatives (SE or Supervision Environment Representative (SER)); and ensure that corrective actions are completed in a timely manner.
- Prescribe preventive measures that the contractor should institutionalize to mitigate any adverse environmental and social impacts.
- Ensure environmental mainstreaming during the implementation of the project.
- Enable for a systematic and proactive approach to addressing environmental and social issues during the project's implementation.
- Provide guidelines for record keeping on site.

This ESMP framework is to be used by the prospective Contractor to prepare own CESMP and the attendant Sub-Plans that are responsive to the environmental and social circumstances prevailing at the time of construction. The ESMP will therefore remain an active document that will be continuously upgraded.

9.4 Responsibilities

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 on the implementation of this ESMP:

- Ministry of Roads and Bridges.
- Ministry of Environment and Forestry.
- Ministry of Wildlife Conservation and Tourism.
- Supervising Engineer.
- Contractor(s)
- Ministry of Transport.

9.4.1 Ministry of Roads and Bridges

The project road is under the jurisdiction of the MRB (the project proponent). Therefore, the responsibility for ensuring that mitigation measures specified in this ESMP, and the contract documents are implemented will lie with them. This will be spearheaded by the project implementation unit (PIU) with direct monitoring by the Environmental & Social (E&S) Team.

The E&S team's composition, competencys, capacity building needs and training are discussed presented in Sections 9.11 and 9.12.

9.4.2 Ministry of Environment and Forestry

The responsibility of the Ministry of Environment and Forestry 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.

9.4.3 Ministry of Wildlife Conservation and Tourism

The project proponent (MRB) will work closely with the ministry in charge of wildlife conservation (Ministry of Wildlife Conservation and Tourism-MWCT) to safeguard the wellbeing of wildlife resources in the area. Therefore, the responsibility for ensuring that mitigation measures specified in this ESMP, and the contract documents are implemented will lie with them, through the MRB.

9.4.4 Ministry of Gender, Child and Social Welfare

The Ministry promotes gender equality and women's empowerment, social justice, and safe the rights and welfare of women, children, persons with disabilities and other vulnerable groups. The project proponent will work closely with this ministry in ensuring interests of these groups are developed and implemented.

9.4.5 Ministry of Land, Housing and Urban Development

The Ministry is responsible for land management and administration in South Sudan. Its role in an ESIA for the Juba-Nadapa Road project would involve assessing potential land acquisition impacts, land use conflicts, and the need for land compensation and resettlement. The ministry would need to ensure that land acquisition procedures comply with national and international standards, and that affected communities are adequately compensated and resettled.

9.4.6 Ministry of Labour, Public Service and Human Resource Development

The Ministry of Labour is responsible for labour laws, standards, and regulations in South Sudan. In the context of the ESIA for the Juba-Nadapa Road project, the ministry would be involved in assessing potential impacts on employment opportunities, working conditions, and occupational health and safety. It would need to ensure that labour rights are protected, and that appropriate measures are taken to mitigate any negative impacts on workers.

9.4.7 National Commission for Culture, Youth and Sport

The National Commission for Culture, Youth and Sport is responsible for promoting and preserving South Sudan's cultural heritage. In the context of the ESIA for the Juba-Nadapa Road project, the commission would be involved in assessing potential impacts on cultural heritage sites, archaeological sites, and traditional knowledge. It would need to ensure that appropriate measures are taken to protect and preserve cultural heritage, and to mitigate any adverse impacts.

9.4.8 Ministry of Water Resources and Irrigation

The Ministry of Water Resources and Irrigation is responsible for water resources management and development in South Sudan. In the context of the ESIA for the Juba-Nadapa Road project, the ministry would be involved in assessing potential impacts on water resources, including surface water and groundwater. It would need to ensure that the project is designed and implemented in a way that minimizes

water pollution, conserves water resources, and avoids negative impacts on water-dependent ecosystems and communities.

The **Directorate of Urban Water** is responsible for managing urban water supply and sanitation services in South Sudan. It could be involved in the ESIA for the Juba-Nadapa Road project by assessing potential impacts on water infrastructure and services, including water supply, water quality, water demand, and wastewater management.

9.4.9 The Client's Representative

The standard practice for many projects is to have an employer representative (supervising consultant). This will comprise of personnel including Supervising Engineer, Environment, Health and Safety Expert and Social/Community Laison Expert whose responsibilities would include:

- Ensure all works comply with relevant regulatory and Project requirements.
- Ensure the requirements of this ESMP are fully implemented, and that environmental requirements are not secondary to other construction requirements.
- Endorse and support the Project environmental policy.
- Liaise with government authorities as required.
- Participate and provide guidance in the regular review of this ESMP and supporting documentation.
- Provide adequate resources (personnel, financial and technological) to ensure effective development, implementation, and maintenance of this ESMP.
- Ensure that all personnel receive appropriate induction training, including details of the environmental and community requirements.
- Ensure that complaints are investigated, and issues raised resolved in accordance with Complaints and Enquiries Procedure.
- Stop work immediately where there is an actual or potential risk of harm to the environment.

9.4.10 The Contractor

The Contractor will be appointed by the MRB and will be the main entity in the implementation of the ESMP. The contractor will be wholly responsible for the implementation of the ESMP to ensure compliance with the requirements of the ESIA/ ESMP and the Standard Specifications for Road Works in South Sudan.

9.4.11 Local Authorities

The relevant departmental officers in the local authorities (State and Counties) should be called upon where necessary during project implementation to provide the necessary permits and advisory services to the project implementers. Some of the areas for which the officers will be required include:

- Approving locations for establishing work camps.
- Involvement in relocation of project affected persons along the road.
- Liaising with the NGOs in the project area to assist in the sensitization campaigns for HIV/ AIDS and public health to the workforce and the local community.
- Identifying locations for disposal of construction debris.
- Issuing permits or relevant documentation for health and safety monitoring in accordance with local health and safety legislation and / or ILO standards.

9.5 Recommended Routine Construction Practices to Avoid or Minimize Impacts

The study has proposed the folowing construction practices and methodology aimed at reducing environmental and social impacts. Typically, these are Best Engineering Practices that the contractor should routinely follow during construction works. They form part of the ESMP that shall be included in works procurement and contract documents.

9.5.1 Clearing and Grubbing

- The Contractor shall carefully consider what machinery is appropriate to the task while minimizing the extent of environmental damage.
- Topsoil shall be cleared of woody vegetation before ripping and removing.
- The topsoil is regarded as the top 300mm of the soil profile.
- Topsoil is to be handled twice only – once during clearing and stockpiling & once during rehabilitation. This will reduce soil erosion.

- The topsoil, including the existing grass cover is to be shallowly ripped (only the depth of the topsoil) before removal. This is to ensure that organic plant material, and the natural seed base is included in the stripping process.
- Soil stockpiles shall not be higher than 2.5m or stored for a period longer than one year. The slopes of soil stockpiles shall not be steeper than 1 vertical to 2.5 horizontal.
- No vehicles shall be allowed access onto the stockpiles after they have been placed.
- Stockpiles shall not be allowed to become contaminated with oil, diesel, petrol, garbage or any other material, which may inhibit the later growth of vegetation.
- The Contractor shall apply soil conservation measures to the stockpiles to prevent erosion. This can include the use of erosion control fabric or grass seeding.
- If at any stage of the clearing operations archaeological artefacts are unearthed or identified, the Chance Find Procedures provided in Annex E shall be followed.
- All alien vegetation identified along the route alignments will be cleared by the Contractor. An effort must be made to remove the entire root system, and the plant left to dry out on a hard surface to prevent germination of seed.

9.5.2 Fencing of Work areas and Campsite

- Fencing of the campsite and construction area (if applicable) shall be suitably secured to prohibit access by livestock and local fauna.
- No unauthorized pedestrian or vehicular access shall be allowed into fenced, off-limit areas.
- Fencing shall be kept neat at all times. The Contractor shall be responsible for the maintenance of all fences.
- If fencing is removed temporarily for the execution of work, the Contractor shall reinstate it as soon as practicable. Until re-instatement, the contractor shall demarcate the working area by surrounding it with danger-tape marking.
- Breaches in the fencing must be repaired immediately.
- The purpose of the fenced areas is to control construction and personnel activity within the designated areas and limit unauthorized access to improve safety.

9.5.3 Site Buildings / Construction Camp

- The planning and design for the Construction Camp must ensure that there is minimal impact on the environment.
- No construction camps will be allowed in sensitive areas such as wetlands, sensitive vegetation types or sensitive landscape units. The Construction Camp will be placed within an existing disturbed area as much as possible.
- The Construction Camp site will be identified by the Contractor in consultation with the supervising engineer (SE) and negotiated by the contractor's Site Manager with the relevant landowners.
- All buildings will be soundly built and will not pose a danger to personnel.
- Any fire in the camp must be at designated areas. No fires are allowed outside the Construction Camp(s). Adequate and well-maintained firefighting equipment - according to the fire hazard strategies - must be maintained on site during the construction period (at least two all-purpose 12.5 kg extinguishers).
- Welding, gas cutting or cutting of metal will only be permitted in a protected area inside the Construction Camp.
- The Contractor shall be liable for any costs related to extinguishing fires started by the Contractor's representatives / employees.
- The construction camp should be planned in such a way that accommodation areas, offices, garages, workshops, storage areas, hazardous materials storage areas, etc. are separated and where needed protected.
- The camp shall have the necessary amenities including clinic with ambulance, water supply, sanitation, eating area, energy, etc.

9.5.4 Initial Earthworks and Platforms

- The construction platform for the Contractor's camp, as well as the platform for the materials storage area must be appropriately planned.
- The Contractor shall take appropriate and active measures to prevent erosion resulting from his own works, operations and activities as well as stormwater control measures to the satisfaction of the RE and the Supervision Environment Representative. Restoration costs will be for the contractor's account, should these measures not be reasonably implemented. Aspects normally

covered in construction contracts in terms of protection of works are standard and are not to be billed or confused with any details covered under environmental requirements.

- During construction the Contractor shall protect areas susceptible to erosion by installing all the necessary temporary and permanent drainage works as soon as possible. All such measures must be included within the design and layout phase, and any additional measures which may be required on site will require approval from the SE.

9.5.5 Vehicle Parking Area

- All vehicles and plant should be allocated a dedicated parking area in the camp site.
- No storage of plant and vehicles will be allowed outside of the designated area.

9.5.6 Service Area / Wash Bay

- All vehicles and plants should be well maintained to ensure that there are no oil or fuel leakages.
- The Contractor will provide concrete floor slab to prevent infiltration of hydrocarbon products.
- Drip trays will be utilized during servicing
- Drainage from the service area will be channeled into a sump or oil-skimming tank, where it shall be treated to remove old hydrocarbons.
- Drainage from the wash bay platform will firstly be channeled into the skimming tank before being released by drain to the sedimentation pond.
- Soil contaminated by oil, fuel or chemicals shall be removed and disposed of at a registered Hazardous Waste Disposal Site if any will be available in the project area at the time of construction or rehabilitated in-situ which will be the most likely scenario.
- The Contractor shall educate workers on the appropriate methods for workshop maintenance and fuel points to prevent fuel and oil being washed out of containment areas.
- Toxins and oil must be recovered from the system at least once a week, and if necessitated more regularly should the RE require it.
- Toxins and oil recovered must be stored in sealed drums on a covered, bunded area and removed from site either for recycling or disposal at a registered waste Disposal Site.
- The servicing of plants and vehicles will only be allowed in the Construction Camp within the demarcated areas.

9.5.7 Separation Tanks

- The Contractor shall provide grease and oil separation tanks (if required) at all areas where oil spillage or collection will occur, i.e. workshops, oil storage, vehicle wash areas and fuel points.
- The Contractor shall provide a method for oil recovery. Recovered oil shall be collected in weather-proof drums for recycling or disposed of at a registered Waste Disposal site. These drums will be stored on site only on a covered, bunded area.
- The Contractor will test effluent discharged from the oil skimming tanks for conformance with relevant effluent standards if requested to do so by the Environment Representative when pollution is suspected.

9.5.8 Aggregate Storage

- Materials will be stored inside the camp area as far as possible.
- Fine aggregate shall be stored on a compacted sub-base platform.
- The Contractor will ensure (and implement steps if required, e.g. bund walls) that no fine aggregate is washed from the storage area onto the rest of the site during high rainfall periods.
- Coarse aggregate will be stored as a minimum on a surface of compacted inert sub-base material.
- All borrow pits used for construction materials must be approved by the SE and the contractor must provide an acceptable borrow pit rehabilitation plans which must be approved by the SE.
- Aggregate used shall be stored as compactly as possible to minimize the possibility of it spreading across a greater area than necessary and to prevent it from being washed away.

9.5.9 Fuel Storage Areas

- The Contractor shall provide and maintain impervious bund walls around his fuel storage areas within the site with a sump. Such walls shall be of sufficient height to contain a minimum of 110% of the capacity of his fuel storage facilities.
- This shall apply to storage above the ground. Underground fuel storage will require approval of the relevant ministry.

- All drainage from fuel storage areas shall be treated to remove oil and fuel.

9.5.10 Dust Control

- The Contractor is to take appropriate measures to minimize the generation of dust because of construction works. Such measures include frequent spraying during low rainfall / dry periods or by other means approved by the SE. Dust control by means of water-spraying would be sufficient on these sites, but water used for this purpose must be used in quantities that will not result in the generation of run-off.
- Speed limits must be enforced in all areas, including public roads and private property to limit the levels of dust pollution
- Spoil dumps shall be positioned such that they are not vulnerable to wind erosion.
- Spoil and other dust-generating dumps which are left unused for 28 days or longer shall be sprayed with water to control dust and treated with mulch and seeded.
- Newly opened roads where no roads currently exist and that are not trafficked shall be sprayed with water to limit dust generation by construction vehicles.
- Trucks hauling dirt, sand, soil and other loose material shall be covered when loaded.

9.5.11 Access Roads, Detours and Accommodation of Traffic

- Existing roads will be used as far as possible. No temporary access roads will be permitted, unless permitted by the SE and negotiated with affected landowners. Associated costs will be borne by the contractor.
- Any temporary roads required shall be decommissioned by the Contractor and rehabilitated using stockpiled topsoil.
- Topsoil shall be removed as described under 'Clearing and Grubbing' prior to the construction of the road.
- During construction the Contractor shall protect all areas susceptible to erosion by installing all necessary temporary and permanent drainage works as soon as possible.
- The accommodation of traffic is an important aspect on the existing roads that have been identified for upgrade as part of the project. Where required, temporary works to facilitate the accommodation of traffic during bridge construction, should be completed first as road closures will be avoided as far as possible.

9.5.12 Sanitation

- Adequate chemical latrines or on-site toilet facilities with appropriate waste management system shall be provided for all staff. They shall be emptied/ serviced on a regular basis to prevent overflowing.
- All latrines provided by the Contractor shall be efficient, sanitary and non-offensive.
- Mobile toilets shall be provided to crews working away from camps.
- A minimum of one toilet shall be provided per 20 persons at each working area such as the construction camp.

9.5.13 Temporary Storage of Waste

For Construction Waste:

- Temporary storage of construction waste will be limited to within the site, and within areas designated by the SE.
- The Contractor will be responsible to remove and transport all waste material off site to a registered Waste Disposal Site.

For Domestic Waste:

- The Contractor shall dispose of all refuse generated by his staff and Sub-Contractors on a weekly basis at a registered Domestic Waste Disposal Site or in situ.
- The Contractor shall on a daily basis do site clean-ups of litter other than construction spoil and dispose of it in designated refuse bins provided on site.

9.5.14 Screening of Crusher Site

- The process of separating rock material into acceptable grades for backfilling and layer works material will result in noise and dust.
- The Contractor shall suppress dust caused by the screening process.

- The screening process shall be positioned so as not to cause any disturbance to surrounding villages.

9.5.15 Spoil Material

- All suitable materials excavated shall be used in the construction of the works.
- All unsuitable and surplus spoil rock shall be removed from the site to a dumping site or sites, to be negotiated by the Contractor and accepted by the SE where it shall be dumped, spread and levelled, all to the satisfaction of the SE.
- No dumpsite shall be used without the prior written approval of the Project/Site Manager and the owner of the property.
- No spoil material shall be stockpiled in violation of any legal requirement or to obstruct any watercourse or drainage channel.

For shaping

- The soil surface shall be contoured, and the edges of all cut and fill areas rounded to fit into the natural landscape.
- Topsoil shall be spread in keeping with the natural topographical form of the site and immediate surroundings.

For topsoil placement

- Topsoil shall be placed to a minimum depth of 150mm over all areas that have been disturbed by the construction activity.
- Topsoil placement shall follow as soon as construction in an area has closed.
- All compacted areas shall be ripped parallel to the contours to a minimum depth of 300mm.
- All areas onto which topsoil is to be spread shall be graded to the approximate original landform and shall be ripped prior to placement.
- Topsoil shall be placed in the same area from which it had been stripped. If there is insufficient topsoil available for a particular soil zone, additional topsoil may be brought from other soil zones at the approval of the SE.
- Where topsoil that has been stripped by the Contractor is insufficient to provide the minimum depth, the Contractor shall obtain suitable substitute material from other accepted sources.
- No vehicles shall be permitted access onto the topsoil after it has been placed.

9.5.16 Revegetation

- Flat and gently sloping areas shall be ripped in lines 300mm centre to centre and to a depth of at least 300mm parallel to the contours prior to revegetation.
- Revegetation of disturbed and work areas shall be done with an indigenous grass mix; similar to what is found in the vicinity of the site and approved by the Engineer.

9.5.17 Storm water Management

- During construction, the Contractor will ensure that erosion control structures - either permanent or temporary - are installed prior to commencement of construction.
- Any erosion channels developing during the construction period or during the operational and maintenance period shall be backfilled and consolidated immediately and the area restored to the proper condition. All erosion damage shall be repaired as soon as possible. Displaced topsoil will be replaced from approved borrow pits.

9.5.18 Traffic and Plant on Site

- Adequate and appropriate traffic warning signage will be placed along the route to be used by the construction vehicles from the camp and the borrow pit or quarry to the site.
- Adequate and appropriate traffic warning signage will be placed along the route to warn public of construction work and heavy vehicle traffic.
- Transporters of fine materials must ensure that their operation does not pose a nuisance through the spillage of material or the creation of dust. The Contractor shall remedy, at his own expense, dust generation and spillage where it occurs to an acceptable level along the transport routes. It is recommended that the load haul of all transport vehicles be covered with tarpaulins.
- Deliveries shall be scheduled for off-peak hour traffic time schedules near major towns

- All trucks and vehicles removing spoil from the site shall have the load areas covered by a tarpaulin to prevent rocks and spoil from falling onto the road surfaces or causing a nuisance to persons in the vicinity.

9.5.19 Personnel

- Working hours should ideally occur only between 08:00 and 17:00 during weekdays. Should the Contractor wish to work outside of these timeframes, negotiations must be conducted with the SE, the client and Site Manager in consultation with the local community.
- Warning signs must be placed on and around the site as per the occupational health and safety requirements.
- Cooking facilities shall be provided for the construction staff within the confines of the construction camp. No trees may be removed for the making of fires, but collection of dead wood is allowed.
- Fires will only be permitted in the confines of the construction camp.
- Where there is a potential for a particular fire hazard at any point in the construction works the contractor shall ensure that his employees are properly trained in the use of the appropriate firefighting equipment and that such equipment is always on hand.
- The Contractor shall refrain from harming or clearing trees, timber and shrubs to any extent other than that necessary for the execution of the contract.
- The Contractor shall take all measures necessary to prevent his staff from hunting, capturing or killing animals and birds during the construction phase.
- The Contractor shall take all necessary precautions against trespassing on adjoining properties and will ensure that all livestock, game or crops are not interfered with.
- The Contractor shall comply with all safety regulations regarding electricity supply and shall take every precaution to ensure the safety of all the people on site.
- The Contractor shall ensure that as far as practical, suitable arrangements are made on the site for the maintenance of health, the prevention and overcoming of outbreaks of disease. Adequate first aid services will be provided by the Contractor at the Construction Camp.
- The Contractor shall be responsible for his own security arrangements and shall comply with any security instructions, which the SE or the client may issue from time to time.
- The Contractor shall ensure that suitable safety regulations and precautions are established and brought to the attention of the personnel. Approved safety helmets and other protective clothing shall be worn where deemed necessary by the Supervisor. Such protective equipment shall be provided by the Contractor to the employees.
- The Contractor shall, at his own cost provide for a constant supply of potable water for human consumption to the Construction Camp and other domestic use on site. The Contractor shall allow for chemical testing of water samples monthly, or more frequently if pollution is suspected by the SE.
- The Contractor is responsible for the behaviour and discipline of all personnel while they are present on the site and shall always exercise strict supervision over them.

For Personnel Education, the contractor shall:

- ensure that his personnel are inducted on the requirements of the ESMP. This will be in the form of presentations and demonstrations to be conducted by the contractor's representative on EHS issues.
- ensure that his personnel have a clear understanding of the Health and Occupational Safety aspects of the contract works.
- ensure that his staff complies with the ESMP requirements for best practice as described by this document.

9.5.20 Crossing of the Rivers

- The Contractor, after consultation with the SE and the client, will be required to notify the relevant Water Authority in writing of the proposed commencement of construction and provide them with a construction programme, prior to any work commencing in proximity of the water courses or drainage features.
- Extreme caution shall be taken during construction owing to the high erodibility river embankments. The SE shall assess any preventable damage caused by the Contractor and prescribe rehabilitation measures to be completed at the Contractor's expense.
- No construction materials or pollutants, such as cement, shall be allowed to fall/ flow into water features.
- No washing of clothes or vehicles will be allowed in the watercourses.

- A laundry facility will be provided in the construction camp. The effluent from this facility (grey water) will drain into a French drain system to be constructed for this purpose.
- Only environmentally friendly bio-degradable detergents will be allowed in the construction camp.
- Any activity which brings about the run-off of sediments into any natural watercourse shall be forbidden. Penalties for infringement will be imposed on the Contractor, as well as cost of remediation.
- The flow of the river may not be affected during construction and under no circumstances will watercourses be blocked.
- The construction of new roads, such as along steep terrain, must be conducted along the watershed, to minimise impact on surface water runoff patterns.

9.5.21 Fauna and Flora

- Natural vegetation shall be kept in as undisturbed a state as possible. Special attention shall be paid to preserve trees and plant communities such as wetlands. Vegetation removals as part of the development requirements – such as along new alignments or along non-existent roads are excluded.
- Indigenous plants or wild animals (including reptiles, amphibians or birds etc.) may not be damaged or harmed.
- All incidents of harm to any animal or natural vegetation (apart from the agreed vegetation areas) must be reported to the SE.

9.5.22 Embankments

- No activity shall be allowed which shall, in any way, create unnecessary disturbance of any river embankment due to the extreme sensitivity of these zones.
- Care must be taken to ensure that machinery used does not erode the embankments further. Where embankments along the alignment are severely eroded, the SE may request the Contractor to install erosion control measures at the contractor's expense.

9.5.23 Site Clean Up and Rehabilitation

- The Contractor must ensure that all structures, equipment, materials and facilities used or created on site for or during construction activities are removed once the project has been completed.
- The construction site shall be cleared, cleaned and rehabilitated to the satisfaction of the SE, prior to revegetation.

9.5.24 Quality of discharged water

The contractor is to ensure that the quality of the water discharged is compliant with the water quality standards that may be applicable at the time, with respect to the receiving environment. The following should be observed for fuels, oils, hazardous substances and other liquid pollutants:

- The contractor should construct machinery and vehicle maintenance areas as well as sealed areas for the storage of pollutants so as to avoid any accidental discharge that would pollute water resources.
- Hazardous materials shall be stored above flood level and at least 20 metres from any watercourse.
- Chemicals and fuel shall be stored in storage tanks within a secure compound. All chemicals and fuels shall be stored in accordance with manufacturer's instructions.
- Storage areas or secondary containment shall be constructed of waterproof reinforced concrete or approved equivalent, which is not adversely affected by contact with chemicals captured within them.
- Pipe-work carrying product from the tank to facilities outside the containment shall be provided with secondary containment.
- Tank equipment such as dispensing hoses, valves, meters, pumps, and gauges shall be located within the containment or provided with own containment.
- Fence of the tank compound with locks or other adequate security controls at the site.
- Locks on unattended dispensing hoses.
- Appropriate training for the handling and use of fuels and hazardous material is to be provided by the Contractor as necessary. This includes providing spill response and contingency plans.
- Extreme care will be taken when transferring chemicals and fuels from storage vessels to equipment and machinery on an impervious sealed area which is kerbed and graded to prevent run-off. Chemical and fuel transfer areas shall drain away from the perimeter bund to a containment pit. The design shall provide for the safe and efficient movement of vehicles.

- All chemicals stored within the bunded areas shall be clearly labelled detailing the nature and quantity of chemicals within individual containers.
- Any chemical or fuel spills shall be cleaned up immediately. The spilt liquid and clean-up material shall be removed, treated and transported to an appropriate site licensed for its disposal.
- Stormwater shall be diverted away from the fuel handling and storage areas. An oil water interceptor shall be provided to treat any rainwater from fuel storage and handling areas.
- Measures should be taken to ensure proper storage of fuel, oil and bitumen. Oil-water interceptors or sumps should be constructed to capture discharge of oils, fats and other polluting liquids from maintenance workshops, vehicle and equipment washing bays and kitchen drains.
- At the work sites the contractor will be expected to maintain strict surveillance particularly when working within the vicinity of water supply points and the rivers within the project area.
- A safety and emergency response plan will need to be developed for all operations with emphasis on the protection of the environment prior to start up.

9.6 Environmental & Social Management Plan

The set of instructions provided in this Chapter and summarized in Table 9-1 constitutes the Environmental & Social Management Plan (ESMP). The following issues require special attention:

- Material sources, especially the quarry sites and borrow pits.
- At the locations for livestock grazing and crossings, signage must be erected. Exact locations to be identified by the local administration in consultation with the locals.
- Designs must take into consideration the sensitive ecosystems and features.
- Informative signs shall be considered for all social/ sensitive amenities (educational institutions, hospitals, trading centres).
- The Contractor shall ensure that all pertinent permits, certificates, and licenses have been obtained prior to any activities commencing on site and are strictly enforced / adhered to.
- The Contractor shall maintain a database of all pertinent permits and licenses required for the contract as a whole and for pertinent activities for the duration of the contract.

The environmental and social management plans are presented in Tables 9-1 and 9-2. The plans includes the potential impacts; mitigation measures/action plan; performance indicators; monitoring & reporting requirements; responsibility and cost estimates.

Table 9 - 1: Construction Phase ESMP

ES Aspect	Source of impacts	Potential Impacts/ issues	Mitigation Measures/ action plan	Performance indicators	Monitoring requirements	Reporting	Responsibility[31]	Cost Estimate (USD)[32]
Bio-physical Aspects								
Air Quality (Pollution)	▪ Construction vehicles and equipment emissions ▪ Dust from earthworks	▪ Decrease in air (Nuisance and health effects on humans) quality due to dust (PM10, PM2.5) and vehicle emissions ▪ Stunted growth of natural vegetation from dust deposition	▪ Use water bowsers to suppress dust ▪ Maintain vehicles to reduce emissions Cover materials during transport ▪ Limit idling of machinery ▪ Impose speed limits for all vehicles ▪ Sensitize motorists/road users ▪ Establish information flow process to the communities on dusty conditions ▪ Provision of appropriate Personnel Protective Equipment such as dust masks to site workers ▪ Use environmentally friendly fuels such as low sulphur diesel ▪ Ensure no burning of waste on sites/non-designated areas ▪ Use of tarpaulins to cover trucks carting away spoil using public roads	▪ Dust levels within acceptable limits ▪ Vehicle maintenance logs ▪ Deposition of dust on vegetation ▪ Watering log	▪ Regular air quality monitoring at sensitive locations (schools, hospitals, etc.) every 6 months ▪ Weekly site inspections.	▪ Entries in the complaints register, & Construction schedule ▪ Monthly progress reports.	Contractor's Environmental & Social Officers (implementation) Employer's Representative (monitoring)	500,000
Landscape and Visual Intrusion	Earthworks, road realignment, borrow pits	Visual degradation, scarring of landscape	▪ Existing material sites that are 5 ha and above should not be exploited further horizontally ▪ imposing rock outcrops should not be used as source of aggregates ▪ preparation of site specific ESMP's before exploitation. ▪ Wide consultations for siting of any material site or quarry ▪ Site specific rehabilitation plan ▪ Borrow pits and quarries should be located at least 200 m from the road and buffered by trees around the perimeter of the pit or quarry ▪ planting avenue trees on the edges of the road reserve to improve general aesthetics.	Restored vegetation, minimal visual scars	Monthly monitoring of borrow pits and landscape restoration	Monthly report	Contractor/Environmental Officer	500,000

[31] Responsibility for both implementation of mitigation measures & monitoring
[32] One-time cost estimate during construction phase

ES Aspect	Source of impacts	Potential Impacts/ issues	Mitigation Measures/ action plan	Performance indicators	Monitoring requirements	Reporting	Responsibility[31]	Cost Estimate (USD)[32]
Soil Degradation and/or Geology	Excavations, improper disposal of spoils	▪ Soil erosion, contamination ▪ River sedimentation ▪ Land degradation ▪ Potential soil pollution from accidental fuel and oil spillage	▪ Implement soil erosion control measures ▪ Proper disposal of spoils ▪ Slope stabilization measures ▪ The Contractor to develop an erosion control and revegetation plan ▪ Areas affected by construction related activities and/or susceptible to erosion or landslides must be monitored regularly ▪ Design runoff control features especially on the roadside drainage channels to minimize soil erosion. ▪ Limit cleared areas to project footprint to avoid unnecessary exposure of soil to agents of erosion. ▪ Line side-drains with concrete or by stone pitching in erosion prone soils to avoid gully formation ▪ The contractor should adhere to specified cut and fill gradients and vegetating embankments ▪ Areas cleared for improving sight distance should be planted with grass to reduce erosion (where possible ▪ Excavated materials and excess earth should be kept at appropriate sites approved by the Supervising Engineer	▪ No visible signs of erosion ▪ Proper spoil disposal ▪ Water quality at the adjacent streams ▪ Formation of rills and/or gullies at excavated sites ▪ Sediment load	Weekly inspections for erosion, spoil sites	Monthly progress reports	Contractor/Environmental Officer	400,000
Water Resources	▪ Discharge of pollutants from construction sites; ▪ Soil erosion; ▪ Modification of water resource.	▪ Water contamination ▪ Siltation of rivers	▪ Proper waste management ▪ Measures for protection of soil erosion shall also apply ▪ Ensure that water is used efficiently by avoiding extravagant water use and wastage in construction ▪ Contractor to avoid use of community boreholes and instead sink his own boreholes. ▪ Implement sedimentation control measures (e.g., silt fences, sediment basins) to reduce runoff into nearby rivers and wetlands.	▪ Water quality within regulatory standards ▪ Water consumption levels, water pollution incidences or housekeeping practices that could cause water pollution	▪ Quarterly water quality testing near construction sites ▪ Sediment control inspections	▪ Site logs of inspections and corrective actions ▪ Monthly monitoring reports-tests & measurement results.	Contractor, SE	800,000

ES Aspect	Source of impacts	Potential Impacts/ issues	Mitigation Measures/ action plan	Performance indicators	Monitoring requirements	Reporting	Responsibility[31]	Cost Estimate (USD)[32]
			▪ Establish designated storage areas for hazardous materials away from water bodies, ensuring containment in case of spills. ▪ Use alternative water sources, such as sinking new boreholes for construction needs, ensuring they are not close to community boreholes to prevent over-extraction. ▪ Construct and maintain proper drainage structures to ensure water flow is not obstructed and wetlands are protected. ▪ maintain water usage/consumption records and obtain abstraction permits as applicable.					
Resource Use efficiency and Pollution	Project material inputs, energy use	Natural resources sustainability and pollution	▪ Development of project water sources, such as boreholes, ▪ Harvest roof water for use at the camp during the wet season with sufficient storage ▪ Material sources should be spread out across the project length with the aim of not depleting materials at only a few areas. This is important in safeguarding materials for future use in maintenance ▪ Construction equipment should be maintained to minimize emissions ▪ Use of fuelwood for cooking by the contractor staff should be controlled ▪ Storage and handling of chemicals and other potential pollutants should follow standard operating procedures. All chemicals should be stored in a bunded area to contain any spill.	▪ Presence of environmental pollutants ▪ Quantities of inputs against estimated availability ▪ Water stress ▪ Energy use efficiency	Quarterly records of project inputs Incidents of pollution	Quarterly reports	Contractor	N/A

ES Aspect	Source of impacts	Potential Impacts/ issues	Mitigation Measures/ action plan	Performance indicators	Monitoring requirements	Reporting	Responsibility[31]	Cost Estimate (USD)[32]
Waste Generation and Management	Improper waste disposal	▪ Water and soil contamination ▪ Public health hazards	▪ Develop a waste management plan ▪ Provide waste bins ▪ Prohibit waste burning ▪ Implement a waste management procedure, ensuring leftover construction materials are reused ▪ Use durable materials to minimize construction waste over the project's lifetime ▪ Avoid excess mixed concrete, discard (where applicable) away from water bodies, and establish a designated wash area for concrete-coated equipment ▪ Segregate wastes generated into inert fill materials, recyclable/reusable materials and hazardous wastes for appropriate disposal ▪ Procure the services of a waste handler for the collection and disposal of wastes, especially the hazardous wastes generated; and ▪ Ensure sanitary facilities are provided at construction sites and that they are located at convenient places away from drainage facilities.	▪ No visible waste accumulation ▪ Proper waste disposal records ▪ Waste management plans at the site ▪ Site status. ▪ Availability of waste handler ▪ Quantities of wastes recycled/reused	▪ Regular inspection of waste handling ▪ Weekly inspection of sites to establish adequacy of waste management plans in place	Monthly EA/periodic Audit Reports	Contractor, Environmental Officer	700,000
Noise Levels	▪ Construction equipment ▪ Vehicles movement ▪ Blasting	Noise pollution affecting nearby communities and wildlife	▪ Maintain equipment ▪ Restrict noisy activities to daytime ▪ Notify nearby communities on activities that would trigger high noise level like blasting ▪ Put up Construction Noise Barriers/fences to reduce noise from compressors and other small stationary equipment where necessary. ▪ Endeavour to use equipment installed with noise abatement devices as much as practicable. ▪ Reduce idling time on trucks and other noisy equipment. ▪ Encourage drivers to turn off vehicle engines when not in use.	▪ Noise levels within permissible limits (dB(A)) ▪ Complaints: Noise levels from construction works and equipment; & Usage of PPE by construction workforce.	▪ Noise monitoring near sensitive receptors ▪ Weekly site inspections; and Noise measurements at point sources	Weekly noise level reports	Contractor, Environmental Officer	500,000

ES Aspect	Source of impacts	Potential Impacts/ issues	Mitigation Measures/ action plan	Performance indicators	Monitoring requirements	Reporting	Responsibility[31]	Cost Estimate (USD)[32]
			▪ Provide personal protective equipment such as earmuffs to workers at the site as necessary					
Flora	Land clearing, road realignment	Loss of vegetation, habitat destruction	▪ Restrict clearing to the minimum at all construction sites and borrow pits. ▪ Controlled clearing – avoid unnecessary clearing of vegetation, ▪ Replant native species in cleared areas (e.g. Acacia trees that occur locally in the area) ▪ Follow only the proposed Right of Way. ▪ Consider the location of mature trees during route selection for the construction of access road ▪ compensatory planting of trees within the project area ▪ Landscaping and planting all disturbed areas (pits, deviations, embankments, camp sites).	▪ Survival of re-planted vegetation ▪ Record of number of large trees cut. ▪ Extent of vegetation clearance.	Vegetation monitoring quarterly, ensuring the success of replanting	Environmental reports (Number and species of trees cleared and planted; Hydrocarbon spillages and clean-up measures taken)	Contractor. /Forestry Specialist (external monitoring by regulatory body)	500,000
Fauna Terrestrial	Construction works, noise, and vibrations; vegetation and habitat clearing/ destruction; blocking biodiversity corridors	Ecosystem disturbance, barrier to animal movement and potential kills	▪ Avoid habitat fragmentation outside the project footprint. ▪ No construction activities at night to avoid disturbance to nocturnal fauna. ▪ Undertake pre-clearance checks of trees to support roosting of fauna species. ▪ Avoid spills of hydrocarbon, oil, chemicals and other hazardous materials. ▪ Avoid introduction of invasive species and pests. ▪ Reduced speed limits shall be signposted to minimize the risk of accidental injury and mortality to fauna. ▪ Road Kill Management and Monitoring Plan (RMMP) in all sensitive habitats. ▪ low level embankment and use of drift structures, and box culverts in all areas streams to allow smooth movement of wildlife to cross from one side of the road to	Reduced wildlife disturbances, intact wildlife corridors	Wildlife monitoring at sensitive sites, quarterly inspections	Environmental officer reports	Contractor/Wildlife Specialist	500,000

ES Aspect	Source of impacts	Potential Impacts/ issues	Mitigation Measures/ action plan	Performance indicators	Monitoring requirements	Reporting	Responsibility[31]	Cost Estimate (USD)[32]
			another in sensitive areas e.g entire section between Illeu and Kidepo Valley. ▪ construction planning-buffer distances between construction activities and areas where protected species have been identified (including vehicle movement routes). ▪ equipment maintenance to minimize preventable noise from equipment ▪ Select equipment with the lowest noise rating that meets task requirements. ▪ Construction equipment not to exceed acceptable noise level. ▪ Construction activities should be scheduled to minimize disturbances during critical breeding seasons for local bird populations.					
Fauna Aquatic	Bridge and culvert construction , discharge into rivers	Water pollution, habitat degradation	▪ Avoid construction near water bodies during sensitive periods ▪ Sediment control measures Avoid discharges into water	Water quality within limits	Water quality monitoring in affected rivers, sediment levels	Monthly water quality report	Contractor/Environmental Officer	300,000
Fauna Avifauna	Noise, construction near nesting areas; vegetation clearance	Disruption to bird nesting; feeding and stopover sites for migratory birds; Accidental kills; relocation of birds to less optimal habitats.	▪ Implement buffer zones around nesting areas ▪ Avoid tree cutting during nesting season ▪ Replanting of vegetation along the road corridor, particularly native trees, can help mitigate habitat loss for certain species. ▪ Installing signage and creating wildlife corridors to facilitate the safe crossing of birds and other wildlife could reduce road mortality. ▪ strengthening regulatory policies and laws/regulations controlling use of natural resources.	No significant decrease in bird populations	Avifauna monitoring during breeding seasons	Environmental report	Contractor/Avifauna Specialist	300,000
Socio-economic Aspects								
Water Use/ Source	▪ The limited water sources.	▪ Contamination of water sources.	▪ Contractor to avoid sourcing water from community water sources.	▪ No record of complaints related to water sources/use	▪ Random water quality testing ▪ Records on water usage	Monthly monitoring reports	Contractor's Environmental and Social officers,	1,000,000

ES Aspect	Source of impacts	Potential Impacts/ issues	Mitigation Measures/ action plan	Performance indicators	Monitoring requirements	Reporting	Responsibility[31]	Cost Estimate (USD)[32]
	▪ High demand for domestic, livestock and construction use	▪ Conflicts between contractor and the community.	▪ Contractor shares water from own sources with community members whenever need arises. ▪ Contractor to develop a water sharing agreement with the community. ▪ Develop a water resource management plan to regulate water usage ▪ Borehole water extraction should be carefully monitored to prevent over-extraction. ▪ Utilize the abandoned borrow pits that collect water as alternative water sources, particularly during the dry season. ▪ Establish a clear conflict resolution mechanism through community engagement. ▪ Implement water-saving technologies and practices during construction. ▪ Initiate a borehole rehabilitation program to improve community's water sources and reduce competition. ▪ Sediment and erosion control measures for construction works near water bodies to prevent contamination and degradation of water quality. ▪ Develop and implement awareness campaigns on the sustainable use of water resources and the importance of conserving water for future needs.	▪ No incidents of drying of boreholes ▪ No of waterborne infections reported in health facilities			Ministry of Water	
Land Use & Land Cover	Change in land use from farms and human settlements to road corridor, borrow pits	▪ Loss of land ▪ Surge in population in settlements along the road, hence heightening the urbanization process ▪ Changes in land use from communal to	▪ Review the project designs to minimize/avoid the land acquisition ▪ Prepare a Resettlement Action Plan and compensate the affected persons before construction commences. ▪ Compensation should have provisions for tree planting to replace any trees that are cut down due to construction activities. ▪ Efforts should be made to avoid cutting down trees wherever possible. If tree removal is unavoidable, there must be a	▪ Acreage of land acquired ▪ Number of PAPs who lost land and Number of PAPs compensated. ▪ Grievances raised regarding land	▪ Daily logging of Compensation done ▪ Daily updating of the grievance log ▪ Records of new developments upcoming	Monthly reports	Contractor's Environmental & Social Officers	2,000,000

ES Aspect	Source of impacts	Potential Impacts/ issues	Mitigation Measures/ action plan	Performance indicators	Monitoring requirements	Reporting	Responsibility[31]	Cost Estimate (USD)[32]
		private, and increased fencing ▪ Likely expansion of existing gold mining activity ▪ pastoralism land may be fenced off (privatization) thereby depriving others of access to pasture and water, with potential to ignite conflict. ▪ influx of rural-urban migrants to existing towns and settlements along the road ▪ Hawkers and employment seekers are likely to flood the area adjacent rest stops. ▪ Likelihood of scramble for plots and land brokers in land adjacent to towns, near rest stops and general roadside areas.	commitment to replant trees to restore the affected areas. ▪ Tree-planting campaigns involving community participation can help mitigate deforestation. ▪ Borrow pits should be carefully managed to minimize their environmental impact and ensure that land restoration measures are in place ▪ Contractor vehicles and machinery should operate only within designated areas ▪ sustainable agricultural practices should be promoted to prevent over-exploitation of land. ▪ measures such as terracing, maintaining buffer zones of vegetation, and implementing erosion-control structures should be put in place to prevent soil degradation and loss of agricultural productivity. ▪ Buffer zones should be established along critical ecosystems to maintain biodiversity. ▪ Wildlife corridors should be integrated into the landscape to prevent habitat fragmentation.	loss and compensation ▪ Human migration to urban centres. Mushrooming of human settlements near contractor's campsites and army barracks	along the road corridor			
Land tenure	Change in land ownership from community to private and public land	Illegal transfer process of land during privatization of community land resulting in conflict over land ownership	▪ State and Local Governments in collaboration with the project implementation unit need to spearhead land related matters. ▪ The Aboloni (communal landlords) to continue regulating.	▪ Grievances reported on illegal transfer of land ownership ▪ Number of cases reported on illegal transfer of land	Regular awareness on the land transfer process among communities	Quarterly reports	Ministry of Land, Housing and Urban Development	TBD

ES Aspect	Source of impacts	Potential Impacts/ issues	Mitigation Measures/ action plan	Performance indicators	Monitoring requirements	Reporting	Responsibility[31]	Cost Estimate (USD)[32]
Demography & Ethnicity	▪ Increased inter-ethnic movement ▪ Influx of migrant workers	Increased inter-ethnic conflicts	▪ Create awareness among communities on cultural diversity ▪ Increase surveillance points along the road corridor. ▪ Invest in peace building initiatives in anticipation of increased inter-ethnic movement. ▪ create awareness on the spirit of East African Cooperation and on the benefits and consequences of an international link road to communities.	▪ Number of insecurity incidents reported associated with ethnic tribes ▪ Number of awareness meetings undertaken	Regular surveillance along the road of the known hotspots for conflicts.	Monthly reports	State Government, Contractor	600,000
Livelihood activities	▪ Loss of land ▪ Construction activities such as blasting	Loss/interruption of sources of livelihoods: ▪ Pasture may be destroyed and loss of livelihood. ▪ There will be loss of land to borrow pits which may negatively affect livelihoods. ▪ blasting may cause damage to crops, houses and businesses which may negatively affect livelihoods. ▪ Scope of gold mining is likely to increase and this is likely to create conflict as some people may lay claim to certain areas.	▪ Construct roadside markets near villages for both farmers and livestock keepers ▪ Implement Livelihood restoration plan activities ▪ Regulate mining activities within the project area	▪ Number of roadside sellers ▪ Number of new businesses or developments set up	Regular inspections of upcoming businesses along the road corridor	Monthly reports	Contractor's Social Officer MRB PIU	1,000,000
Socio-Economic Development	Poor road network and limited	▪ Increased rate of crime	▪ Improve access roads to social infrastructure to ensure access to social services	▪ Number of locals employed by the project	▪ Review of the hiring process. ▪ Regular monitoring of	Monthly and Quarterly reports	Contractor & Social Officer	500,000

ES Aspect	Source of impacts	Potential Impacts/ issues	Mitigation Measures/ action plan	Performance indicators	Monitoring requirements	Reporting	Responsibility[31]	Cost Estimate (USD)[32]
	economic ventures	▪ Limited employment opportunities ▪ Difficulty in accessing social services	▪ Prioritize local community during employment ▪ Implement a skill-transfer program for the community ▪ Invest in Corporate Social Responsibility projects such as social halls, ICT centres, market stalls, hospitals, and schools ▪ Awareness creation on the dangers of alcohol and substance abuse. ▪ construction of roadside markets close to the villages and army barracks to reduce distances to markets and spur local economy. ▪ Invest in community social amenities to improve the access and quality of services.	▪ Number of locals absorbed as interns ▪ CSR projects undertaken by the contractor	the internship program			
Education	Construction activities	▪ Limited access to learning institutions ▪ Interference of learning emanating from noise ▪ Exposure of students to dust ▪ Susceptibility of students being poached by workers for early marriages, exposure to STIs and teenage pregnancies	▪ Enhance safety measures around learning institutions. ▪ Ensure access to learning institutions particularly when the schools are in session. ▪ Manage noise and dust exposure around schools ▪ Conduct road safety and health awareness campaigns in schools ▪ Engage with traffic police for road safety education. ▪ Improve access roads to schools with a reasonable distance/project zone of influence. ▪ Awareness creation on the dangers of substance abuse.	▪ Number of awareness campaigns conducted among schools ▪ Number of complaints recorded on noise level and dust by schools	Quarterly trainings and awareness sessions	Monthly reports	Contractor's social officer	100,000
Community Health	▪ Influx of local and international immigrant workers ▪ Lack of access to health facilities	▪ Exposure to new infections such as communicable diseases ▪ Increased exposure to STIs, HIV, STIs and other communicable	▪ Conduct STIs & HIV/AIDS campaigns within communities ▪ Undertake drug abuse and prevention campaigns ▪ Improve road access to health facilities ▪ Support health facilities with drugs and necessary medical equipment ▪ strive to proportionately hire local staff from all ethnic communities in the project area	▪ Number of community awareness trainings undertaken ▪ Number of medical cases reported of non-	▪ Random drug tests among project workers ▪ Regular medical camp checks in communities	Monthly reports	Contractor's Social Officer	400,000

ES Aspect	Source of impacts	Potential Impacts/ issues	Mitigation Measures/ action plan	Performance indicators	Monitoring requirements	Reporting	Responsibility[31]	Cost Estimate (USD)[32]
	and public health knowledge	diseases resulting in school dropouts, early teenage pregnancies ▪ Increased drug abuse ▪ Likely to be congestion at the limited health facilities due to increased population. ▪ Risk of exposure to land mines especially when sourcing materials beyond the road corridor, diversions and clearance of re-aligned sections. ▪ few job opportunities will be treasured hence those overlooked for such opportunities may turn hostile especially to the local project staff from communities other than their own	▪ New access roads, re-aligned sections and diversions should be inspected for any landmines before works begin in those areas.	communicable and communicable diseases associated with project activity				
Occupational Health and Safety	All civil works and associated activities	Worker injuries	▪ The Contractor should prepare an emergency prevention and preparedness plan to include protocols and standard operating procedures (SOPs) to respond to emergency events such as fire, earthquakes, mudslides and sudden	Number, nature and types of incidents and accidents	Safety training, tool-box talks, OHS plans	Root-cause analysis report for each incident	Contractor EHS Officer	Good industry practice

ES Aspect	Source of impacts	Potential Impacts/ issues	Mitigation Measures/ action plan	Performance indicators	Monitoring requirements	Reporting	Responsibility[31]	Cost Estimate (USD)[32]
			outbreak of infectious diseases among workers. ▪ Trainings on the Standard Operation Procedures (SOPs) and other related procedures should be provided to all categories of project workers. ▪ Proper and relevant signage should be posted in all public spaces mandating hygiene and PPE use and the contractor should ensure availability of adequate supplies of PPEs. ▪ The Contractor should prepare an OHSP to include procedures on incident investigation and reporting, recording and reporting of non-conformances, emergency preparedness and response procedures, and continuous worker training/awareness. OHS measures applying to the Project should be set out in the bidding documents. ▪					
Vulnerable and Marginalized Groups	Construction activities and improved standard of living	▪ Limited movement of the disabled and elderly during construction ▪ Increased risk of girl trafficking	▪ Enforce the laws protecting child rights. ▪ Provide alternative access points for the elderly and disabled people	▪ Number of abduction incidents reported ▪ Number of access complaints launched by disabled persons or elderly people	▪ Random inspection of the construction site ▪ Regular visits to the local government	Monthly reports	Contractor's social officer	200,000
Road Traffic & Safety	Construction activities	▪ Traffic flow interruptions in urban areas ▪ Lack of or limited access to properties ▪ High cost of transport	▪ Develop and implement site-specific traffic management plan. ▪ Communicate of any interruptions or road closures to the public in advance and provide alternative routes. ▪ Provide temporary access to facilities. ▪ Conduct road safety awareness campaigns in the community.	▪ Number of traffic flow interruption ▪ Number of complaints launched on lack of access to properties	▪ Regular road inspection ▪ Location of traffic police at critical urban centers to manage traffic	Monthly reports	Contractor's social officer	300,000

ES Aspect	Source of impacts	Potential Impacts/ issues	Mitigation Measures/ action plan	Performance indicators	Monitoring requirements	Reporting	Responsibility[31]	Cost Estimate (USD)[32]
			▪ Collaborate with the traffic police (or equivalent authorities) to assist in management of traffic along the road. ▪ Maintain project fleet in good condition (road worth).					
GBV/SEAH	Conflicts among workers and community members Cultural practice Improved financial status Increased drug abuse	▪ Increase in child marriages ▪ Increase in GBV/SEAH cases among community members and project workers	▪ Sensitize community and project staff on GBV and cons of child marriages ▪ All staff to sign the Code of Conduct ▪ Develop a project GBV and SEAH Prevention & Response Action Plan.	▪ New workers to the project ▪ Number of child marriages that have occurred within the construction period among communities in the project area ▪ Number of GBV/SEAH related cases reported ▪ Number of workers who have signed the Code of Conduct ▪ Implementation of the GBV/SEAH policy by the contractor	▪ Random visit to communities ▪ Random visit to the HR and review of HR records	Monthly	Contractor's Social Officer	600,000
Cultural Heritage	Construction activities	▪ Destruction of trees of cultural value ▪ Displacement of traditional places of sacrifice	▪ Implement Chance Find Procedures ▪ Sensitize project workers on the importance of cultural heritage	▪ Number of cultural heritages identified ▪ Number of cultural ceremonies undertaken ▪ Number of cultural trees displaced and	▪ Regular recording of cultural heritage discovered ▪ Visual recording of the cultural ceremonies undertaken	Monthly	Contractor's Social Officer	200,000

ES Aspect	Source of impacts	Potential Impacts/ issues	Mitigation Measures/ action plan	Performance indicators	Monitoring requirements	Reporting	Responsibility[31]	Cost Estimate (USD)[32]
				compensated for by the project				

Table 9 - 2:Operation Phase ESMP

Environmental Aspect	Source of impacts	Potential Impacts/issues	Mitigation Measures/action plan	Performance indicators	Monitoring requirements	reporting	Responsibility	Cost (USD)
Biophysical Environment								
Air Quality	Increased vehicular traffic	Increased emissions (CO_2, NO_x, etc.)	▪ Promote use of clean fuels ▪ Enforce speed limits Maintain vehicles	▪ Tests of air quality. ▪ Air quality within regulatory limits	Air quality monitoring along the road	Quarterly environmental audit	Transport Authority (MRB)	TBD
Landscape and Visual Intrusion	Road operations, poorly maintained vegetation	Aesthetic degradation, loss of scenic views	Regular maintenance of vegetation along the road, limit advertising boards, design roads to blend with surroundings	▪ Area vegetated. ▪ Well-maintained landscape, minimal visual pollution	Annual landscape and visual quality assessments	Annual environmental audits	Road Maintenance Authority (MRB), County and State Roads Departments	TBD
Soil Degradation	Road surface runoff, vehicle movement	Soil erosion, degradation of roadside	Maintain drainage systems to prevent runoff erosion, periodic road maintenance	Functional drainage systems, no visible erosion	Annual road and drainage inspections	Annual monitoring reports	Road Maintenance Authority	TBD
Water Resources	Road runoff	Water contamination from pollutants and debris	▪ Install and maintain drainage systems ▪ Regular cleaning of silt traps	Water quality within regulatory standards	Regular inspection of drainage systems	Quarterly water quality reports	Road Maintenance Authority (MRB), County and State Roads Departments	TBD
Waste Generation & Management	Accumulation of roadside waste	Public health and aesthetic degradation	▪ Provide waste collection points ▪ Promote public awareness on waste disposal	Clean and safe roadside environment	Regular waste collection and inspection	Quarterly waste management reports	Road Maintenance Authority (MRB), County and State Roads Departments	TBD

Environmental Aspect		Source of impacts	Potential Impacts/issues	Mitigation Measures/action plan	Performance indicators	Monitoring requirements	reporting	Responsibility	Cost (USD)
Noise Gerneration		Increased traffic	Long-term noise pollution near residential/schools /hospitals areas	▪ Install noise barriers (sensitive receptors - Hospital& school) near the road project ▪ Enforce speed limits ▪ Designate truck lanes	Noise levels within acceptable limits	Regular noise monitoring at sensitive locations	Annual noise reports	Road Maintenance Authority (MRB), County and State Roads Departments	TBD
Flora		Road operations, increased vehicular activity	Encroachment on roadside vegetation, spread of invasive species	Regular maintenance of roadside vegetation, prevent invasive species spread by implementing biosecurity measures, planting of native flora	Healthy roadside vegetation, control of invasive species	Quarterly monitoring of roadside vegetation health and invasive species presence	Quarterly environmental reports	Road Maintenance Authority/Forestry Specialist(MRB), County and State Roads Departments	TBD
Fauna	Terrestrial	Increased vehicle traffic	Increased wildlife-vehicle collisions, habitat fragmentation	Install wildlife crossing signs, maintain speed limits in wildlife areas, periodic road inspections for wildlife crossings	Fewer reported collisions, functioning wildlife crossings	Quarterly wildlife collision reports, inspections of crossing areas	Wildlife monitoring report	Road Maintenance Authority (MRB), County and State Roads Departments	TBD
	Aquatic	Runoff from roads into water bodies	Water pollution, habitat degradation	Regular maintenance of road drainage systems to prevent contamination, prohibit dumping near water bodies	Water quality within limits	Bi-annual water quality testing at sensitive locations	Water quality report	Road Maintenance Authority (MRB), County and State Roads Departments	TBD
	Avifauna	Noise and disturbance from vehicles	Disruption to bird nesting and migration	Establish bird-friendly crossings, maintain speed limits, buffer zones near sensitive avifauna habitats	Reduced disturbances to bird populations	Bird population monitoring annually	Avifauna monitoring report	Road Maintenance Authority (MRB), County and State Roads Departments	TBD
Socio-economic aspects									
Water Use/ Source		Emergence of a water market	Competition among informal players to sell the commodity	Develop regulations to manage pricing and provision of the resource to the public	▪ Number of private water suppliers ▪ Price charged to the consumer	Regular inspection on the water quality and price charged to consumers	Water Quality Report	Water Authority & Road Maintenance Authority (MRB)	TBD
Land Use & Land Cover		Privatization of land and shift from agriculture to commercial	Limited access to pasture and water for livestock.	Promote sustainable agricultural practices among both farmers and livestock keepers.	Number of conflicts arising from trespass to private land by	Continuous awareness on land issues among communities	Quartely Social Reports	Land Ministry & Road Maintenance Authority (MRB)	TBD

Environmental Aspect	Source of impacts	Potential Impacts/issues	Mitigation Measures/action plan	Performance indicators	Monitoring requirements	reporting	Responsibility	Cost (USD)
	development and mining.			livestock keepers.				
Land tenure	Change in land ownership	Increased privatization that will encourage illegal land grabbing and illegal process of transfer of ownership	▪ State and Local Governments in collaboration with the project implementation unit need to spearhead land related matters. ▪ The Aboloni (communal landlords) to continue regulating land issues	Number of Land cases reported and resolves at the Lands court	Quarterly land cases resolution	Quartely Social Reports	Land Ministry & Road Maintenance Authority (MRB)	TBD
Demography & Ethnicity	Inter-ethnic conflicts	▪ Disruption in flow of goods and services ▪ Shortage of goods and services	▪ Enhance peace building initiatives ▪ Promote inter community dialogue	▪ Number of community conflicts ▪ Number of peace forums	▪ Regular surveillance along the road of the known hotspots for conflicts. ▪ Establishment of police posts along the road corridor	Quartely Social Reports	Road Maintenance Authority (MRB)	TBD
Livelihood Activities	Changes in sources of income due to upcoming developments	Rise of new businesses may edge out the small scale traders like in the mining industry.	▪ Conduct entrepreneurship training among the communities to boost their knowledge and skills ▪ Offer loans and financial assistance to aid with sustainable business development (start-up and growth)	▪ Number of entrepreneurship training and financial literacy trainings ▪ Number of locals who apply and qualify for loans and other financial assistance	Monthly visits to the established business among the trainees	Quartely Social Reports	Road Maintenance Authority (MRB)	TBD
Socio-Economic Development	Lack of socio-economic development infrastructure and facilities	▪ Limited or no access to social services ▪ Lack of policies to attract investors	Government to invest in socio-economic infrastructure along the road corridor.	▪ Number of investors setting up new businesses or developments in the project area or venturing into mining	Annual road inspections	Quarterly Social reports	Road Maintenance Authority (MRB)	TBD

Environmental Aspect	Source of impacts	Potential Impacts/issues	Mitigation Measures/action plan	Performance indicators	Monitoring requirements	reporting	Responsibility	Cost (USD)
				▪ Passing of favourable laws to boost trade and investment in the region				
Education	Improved road conditions	▪ Increased risk of road accidents to school children ▪ Increased access to intoxicating substances	▪ Put up clear road signages and enhance safety measures around schools ▪ Awareness creation on the dangers of substance abuse.	Number of road accidents reported near learning institutions or involving school children	Regular road inspections	Quarterly Social reports	Road Maintenance Authority (MRB)	TBD
Community Health & Safety	Unrehabilitated borrow pits	▪ Increased crowding in existing health facilities. ▪ Developing of new disease infections ▪ Increased unavailability of drugs ▪ Increase in HIV/AIDS cases ▪ Increases in STIs infections ▪ Increase in morbidity and mortality ▪ Increase in communicable diseases	▪ Project support expansion of existing health facilities ▪ Project support construction of new health facilities ▪ Support procurement of drugs ▪ Awareness creation ▪ Increase access to health information and services ▪ Provide preventive and protective services ▪ Create support links with existing health service providers	▪ Number of health facilities supported ▪ Number of awareness creation sessions held. ▪ Number of new infections ▪ Number testing for infections ▪ Number utilizing protective services	Regular community health checks	Quarterly Social reports	Road Maintenance Authority (MRB)	TBD
Vulnerable and Disadvantaged Groups	Vehicles moving at high speeds and discrimination in employment	▪ Risk of being involved in road accidents ▪ Lack of employment opportunities	Provide designated crossing points for pedestrians and regulate speeds at those points.	Number of road accidents involving the vulnerable people	Road inspections	Quarterly Social reports	Road Maintenance Authority (MRB)	TBD
Road Traffic & Safety	Vehicular traffic	▪ Increase in localized safety threats in	▪ Install lighting/increase lighting in roadside settlements	▪ Number of localized safety	Inspection of road and	Quarterly Social reports	Road Maintenance Authority (MRB)	TBD

Environmental Aspect	Source of impacts	Potential Impacts/issues	Mitigation Measures/action plan	Performance indicators	Monitoring requirements	reporting	Responsibility	Cost (USD)
		roadside settlements ▪ Increased road accidents ▪ Community members blocking roads ▪ Increased road accidents involving livestock. ▪ Livestock owners blocking the roads in protest	▪ Road safety awareness creation ▪ Road signs ▪ Provide facilities for non-motorized transport ▪ Awareness creation among livestock keepers ▪ Awareness creation among all motorists ▪ Road signs for livestock crossing areas	incidents reported ▪ Number of accidents ▪ Number of livestock involved ▪ Number of road accidents ▪ Number of road blockages Number of road fatalities	furniture conditions			
GBV/SEAH	Increased movement of people and available job opportunities	▪ Increase in cases of GBV and SEAH among workers and community members ▪ Increase in child trafficking cases	▪ Sensitize community, project staff on gender-based violence ▪ Employers to have all staff sign a Code of Conduct. ▪ Employers to develop a GBV and SEAH policy.	▪ Number of cases reported ▪ Process of induction of workers	Community awareness campaigns	Quarterly Social reports	Road Maintenance Authority (MRB)	TBD
Cultural Heritage	Unidentified cultural heritage	▪ Risk of trafficking of artefacts of cultural value ▪ Interference with cultural heritage such as cutting of trees	▪ Implement Chance Finds Procedure. ▪ Sensitise project workers on the importance of cultural heritage.	Number of cultural heritages identified both tangible and intangible	Road inspection	Quarterly Social reports	Road Maintenance Authority (MRB)	TBD

9.7 Decommissioning – Management Guidelines

Road projects are designed for up to twenty years and decommissioning of the proposed road project is not foreseen. Likely options after the design life would be rehabilitation or reconstruction. However, should decommissioning be necessary, the risks and impacts would be similar to those of construction phase. The proponent shall prepare a decommissioning plan should this unlikely situation arise.

The project's auxiliary facilities will be decommissioned upon commissioning of the upgraded road. The contractor shall prepare commissioning plans for material sites, camps, storage areas etc to the satisfaction of local authorities as applicable and the client. The approach/ measures shall include:

- Scoping: consultative process to discuss the scope of the decommissioning action for all project components, including the schedule, budget, risks and approach for performing the work.
- Facility/infrastructure walk-down: Site personnel would perform a facility walk down to obtain the information necessary to prepare the hazard assessment and the Reconnaissance Level Characterization Report (RLCR). Safety and physical hazards at the sites would be identified as part of the initial project reconnaissance. The safety and physical hazard assessment would help site personnel determine the possible risks to workers, the public and the environment during decommissioning.
- Reconnaissance level characterization: an overall assessment of the hazards, and other conditions associated with each structure/facility to be decommissioned. The physical condition of the facilities would be assessed in order to identify hazards, as well as physical obstacles or other conditions that could affect decommissioning activities. The Reconnaissance Level Characterization would include a detailed review of hazards that require special work controls to complete decommissioning safely.
- Prepare reconnaissance level characterization report: Based on the Reconnaissance Level Characterization, the proponent(s) would prepare a report summarizing the results of the Reconnaissance Level Characterization and provides an analysis of the risks presented by the facility/project.
- Perform physical work of disposition operations: these activities include, for example, excavation, dismantling, demolition and removal of components. After demonstration that the structure/facility meets the established criteria, it would be demolished or excavated.
- Perform and validate final characterization: At the end of the decommissioning, site personnel would confirm that their activities have achieved the standard required in the completion of disposition for structures/facilities that are demolished such that only environmental restoration activities remain.
- Environmental restoration: constitutes those activities necessary to characterize, assess and remediate contamination in soils, sediments, surface and ground water from past activities at the site. It may also entail reinstatement and re-vegetation of the site(s) through planting of indigenous trees and shrubs. Re-vegetation would be carried out to the extent determined by the proposed future use of the sites.

9.8 Environmental & Social Performance Monitoring

Environmental and social monitoring should is an integral part of E&S management during the construction phase. E&S Management and Monitoring is designed to address those construction activities which have the potential to adversely affect the environment and to ensure compliance with relevant conditions that may be prescribed by the MRB, the WB and other government agencies.

Monitoring programmes are to be used to guide the management of E&S effects and gauge the level of environmental and social performance. In particular, the programmes afford a mechanism by which to aid in the early identification of potential environmental and social issues and allow the effectiveness of environmental and social measures to be evaluated and amended, if required.

Specifically, the environmental and social monitoring programme aims to:

- Detect the type and extent of environmental change and, specifically, identify those changes directly resulting from road construction projects.
- Verify 'actual' versus 'predicted' levels of environmental change arising from construction activities.

- Supplement the assessment of the effectiveness of environmental management being implemented during the project's construction.
- Provide an evidence base from which compliance to the CESMP and other environmental performance standards can be demonstrated.

Internal and external E&S monitoring to be undertaken during construction should be structured and systematic, scientifically rigorous, statistically valid and conducted by suitably qualified and experienced personnel. Each E&S monitoring programme should be periodically reviewed and modified to provide the necessary assurance and confidence of its continued appropriateness. Such reviews should consider the required frequency and duration of monitoring, conformance with requisite permit/licensing conditions and evaluate the ongoing need for individual programmes.

Copies of the records of all monitoring activities should be maintained by the MRB Environment & Social Manager and the SE to facilitate the audit and reporting programme.

9.8.1 Auditing and Compliance Checks

The PIU should implement a robust programme of compliance auditing and reporting throughout the project construction phase to demonstrate the effectiveness of site-based E&S management programme(s). A structured and systematic internal and external audit programme should be implemented to:

- Periodically assess environmental and social management practices being implemented with a particular focus on their effectiveness and legal compliance.
- Check the currency of all environmental and social management practices, documentation, reports/registers etc.
- Evaluate the performance of environmental and social management practices against objectives and targets.
- Identify continual improvement and better practices.
- Review the frequency and content of training, together with qualifications of the nominated trainers.
- Review the causes of environmental incidents such as spills and compliance failures and assess the effectiveness of response plans and gauge whether any lessons-learnt are being disseminated and applied.
- Identify and communicate any major environmental and social priorities to senior management.

A proposed audit and reporting programme is presented in Table 9-3.

Table 9 - 3: Suggested ESMP Audit and Reporting Programme

Type	Content	Submission To	Responsibility
Daily Environmental and Social Report	Daily log of activities, visual observations, records using checklist pro-forma, identification of specific issues/incidents, forward planning/scheduling.	Contractor Site Manager/ Foreman, Construction Manager/Supervisor	Contractor
Weekly Environmental and Social Report	Similar to the above with a more comprehensive summary of priority actions, issues of concern and review of completed/scheduled environmental management measures and controls.	Contractor Site Manager/Foreman, Construction Manager/Supervisor	Contractor
Environmental and Social Incident Report (as required)	Catalogue issues, practices and incidents which have posed or caused environmental harm. Record the procedures and corrective actions implemented to address the incident or occurrence. This is inclusive of	MRB Environment and Social Manager and Construction Manager/Supervisor	Contractor

	corrective action reporting and follow-up.		
Monthly Environmental and Social Monitoring Report	Formal summary of monitoring data and level of CESMP implementation and legal compliance. Record of any significant milestones, incidents and follow-up.	MRB E&S Manager, Contractor Site Manager/Foreman, Construction Manager/Supervisor	Contractor
Quarterly Environmental and Social Monitoring Report	As above with the inclusion of environmental management and programme performance.	MRB E&S Manager and Construction Manager/Supervisor	Contractor Site Manager/ Foreman and Construction Manager/ Supervisor
Six Monthly Progress Report	Formal progress update, level of compliance with regard to monitoring, compliant and environmental incident handling, correction and follow-up. Overall performance evaluation on the effectiveness of the CESMP and its implementation.	MRB E&S Manager and Construction Manager/Supervisor/ Government Inspection Officer	Contractor Site Manager/ Foreman and Construction Manager/ Supervisor
Independent Environmental and Social Audit	Formal third party audit procedure and independent report to monitor legal compliance against relevant ESIA prescriptions and World Bank ESS, the incidence of non-compliance and their correction, the handling and response to complaints and occurrence of environmental incidents in terms of types and again the effectiveness and responsiveness of corrective actions procedures and reporting.	MRB E&S Manager and Construction Manager/ Supervisor, Contractor Site Manager/ Foreman,	Ministry of Environment Inspection Officer

9.8.2 Non-conformance and Corrective Action

Where environmental and social monitoring, audits, ad-hoc observations and/or any activity and incident indicates deficient performance, performance that does not conform with environmental and social management requirements set out in the Contractors CESMP or related documents such as ESIA Report (which should be read in conjunction with this document) or that further improvement in performance is necessary, corrective action should be implemented. Appropriate corrective action procedures should therefore be established to:

- Determine the cause of any recorded non-conformance.
- Define and assign the appropriate level of responsibility and authority for investigation and implementation.
- Establish requirements for recording non-compliance.
- Identify and implement appropriate corrective action(s).
- Initiate preventative actions.
- Apply controls to ensure that preventative actions developed for ‘futureproofing’.
- Update written procedure resulting from the corrective action and amend this CESMP, as required.

Non-conformance classifications applicable to this ESMP implementation are shown in Table 9-4.

Table 9 - 4: Non-Compliance Classifications

Classification	Descriptors	Responsibility
Major Non-Conformance (any one of the points listed)	Significant adverse effect on health and safety of personnel, suppliers and contractors; ▪ Contravenes ESIA recommendations with risk of penalties, fines or enforcement actions being issued; ▪ Breaches and/or environmental effects which could be irreversible and costly to fix; ▪ Significant level of legitimate and valid complaints raised by stakeholders and the public; ▪ Public image of MRB is adversely affected.	MRB Environment Manager
Minor Non-Conformance	▪ Breaches and/or environmental and social effects are easily reversible; ▪ Minor irritation or nuisance to the local community or sensitive environmental receptors; ▪ Health and safety of personnel, suppliers and contractors not placed at significant risk; ▪ Public image of MRB remains unaffected.	MRB Environment and Social Manager or Construction Manager/ Supervisor

Where environmental and social management practices, measures and controls are identified as being inefficient or generating non-conformance, the contractor should raise and issue an Environmental and Social Improvement Request to remedy the situation. All Environmental Improvement Requests should be logged on a register maintained by the Contractor and the SE.

9.8.3 Emergency Preparedness and Response

The Contractor should prepare and Emergency Preparedness and Response Plan to establish and maintain procedures which clearly document the protocols for identifying and responding to environmental incidents and emergency situations, and for preventing or mitigating environmental and social effects resulting from the construction works. These should be agreed by the Contractor with MRB prior to the commencement of construction works. Part of the environmental induction and training should be dedicated to ensuring that all of the Contractor's site personnel are well versed in environmental emergency response and understand their individual responsibilities.

Such procedures should include:

- Lists of key personnel and their responsibilities.
- Availability of emergency services or specialist contractors registered for site containment and clean-up.
- Procedures for communicating both internally within the Contracting entity and other key stakeholders such as State Authorities, the public and the media.
- Potential environmental incidents and natural hazards which could give rise to wider reaching effects beyond development site such as landslides and wildfires.
- Hazard information such as safety data sheets.
- Training, monitoring and drills.
- Procedures for controlling incidents and undertaking remediation work.
- Internal and external responsibilities for the follow-up investigation and remediation.

Potential environmental incidents and emergency situations likely to arise as a result of construction activities should be handled as follows:

- All site personnel should immediately report an incident(s) to the Contractor or the SE who should assess the situation and implement the following steps.
- Immediately take all reasonable steps to contain further damage or danger to personnel and the environment.
- Contact relevant emergency service and regulatory authorities and/or clean-up contractors.

- Inform the relevant emergency and regulatory authorities as required by legislation and other environmental approvals (permit/license) conditions.
- Complete a detailed report of the incident using a registered Environmental Incident Form (to be developed by the contractor and approved by the SE) or similar.
- Initiate appropriate and approved corrective action(s) and response measures; and
- Where relevant plan and implement site clean-up and restoration.

9.8.4 Environmental Incident Review and Management

The Contractor should implement a robust environmental and social incident management and investigation process, which focuses on:

- Management roles and responsibilities in environmental incident investigation.
- 'Root-cause' analysis for significant events and near misses.
- Periodic evaluation of incident cause trends to determine where improvements in systems, processes, practices or procedures are warranted.
- Procedures for disseminating knowledge and experience from relevant lessons learned.
- Procedures for follow-up and closure of actions.

Copies of environmental incident reports should be maintained on an 'Environment Incident Register' established by the Contractor and provided to the MRB Environment Manager and any other designated government Officer in accordance with applicable environmental legal duties and statutory obligations.

9.8.5 Review of Environmental and Social Performance

MRB should review the sufficiency and effectiveness of the Contractor CESMP on a monthly basis. The review(s) should be based upon the results of environmental monitoring and audit findings, site-based governance, the suitability and adequacy of resources, site induction and training provisions and Contractor's monthly progress reports. Importantly, the review(s) should also take account of changing circumstances, particularly with regard to organisational changes, the refinement of construction activities or use of different work methods, the availability of new technology, and introduction of new or amended regulatory requirements.

The Contractor is responsible for developing and submitting the CESMP to the SE for review. Continual review and approval of the Contractor's CESMP by the RE is a critical part of the legal compliance and governance process to be applied throughout the 'full life-cycle' of project construction from enabling works through to site/facility commissioning and handover. If changes are required, the Contractor is to submit a revised version or versions of its CESMP to RE for sign-off.

Any MRB approved variations of the CESMP must be implemented by the Contractor with the appropriate measures/actions recorded for future audit compliance purposes.

9.8.6 Requirements for Environmental Sign-off and Site Handover

A summary report, based on the Contractor's implementation of the CESMP (including monitoring data summary; complaints and non-conformance records) and a final inspection report should be supplied by the Contractor to MRB at the completion of construction works. The summary report is to be issued to the MRB Environment Manager for review and comment prior to it being finalized.

9.9 E&S Management Sub-Plans to be Developed by the Contractor

This section describes the management plans that shall be prepared by the contractor prior to construction commencement. Preparation of the plans shall be the responsibility of the contractor and shall be submitted to the supervision consultant for approval prior to implementation. The provisions provided in the subsequent sections are intended to serve as guidance to the contractor for preparation of the site specific respective management plans which shall be implemented alongside the construction environmental amanagement plan. The plans are presented in the following sections.

9.9.1 Water Resources Management Plan

The water management plan is prepared to provide guidance on management of water resources within the project environment. These guidelines will relate to management of water availability, quality and quantity of the water sources utilized for the project area. These will relate to the abstraction points for the surface water resources and boreholes as well as project drainage structures.

The objective of the water management plan is to, among others:

- Identify the water resources (both surface and groundwater) within the vicinity of the project that may be affected by the project.
- Outline project activities that are likely to result in deterioration of the quality and quantity of water resources within the project environment.
- To encourage efficient use of the water resources within the project area.
- To assist with compliance to the South Sudanese and International Legislations.
- Minimize impacts on livelihoods of communities within the project area.

The contractor shall develop a water management plan that specifies the project activities likely to result in water quality impacts. These shall include but shall not be limited to;

- Bridge Construction works on all major water course.
- Uncontrolled discharges from the campsite, bulk fuel storage sites and the concrete batching plants.
- Sediments and silt washed downstream by runoff with potential for siltation and sedimentation of the water sources.
- Inadequate and improper use of sanitation facilities.

9.9.2 Blasting Management Plan

The Contractor shall also prepare a blast management plan. The plan is a risk control measure to ensure that people are not harmed in a blasting events at the quarries, borrow pits and at work sites and damage to property is limited. The guidance provided therefore is expected to assist in planning a safe blasting event within the defined site.

The objectives of the blasting management plan shall include among others:

- To identify hazards and risks associated with blasting.
- To identify control or mitigation measures during blasting.
- To Identify site-specific requirements.
- To control the blast process from design to initiation and in the event of a misfire.
- To comply with the approval specifications.
- To ensure safety of the public, site personnel and surrounding properties.
- To implement a review process to ensure that the objectives are met.

The common blasting risks that may result in the injuries and damage to property include but are not limited to;

- Unauthorized access to the blasting site.
- Blasting conducted by unqualified personnel.
- Inadequate warning of blasting to the local community.
- Flying or splitting rocks causing damage to property or injuries.
- Unauthorised access to blast area.
- Damage to structures

9.9.3 Rehabilitation and Restoration Plan

The overall objective of rehabilitation is to restore land damaged during construction to its pre- existing condition as far as reasonably practicable, to enhance social land uses and biodiversity recovery.

The specific objectives of the rehabilitation will be to:

- Leave a safe environment for humans and animals.
- Stabilise the soil surface and prevent erosion and sedimentation of aquatic habitats.
- Prevent soil, surface water and groundwater contamination by effectively managing spills during the entire construction phase of the proposed Project.
- Establish a diversity of locally indigenous plant species within rehabilitated sites, without infestations of undesirable invasive alien plants (IAPs).
- Comply with regulatory requirements and international good practice standards.

The proposed Project extends over terrestrial and aquatic habitats. Construction activities will involve the movement of materials, equipment, machinery, vehicles and people along the length of the proposed Project alignment. Construction activities will impact on these habitats either directly or indirectly, through vegetation clearing, excavation works, exposure of soils to erosion or alien plant invasion; and accidental / unintentional pollution with construction solid waste, litter and polluted effluent.

9.9.4 Air Quality Management Plan

The overall objective for air quality management during the construction is to preserve air quality levels to the extent that impacts on the closest and/or most affected receptors situated in the vicinity of the project and associated construction infrastructure are minimized. Furthermore a key objective is to keep local communities and the regulators informed of the activities and to respond quickly and effectively to issues and complaints.

Construction activities are to be conducted in a manner that air quality emissions comply with performance criteria established for air quality both locally and to the international standards. It also important to note that the financier air quality regulation should also be observed.

For operations, air quality management is related to clean up of spills on the road surface, maintenance of vehicle speed, and most significantly, the reduction of congestion.

With regard to construction activities, there are potential impacts associated with dust emissions:

- Exposure of soils during site clearance and construction.
- Crushing of aggregate and extraction of borrow material.
- Vehicle movement over unpaved surfaces, including on temporary by-passes.
- Vehicles exhaust emissions.
- Exhaust emissions from diesel powered generators used during construction.
- Transport, handling and stockpiling of friable materials required for construction.

9.9.5 Noise Management Plan

The primary objective for noise and vibration management during construction is to minimize the impact on the closest and/or most affected noise sensitive receptor situated in the vicinity of the proposed project and associated construction infrastructure are minimized. Furthermore, a key objective is to keep local communities and regulators informed of activities and to respond quickly and effectively to the issues and grievances.

The emphasis of noise and vibration management is to minimize the impact and to demonstrate that the impact has been reduced to a level that is low as reasonably practicable.

During the construction most of noise and vibration emission sources will be influenced;

- Construction noise from construction camps and associated plants.
- Construction noise from active work sites along the proposed road.
- Noise and vibration from blasting required for quarrying and road construction earthworks.
- Noise and vibration from pilling and use of vibrator compactor.

9.9.6 Waste Management Plan

A waste management plan guidance shall be prepared to provide direction for preparation of a waste management plan by the contractor. The waste management plan shall seek to identify the project waste streams and propose management of the waste to avoid environmental pollution and visual intrusion associated with improper waste management. The plan shall ensure hazardous waste is identified, segregated and managed in line with national and/or international practices due to high risks posed to environment including risk to human health. It alo seeks to provide guidance on the principles of waste management.

The objectives of the plan will be to:

- Identify and document the various waste streams within the project.

- Propose effective waste management measures applicable within the project.
- Define waste disposal measures for each waste stream including those by third parties.
- Ensure that impacts of waste to natural resources e.g. water, soil are minimized.
- Promote sustainability through efficient use of resources by promoting the principles of reduce, reuse, recycle.
- Define mechanisms for disposal of hazardous waste.

The contractor shall develop a waste management plan that specifies the project activities likely to result in waste management impacts. These shall include but shall not be limited to Site clearance; Camp operations; Workshops; Civil works; Quarrying and stone crushing; Borrowing soft materials; Batching plant operations.

9.9.7 Land Acquisition Plan and/or Livelihood Restoration Plan

The contractor will be expected to acquire land for the main camp, sub-camps, borrow pits, quarries etc from the genuine land owners. Since land is mainly communal the Contractor will be expected to follow the laid down procedure for acquiring land. In the case of community land the respective landlord (aboloni) is the gateway to access community land. The land acquisition process shall be communally driven (hold community meetings, write minutes of agreements); This will forestall any other individual claimants to land and lock out brokers. The head of the Payam and Boma shall be part of this process. A mutually accepted Agreement shall be signed between the Contractor and the Community Representatives on behalf of the community. The Contractor shall refrain from having deals with individual community members. In case of private land the Contractor shall directly enter into negotiation with the bonafide land owner for acquisition

9.9.8 Community Health, Safety and Security Plan

A community health safety and security management plan has been prepared as a guidance (provided in Appendix I). The contractor will prepare a detailed plan to elaborate the health and safety measures from the community perspective only. Health and safety applicable to the personnel have been documented separately in an occupational, safety and health plan as Appendix H. The plan guidance aims to establish linkages between the project activities and potential risks while seeking to propose management measures that may be adopted and streamlined for implementation in the project through preparation of the CESMP.

The objectives of the plan are to:

- Avoid or limit risks to, and impacts on, the health, safety and security of the community during the construction phase from both routine and non-routine circumstances.
- Ensure that safeguarding of personnel and property is conducted in an appropriate manner that avoids or limits risks to the community's safety and security.
- Maintain a monitoring and evaluation program that is community-based, participatory, transparent and covers construction and operational phases of the project.

The project's construction activities will expose the members of the community to health and safety risks. This may arise if community members enter or access work areas and get exposed to open excavations, polluted water/land, waste disposal, material site development, construction workers interaction with the community, security, etc.

9.9.9 Labour Management Plan

The main objective of this plan is to maintain and promote worker health, safety and rights throughout the Project development. An OSH plan has been developed as part of this ESIA and should inform the labour management plan.

The objectives of the plan are:

- To provide a framework to continuously identify, evaluate and prioritise the risks and impacts related to the labour and working conditions of workers.
- Implement measures to prevent and avoid incidents, fatalities and conflicts that may cause harm to the workforce and local communities.
- To provide a foundation for implementing worker rights, in particular in relation to working conditions and freedom of association.
- Ensure that gender is mainstreamed into worker rights, recruitment and occupational health and safety to ensure that conditions meet specific gender needs and that women also have an opportunity to access job opportunities and are free from discrimination and harassment.
- To provide performance indicators, monitoring requirements and review procedures for activities associated with labour and working conditions.

- Facilitate protection for the workforce in relation to child and forced labour, as well as supply chain risks.
- Provide the government authorities and stakeholders with assurance that mitigation measures will be addressed, are achievable, and a common basis for measuring compliance with specific mitigation requirements in relation to labour and working conditions.
- Ensure that worker accommodation is provided in line with IFC/EBRD Worker Accommodation Guidance.
- Maximise the opportunity for local labour.

The main Project activities leading to impacts related to labour and working conditions are as follows:

- Poor occupational health and safety practices that may lead to injury or death of workers.
- Unfair working conditions related to pay, working hours and benefits leading to worker strikes, project delays and human rights violations.
- Unfair recruitment procedures that do not consider the local community or gender equality and discrimination based on ethnicity, religion, disability, age and cultural factors that may lead to conflict between the Project workers and local community.
- Community-workforce interaction, with expatriates/non-locals that may engage with sex workers or young women from local communities, particularly those residing close to the road reserve and in populated areas such as Torit and Kapoeta.
- Worker health and wellbeing associated with camp accommodation and the condition of facilities available, to cater for their needs. This includes consideration of male and female needs that are tailored to meet gender specific requirements.
- Risk associated with child and forced labour directly through the Project workforce and throughout the supply chain.

9.10 E&S Management Sub-Plans to be Developed by Employer

9.10.1 Gender, GBV, SEA & SH Prevention and Response Plan

The borrower will develop the Gender, GBV and SEAH Prevention and Response Plan prior construction phase to ensure that gender is mainstreamed in all aspects of the project to enhance sustainability, create equal opportunities and equal access to project benefits for men and women, ensure that women are not adversely impacted by the project and to mitigate gender specific risks that may impact on the success of the project.

Further the Plan will aim at eliminating GBV, SEA & SH within project staff and between project staff and residents. The main objectives of the Plan should include:

- Mainstreaming gender into all aspects of the project to enhance equal opportunities and mitigate gender specific project risks.
- Establishing gender specific goals and objectives that the project is required to adhere to.
- Ensuring that gender specific project impacts are measured through performance indicators and that issues are addressed where required; and
- Creating awareness of specific national and international requirements, the gender context and the importance of mainstreaming gender.
- Creating awareness on GBV and SEAH amongst staff and having a mechanism of dealing with reported cases of GBV and SEAH.

This Plan should be considered to be a “live” document that is amended in light of the learning experienced during its implementation.

The proposed road upgrading activities will result to physical and economic displacement of structures and businesses (e.g. informal traders and residents present along the road reserve). The displacement or resettlement impacts will have the potential to trigger human rights issues (e.g. food insecurity, community health, safety and security, and gender-based violence (GBV)), which could have reputational implications on the Contractor and MRB, and the lenders. Construction activities are likely to attract majority of male labour force since construction work is generally viewed as a male dominated industry. This may result to fewer opportunities for women to work on the project either directly (e.g. housekeeping, cleaning and store management) or indirectly (e.g. vending food to workers).

9.11 Capacity Building Need Assessment

The project road is under the jurisdiction of the MRB (the project proponent). Therefore, the responsibility for ensuring that mitigation measures specified in this ESMP, and the contract documents are implemented will lie with them. This will be spearheaded by the project implementation unit (PIU) with direct monitoring by the Environmental & Social (E&S) Team.

The E&S team is currently comprised of: Senior Environmental Risk Management Specialist (1No.); National Environmental Risk Management Officer (1No.); and National Social Risk Management Officer (1No.). Their expertise include; Advocacy and lobbying, Biodiversity conservation, Civic and community engagement, Climate risk vulnerability assessment, Environmental and Social Impact Assessment, Environmental conservation, ESMP monitoring and supervision, Health Safety & Environment, Multi-level stakeholder engagement, Occupational health and safety, Policy implementation, Pollution prevention and remediation, Safeguards technical advisory, Social assessment, Training and capacity building.

The proponent is currently enhancing/ broadening the team's expertise through recruitment of: Senior Social Risk Management Specialist (1No.); National Environmental Risk Management Officer (1No.); National Social Risk Management Officer (2No.); Health and Safety Specialist (1No.); and Gender Based Violence Specialist (1No.).

The team is facilitated for both office and field tasks. There is need to establish an organizational structure with clear roles and responsibilities for effective coordination in the oversight of ESMP implementation by contractor(s).

The ES capacity in the ministry can be enhanced through creation of an E&S unit within the Ministry and government staff seconded to the unit. The E&S team capacity building tasks should include trainings, mentorship, exchange programs etc.

As stated above the MRB does not currently have a dedicated department for E&S management. E&S safeguards are currently handled by one sociologist and one environmentalist who have some experience of E&S risk management for Bank-funded projects. They are domiciled within the Engineering Department of the MRB. This capacity is certainly below the required level to support MRB projects, least of all is the proposed project.

However, the implementing agencies' institutional capacity in E&S management require further enhancement and it is expected that during project implementation E&S capacity strengthening as well as hand holding will be required. Since MRB have low capacity in E&S management, there will be need for upfront technical support to the project teams towards adequate assessment and management of environmental and social impacts of the program.

Capacity building should take the form of short-term training modules and practical training on site.

9.12 Training Plan

The following steps should be adopted in capacity building for the MRB.

- Training Consultant with deep knowledge of WB safeguards requirements
- Consultant to assist in hiring MRB E&S Manager
- Consultant and the E&S Manager to assist in hiring additional local E&S specialists to join the Project Implementation team.

The training should address the following areas:

- Trainees should include Expected Clients, Supervision Engineers and MRB E&S internal capacity and their role and responsibilities for addressing E&S risks at all Project stages;
- Requirements for CESMPs based on international standards such as ISO14001;
- Overview of considerations given to E&S requirements in the procurement process;
- Environmental and social requirements directly stipulated under MDB Conditions of Contract for Construction;
- How to identify the ability of Contractors to develop and deliver the project in line with WB requirements during the tendering process;

- Responsibilities relating to supervision and monitoring of Project's E&S performance under FIDIC Conditions of Contract for Construction;
- Practical role of local E&S authorities and inspection agencies in enforcement of local environmental and social requirements;
- Project specific requirements and typical E&S risks for a typical infrastructure construction project;
- Internal Banks guidance in relation to contractor management;
- Examples of documentation, procedures;
- Examples of good practice on site to mitigate typical environmental and social risks at
- infrastructure projects;
- Banks monitoring requirements, E&S reporting and monitoring, good practices; and
- Lessons learned from case studies in the East African region.

The training should be in modules considering different stages and/or activities that will be carried out during all phases of the project. The course will outline possible environmental and social risks but will focus on provision of advice on how to implement good practice and meet WB E&S requirements.

9.13 Environmental and Social Commitment Plan

ESS 1 requires that an Environmental and Social Commitment Plan (ESCP) should be developed during the project preparatory stages and implemented during project execution. The plan should take into account the findings of the environmental and social assessment, the World Bank's environmental and social due diligence, and the results of engagement with stakeholders. An ESCP, which will set out measures and actions required for the project to achieve compliance with the ESSs over a specified timeframe, in this case during the construction phase.

Some proposals of the commitments expected of the project proponent are presented in Section 9.8.

10 Conclusion and Recommendations

10.1 Conclusion

The findings of the ESIA indicate that the project will have strong positive impacts on the social and economic conditions. The most important being integrating the Eastern Equatoria state with the entire South Sudanese economy, the local perception of development in the area could foster peace in the region, efficient link with the port of Mombasa and direct economic gains and employment creation during construction. In the long term, communities living in the area will have easier access to social amenities such as health facilities, schools and government offices.

The project area has huge potential for minerals as demonstrated by artisanal gold mining in Kapoeta and the huge fossil fuel deposits. The road will facilitate more formal prospecting of these minerals and even fossil fuels that can have a huge economic benefit to the region and the country at large. Other benefits include alleviation of road safety concerns and concerns relating to high dust generation, provisions for safe crossings by pedestrians and reduced and comfortable travel time. The other potential positive impact is the opportunity to rehabilitate borrow pits that were abandoned, should the contractor find them still viable. Another significant positive environmental impact is the opportunity to design a climate resilient infrastructure that retains the integrity of the numerous wetlands in the project area. Furthermore, climate resilient design should provide for drainage structures that factors future changes in hydrology to improve the drainage across the project road and integration of soil erosion control structures in erosion prone areas.

However, there are potentially negative impacts of different magnitudes anticipated on the biophysical environment and social conditions. The most notable is the potential impacts on wildlife movements especially the well-established wildlife migration corridors intersecting the project road. It is also estimated that the realignments and the new bypasses, totaling some 68km could take up some 100Ha of woodlands. Although, the loss may not significantly affect ecosystem services being offered by the woodlands since the woodlands are vast, it can, however, have significant localized impact. It is proposed that the vegetation loss should be mitigated by compensatory tree planting in an area three times the loss, equivalent to 300Ha. preferably in community land within a highly degraded area of the woodlands.

The most important potential social impacts relate to land acquisition with attendant compensation issues, temporary disruption and displacement of small-scale informal traders along sections of the corridor through markets and urban centres; temporary and permanent take of agricultural land and livestock grazing areas; disruption and inconveniences to people occasioned by construction traffic and use of diversions. Others are labour issues occasioned by historical hostilities between communities; public safety security risks, GBV/SEAH risks and communicable diseases. All these social impacts can be effectively avoided or mitigated effectively through social risk management instruments that have been developed for the project including GRM, SEP LMP, RAP/LRP, GBV/SEAH Action Plan and proactive planning including prompt compensation of the PAPs. These social risk management instruments for the project apply to the technical studies under the technical Asistance (TA), but will need to be developed for the Juba-Nadapal road construction/implementation phase.

Design considerations for most major crossing have made key considerations including siltation/sediments movement through channels such as the Kidepo River and designs have also made provisions for relieve crossings near major crossings.

Most of the environmental and social management measures proposed are generally straight forward and clearly outlined. Most of the measures relate directly to sound operating practices both during the construction phase and subsequently over the operational life of the road project. The Management Plans that have been developed can guide implementation of sound environmental and social practices to maximize the benefits of the project with minimal or no residual impacts on the project environment. A monitoring plan has also been provided in the ESMP to enable assessment of the project environmental and social performance of the project. Therefore, if the project is implemented with due regard to the proposed mitigation measures it is anticipated that the project will have minimal residual negative impacts on both the socio-economic and biophysical project environment.

10.2 Recommendations

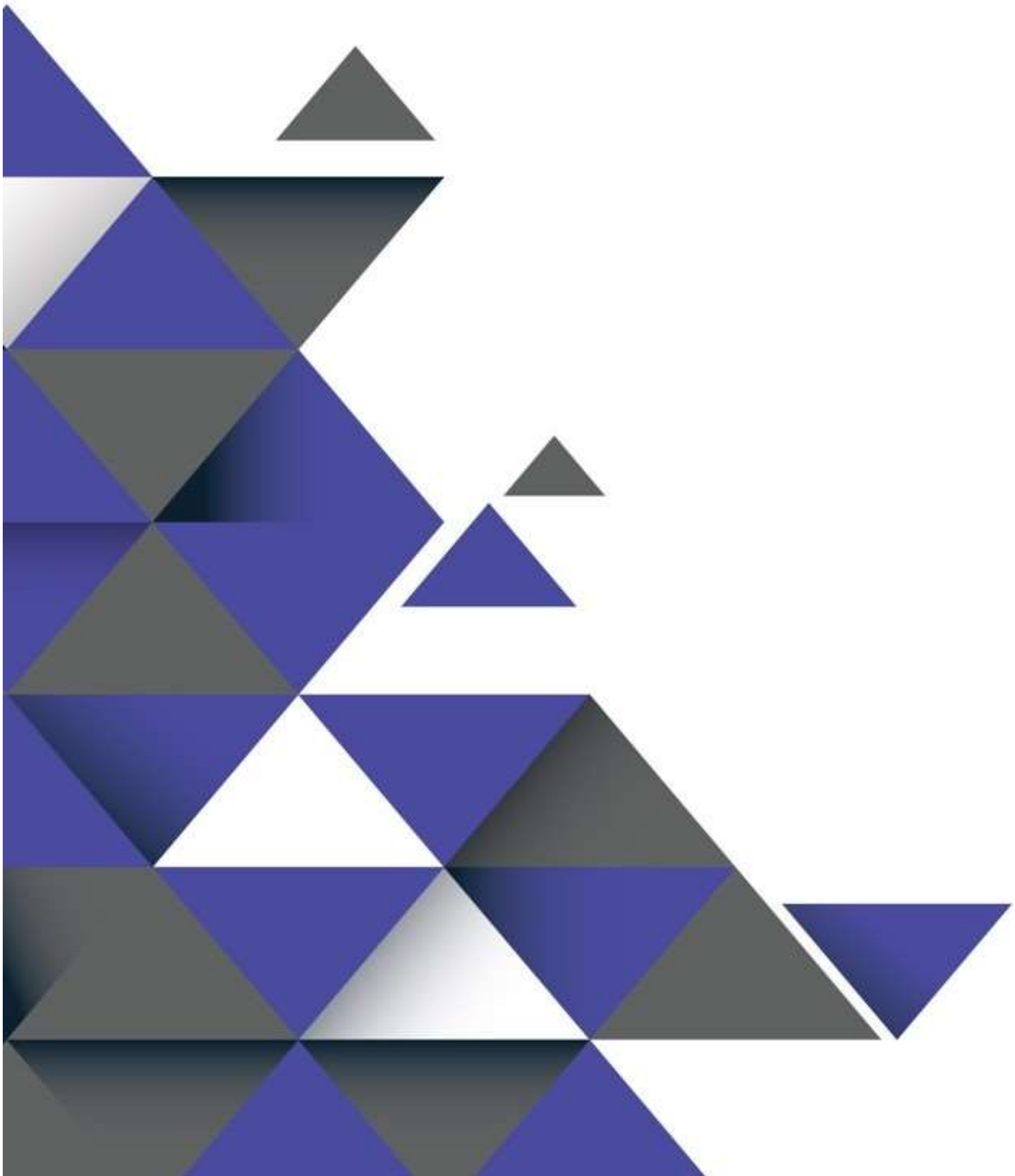
In order to assist both the engineering design team and MRB to develop a sustainable road, the following recommendations are proposed:

- Before any works begin and labour recruited, the contractors should establish a strong, inclusive and well facilitated workers' GRM to help with labour issues and MRB to establish a separate community GRM to address other community concerns that may arise during construction.
- Establish speed humbling features that may include rumble strips at all wildlife crossing areas. These should be complemented by clear wildlife crossing signs.
- Maintain sufficient clearance at the wildlife crossing areas to improve driver visibility to reduce collisions with wildlife.
- Consider compensatory tree planting in some 300Ha of land within the project area. This could also act as carbon sink for emissions that will be associated with the operation phase.
- The truck rest stops should have basic facilities such as ablution, eateries and accommodation so as to avoid conflicts with the local communities.
- Adjust road drainage and pavement design to accommodate the expected > 10% increase in precipitation and run-off and 2°C temperature as predicted in the short-term climate change scenario.
- Other design considerations:
  - (i) Review the high fills and deep cuts through settlements that serves as barriers to free movement of people eg. Section through Nadapal has a fill of upto 3m while part of the road though Torit has a cut of up to 2m.
  - (ii) Other high fills in fairly flat areas should be provided with relieve culverts even if there are no channels to avoid water ponding (flooding on one side of the road) Further such high fills should be provided with guardrails for safety of the road users, alternatively mild embankment slopes should be considered to allow for errant vehicles to recover and return to the roadway.
  - (iii) The start of the road was observed to pass through a swampy section, there is need to ensure the road foundation is properly done over this section, further adequate drainage structures should be provided.
  - (iv) The designs should include signage at the locations likely to be frequented by both domestic and wild animals crossing especially near known water points and other identified animal migratory corridors. Enforcement of this provision during construction is emphasised.
  - (v) The materials investigations have identified existing rock outcrops to be used as sources of aggregates. We suggest that this should be preserved, and alternative sources be identified.

Where road realignment is proposed around an urban area or a settlement, consideration should be given to also upgrade the exisitng road through the urban area to ensure that it connects effectively to the newly upgraded road. This will also enhance the socio-economic benefits.

It is also recommended that the proposed mitigation measures be implemented as far as practically possible and where necessary qualified personnel (service providers) be contracted to offer specialized services including HIV and AIDS awareness campaigns and Health and Safety training. Additionally, a copy of the ESMP should be provided to personnel in charge of implementation for reference throughout the project life cycle.

Appendices



Appendix A: Terms of Reference for the ESIA study

Terms of Reference

Environmental and Social Impact Assessment (ESIA) for the Upgrading of Juba - Torit - Kapoeta - Nadapal Road (354.05Km) to Paved (Asphalt) Standard

Study Brief

The objective of the assignment is to conduct environmental and social impact assessment as part of the implementation of the proposed road project and to devise mechanisms to manage and monitor the associated potential risks and impacts and thereby ensure the project will be environmentally and socially sound and sustainable.

The ESIA Consultant will carry out the analysis of the environmental and social risks and impacts of the project and apply the mitigation hierarchy to ensure that negative risks and impacts are identified, anticipated and avoided; where not possible to avoid, that the risks and impacts are minimized or reduced to acceptable levels which can be mitigated; and that where significant residual impacts remain after mitigation, that they are compensated or offset, where technically and financially feasible.

The environmental and social (E&S) assessment will promote improved environmental and social performance, in ways which will recognize and enhance the capacity of the implementing agency.

Study Team

The ESIA study team has been presented in Section 1.6 of this report. The tasks assigned to the project team members are presented in Table A-1.

Table -A- 1: Team Tasks Assignment

No.	Name of Staff	Proposed Position	Tasks Assignment
K-1	Tom Omenda	Team Leader	▪ Coordinate and oversee the activities of the team of experts in the preparation of the ESIA/ESMP Reports. ▪ Serve as the first point of contact for all technical and task planning and execution matters. ▪ Provide the experts with technical guidance and support on the interpretation and application of the Environmental and Social Standards triggered by the project. ▪ Ensure quality control of each deliverable and strict adherence to the prescribed timelines. ▪ Take lead in the organization and conduct of the stakeholder engagement activities, particularly with the high-level stakeholders.
K-2	Prof. Jenesio Ikindu	Environmental Specialist	▪ Undertake Environmental and Social Impact Assessment study for the proposed project and developing the Environmental and Social Management Plan (ESMP) ▪ Preparation of mitigation measures to be implemented to avoid or minimize any negative impacts. ▪ Ensure enhancement of the positive impacts the road construction activities will have on the environment and the people
K-3	Prof. Beneah Mutsotso	Social Specialist	▪ Carrying out the Social Impact element of the ESIA ▪ Compiling the output and preparation of and devising the proposed mitigation actions to minimize any adverse impacts on the human environment. ▪ Ensure stakeholder engagements are undertaken and all feedback, concerns and view from all engagement

No.	Name of Staff	Proposed Position	Tasks Assignment
			documented and considered throughout the ESIA and ESMP preparation process. ▪ To identify if there are any vulnerable groups/individuals affected by the project and develop their specific engagement methods. ▪ To assess if there is any impact on cultural heritage and if so, develop the chance finds procedure. ▪ To undertake socio-economic study within the Area of Influence.
K-4	Eng. Geoffrey Mwangi	Highway Engineer	▪ Support the E&S Specialists through interpretation of the contents of the feasibility study reports, engineering designs and other design elements. ▪ Support the E &S specialists in the adequate incorporation of the E & S aspects in the bidding documents and in addressing the technical concerns raised by the public. ▪ Liaise with the Design Consultant to ensure congruence in the developed design and the design considerations made in the ESIA.
S-1	Samuel Luate	Environmental Officer	▪ Support the Environmental specialist in the ESIA tasks. ▪ Preparation of the ESIA Summary in local language. ▪ Support the Social Specialist in stakeholder's identification, mapping & consultations; and cultural aspects to be observed during stakeholder's engagement.
S-2	Anne Rita Koki	Social Officer	▪ Prepare social reports, including input in the ESIA reports and Environmental and Social Management Plans (ESMPs), detailing findings, assessments, and proposed mitigation measures. ▪ Support the Social Specialist in organization of meetings for stakeholder engagement with local communities, government agencies, and NGOs to gather input on environmental and social concerns and considerations. ▪ Facilitate communication between project stakeholders to address environmental issues and incorporate feedback into project plans. ▪ Support the social specialist in undertaking the socio-economic study.
S-3	Robert Ngunjiri	Environmental Officer	▪ Prepare environmental reports, including ESIA reports and Environmental and Social Management Plans (ESMPs), detailing findings, assessments, and proposed mitigation measures. ▪ Assess the significance of environmental impacts identified during the ESIA process. ▪ Provide recommendations for mitigation measures to minimize adverse environmental effects.
M-1	Lawrence Njue	Project Manager/ EHS Expert	Lawrence will support the team leader and study team in ensuring tasks are within timelines and to required standards. He will ensure resources are timely availed to the team to execute the study tasks.

Scope of ESIA Study

The ESIA study will cover the 354.05Km stretch of the road. The offsite investments that may be required/ auxiliary facilities such as access roads, quarry sites, borrow pits, construction camp site will be subjected to independent ESIA studies by the successful contractor. This ESIA study will describe the sites and identify general management and monitoring measures in the report.

The ESIA study will be delivered through the following key activities:

- Review relevant documents that includes policies, legislation and guidelines of the Government of South Sudan and the World Bank, feasibility study and draft design of the proposed project, including ESIAs carried out for similar projects.
- Collection of primary data in relation to bio-physical and human environment of the study area. The study methodology to include maximal use of secondary data along with primary data for analytical articulation of the findings.
- Analysis of alternatives focused on the identification of potential negative and positive impacts of the project on the society, economy and environments. Study will compare feasible alternatives to the proposed project, technology, design and operative including the "without project" situation in terms of their potential environmental impacts; the feasibility of mitigating these impacts; their capital and recurrent costs, their suitability under the local condition; and their institutional, training and monitoring requirements.
- Stakeholder Consultations with beneficial and affected as well as vulnerable groups of the study area and ensure their views and concerns are well considered and incorporated during project design and implementation, and to develop sense of ownership. Concerned Government Administration institutions will be consulted prior to start public consultations to create smooth relationship and call public meetings in association with the concerned government administration structure.

With the project area data and information from above tasks, the study shall consider all relevant direct, indirect, and cumulative environmental and social risks and impacts that could result from the proposed road project upgrading works. The consultant shall undertake the ESIA study in parallel with the design study works, in consultation with the requirements of the WB ESF, the WBG Environment, Health and Safety Guideline and the relevant E&S frameworks of South Sudan.

Specifically, the ESIA study (through consultant) will undertake the following, but not limited to, tasks:

(a) Provide an accurate and concise description and delineation of the proposed project that includes the geographic, environmental, social, and temporal context of the project and any associated aspects factoring variations in the country conditions and project context, including any offsite investments that may be required (e.g., dedicated pipelines, access roads, quarry sites, borrow pits, camp site, bitumen storage areas, workshop and garages facilities, asphalt plant and crusher sites, power supply, water supply, housing, and raw material and product storage facilities), as well as the project's primary suppliers. The study will present a detailed map showing the project site and the areas that could be receptors of the project's direct, indirect, and cumulative impacts.

(b) Present environmental and social baseline data on aspects such as the physical, biological, socioeconomic, and cultural resources, that is based on current information, including any changes anticipated before the project commences, that will adequately inform the characterization and identification of potential environmental and social risks and impacts and mitigation, while taking into account the current and proposed development activities in the project area that are not necessarily directly connected to the project.

The consultant shall assess the existing physical, biological and social environments of the project area. The assessment will include, but not be limited to:

(i) Physical Environment: Topography; Geology and hydrogeology; Climate Condition (Rainfall and Temperature); Soil type; surface and ground water; etc., of the project area.

(ii) Biological Environment: (a) Aquatic ecology: A detailed characterization (with field data) of aquatic flora (identified potential species), fauna (including fish, mammals, etc.,) and natural habitats based on full seasonal field data and secondary information. Economically or culturally important species and others which play important ecological functions as food sources or sustainers of the habitat of identified key species. (b) Terrestrial ecology: A detailed

characterization (with field data) of terrestrial flora, fauna (including mammals, reptiles, amphibians, birds and others) and their natural and critical natural habitats based on full seasonal field data and secondary information. Economically or culturally important species and others which play important ecological functions as food sources or sustainers of the habitat of identified key species.

(iii) Social Environment on the following:

- Water use: identify all existing water uses, including both permitted and non- permitted, rivers and streams; and other water bodies affected by the project.
- Land use and land cover: Characterize current land uses and land covers in the project area and indicate major trends in land use change which are taking place irrespective of the proposed project. Include maps with recent data.
- Land tenure: Characterize types of land tenure (e.g., titles, customary), formal and informal institutions related to land tenure ship in the project area.
- Demography and ethnicity: Develop a demographic and ethnic profile of the population in the project area.
- Livelihood activities: Characterize economic and subsistence-oriented livelihood activities, both for communities residing within the Project area and project Influenced areas as well as for individuals or industries which depend on resources in the Project Area of Influence.
- Socio-economic development status: Map out the socio-economic development status of the project area, including resource conditions, economic activities, employment sources and trends, infrastructure and service provision (education, transport, Agriculture and health extension services etc.), as well as local development needs, priorities, challenges, and planned or ongoing development interventions.
- Community health: Provide an overview of key health issues, focusing on the presence of any disease (ten top diseases), which may become more prevalent in the area due to the implementation of the project mainly HIV/AIDS or other sexually transmitted diseases, and COVID-19 due to worker influx, etc., as well as the coverage and quality of health services available in the project area. This includes number of health institutions and human resources of the health institutions.
- Vulnerable peoples: identify the presence of vulnerable people (Female headed households, Orphans, unemployed persons, Disabled people, more than 65 years aged peoples, etc.,) residing in the project area and compile information on their specific demographics, socio-cultural features, livelihood and employment patterns and use of natural resources. Discuss social cohesion and leadership institutions. Provide gender-specific information in the area.
- Road traffic and safety. describe the road condition and current traffic situation. Consider the machinery, vehicles, truck mobilized into the project area for implementation of the project and risks that the project could bring to current roads and public safety.
- GBV/SEA: Identify the risk of Gender Based Violence (GBV)/Sexual Exploitation and Abuse (SEA) in the project area. Both contextual and project specific risks and potential mitigation measures.
- Cultural heritage: assess the potential risks and impacts to tangible and intangible cultural heritage resources in the project area and identify chance find procedures.

(iv) Review the country's applicable policy framework, national laws, and regulations, and institutional capabilities (including implementation) studies, action plans and the country's commitments directly applicable to the project under international treaties and agreements relating to the environment and social issues. Additionally, review and demonstrate the applicability of the specific requirements of the World Bank ESSs, the World Bank Group Environment Health and Safety Guidelines (EHSGs) and other Good International Industry Practices (GIIP). Identify gaps and recommend measures to close key gaps between the national and World Bank ESF.

(v) Systematically evaluate the project alternatives in terms of the potential environmental and social impacts with regard to the project location, technology option, design and operation, including the without project option, and the most environmentally, socially and economically feasible option after assessing the capital and recurrent costs of each alternative, their suitability under local conditions; the institutional, training, and monitoring requirements for mitigating the environmental and social impacts.

(vi) Identify and carry out analysis of stakeholders, undertake meaningful consultation as an integral part of the assessment and design, and propose grievance redressing mechanism to be established and implemented throughout the project, in accordance with the requirements set out in ESS10 on Stakeholder Engagement and Information Disclosure. Public consultation should be carried out in their vicinity with the attention of affected and vulnerable groups residing all along the main road alignments. Minutes of meeting will be taken and annexed to the ESIA report.

- Initial step of consultation at start of study to seeking input on the scope of work for further environmental assessment work and to seek to identify any concerns or issues that the local communities and stakeholders may have in relation to the project;
- Second step of consultation, after environmental and social assessment work is completed to present the results of the environmental and social assessment, including presentation of identified impacts and proposed mitigations, seeking input on these proposed environmental and social management measures and to demonstrate the measures that have been taken in the design to address the concerns raised by the local communities/stakeholders. The study will disseminate to identified interested parties of a brief summary of the environmental and social assessment in local language.

(vii) Undertake a socioeconomic study to understand the characteristics and dynamics of the project area, to establish the socio-economic conditions of the potential project- affected persons including cultural heritage, to identify events, including potential for conflict, that could affect the project implementation and to identify opportunities for enhancing project benefits.

(viii) Identify and evaluate the possible labor demands and resources, including primary suppliers required for the project workers, and specific measures to mitigate child and forced labor and health and safety risks to workers and the surrounding community, and recommend a suitable design for the worker's grievance redress mechanism.

(ix) Assess and evaluate the impact of the project on people's land, property and their livelihood, resettlement risks and impacts and suggest appropriate mitigation measure such as preparation of the Resettlement action plan, livelihood restoration plan that will help to mitigate possible social risks and impacts to the project-affected persons relating to involuntary land take.

(x) Scope the project using as appropriate, a combination of tools and methods, to identify risks and impacts that are not covered in ESSs 1 to 10, but may be specific to the proposed project. The assessment, informed by the scoping of the E&S issues, will take into account all relevant risks and impacts of the project, including:

- Environmental risks and impacts including those defined by the World Bank EHSGs, relating to community safety, climate change and other transboundary or global risks and impacts; resource efficiency and pollution risks; any material threat to the protection, conservation, maintenance, and restoration of natural habitats and biodiversity; ecosystem services and the use of living natural resources, such as fisheries and forests.
- Social risks and impacts, including threats to human security through the escalation of personal, communal, or interstate conflict, crime, or violence; risks whereby project impacts fall disproportionately on disadvantaged or vulnerable persons, any prejudice or discrimination towards the sharing of project benefits and resources, particularly in the case of disadvantaged or vulnerable persons; negative economic and social impacts relating to the involuntary land acquisition or restrictions on land use; risk relating to both tangible and intangible cultural heritage; risks or impacts associated with land and natural resource tenure and use.

- Identify the overall Project Area of influence including downstream and upstream Environmental and Social Impact Zones.
- Summary of findings on the key social and environmental baseline aspects and potential impacts, including an indicative assessment of scale and severity, which should be included for further study in the environmental and social assessment and planning studies.

  Information for each impact must be provided on:

  - ✓ the magnitude of immediate and cumulative impacts – long, medium and short term.
  - ✓ whether it is adverse or beneficial.
  - ✓ whether it is reversible or irreversible.
  - ✓ likelihood of its occurrence.
  - ✓ the geographic boundaries of the impact,
  - ✓ Description of measures to prevent or reduce significant adverse impacts or enhance beneficial effects and an assessment of their likely outcome.
  - ✓ A description of residual impacts which cannot be mitigated or can only be mitigated partially.
  - ✓ Nature of the impact - this describes the type of effect that the proposed activity will have on the environment and local community should include “what will be affected and how”.
  - ✓ Duration - this describes the lifetime of the impact, as being short term (0-5 years), medium term (5-15 years), long terms 15 years (where the impacts will cease after the operation of the site) or permanent. The figures depicted here for indication purpose only. The consultant can use its own range based on its own scientific argument.
  - ✓ Extent - this should indicate whether the impact will be locally extending as far as the site and its immediate surroundings, or whether the impacts may be realised regionally, nationally or even internationally.
  - ✓ Intensity - here it should be established whether the impact is destructive or innocuous and should be described as either low (where no environmental functions and processes are affected), medium (where the environment continues to function but in a modified manner) or high (where environmental functions and processes are altered such that they temporarily or permanently ceased).
  - ✓ Probability - considers the likelihood of an impact occurring.
  - ✓ Significance- the significance of the impacts is determined based on duration, intensity and probability occurrence of the impacts.

(xi) Evaluate the project's potential environmental and social risks and impacts and categorize them into direct, indirect, cumulative and residual impacts and apply the mitigation hierarchy for adverse impacts, and opportunities for the enhancement of positive environmental and social risks and impacts;

(xii) Outline the basis for selecting the proposed project design and specify the applicable World Bank Environmental Health and Safety Guidelines (ESHSGs), and in the event the ESHGs are determined to be inapplicable, justify the recommended emission levels and approaches to pollution prevention and reduction that are consistent with good international industry practice.

(xiii) Devise differentiated measures where specific disadvantaged and vulnerable groups are identified, so that adverse impacts do not fall disproportionately on the already disadvantaged or vulnerable groups in the community and ensure that these groups are not disadvantaged in sharing project benefits and opportunities.

(xiv) Summarize the key material measures, actions and the timeframe for the project to meet the requirements of the WB's ESSs, to inform the development of the Environmental and Social Commitment Plan (ESCP).

(xv) Consider potentially significant project-related transboundary and global risks and impacts, such as climate change mitigation, adaptation and resilience issues, greenhouse gas emissions of short and long-lived pollutants, impacts from the air, noise, land and water pollutants that may emanate from the planned activities, and impacts on threatened or depleted migratory biodiversity species and their habitats.

(xvi) Prepare an Environmental and Social Management and Monitoring Plans including monitoring indicators.

(xvii) Assess existing implementation arrangements, and propose any further improvements, if there are gaps. The study will also carry out capacity assessment at all levels and propose capacity building to be provided explicitly with the required budget.

(c) The ESIA study will culminate into preparation of the following documents:

- ***Environmental and Social Impact Assessment (ESIA) Report***: The Consultant will prepare and submit to the client a Draft ESIA Report for comments. Upon receipt of comments (as applicable), the consultant will incorporate into the Final ESIA Report.
- ***Environmental and Social Management Plan (ESMP)***: The Consultant will prepare an Environmental and social management plan (ESMP) detailing the mitigation measures to eliminate or offset the identified adverse environmental and social risks and impacts or to reduce them to acceptable levels, and devise enhancement measures for the positive impacts to be implemented during the implementation of the project, and the specific actions to implement these measures.
- Prepare the following ESIA annexes:
  - ✓ Occupational Health and Safety (OHS) plan.
  - ✓ Community Health and Safety Plan.
  - ✓ Biodiversity Management Plan.
  - ✓ Traffic Safety Management Plan.
  - ✓ Chance Find Procedures.
  - ✓ Stakeholder's consultation records.
  - ✓ Environmental guideline for construction contractors.
  - ✓ Checklists used; maps and copy of the final ToR.

(d) Workshop Presentations: consultant will make a presentation to client based on ESIA Draft Report and comments from client and WB comments).

Appendix B: Consultation Records

Appendix B.1: Key Informant Questionnaires

The Government of the Republic of South Sudan (GRSS) has received funding from the International Development Association (IDA) in the form of a Project Preparation Advance (PPA) for the proposed South Sudan Transport Sector Development and Regional Integration Project (SS-TSDRIP) to expedite the project preparation process and support the initial capacity strengthening of the implementing agencies. World Bank has assessed the project environment and social risks for the Juba-Torit-Kapoeta-Nadapal road for upgrading from gravel to bitumen standards and assigned a High-Risk rating for both Environmental and Social. The GRSS through the Ministry of Roads and Bridges has engaged an independent environmental consulting firm to undertake Environmental and Social Impact Assessment (Howard Humphreys East Africa Ltd). The study involves conducting stakeholder engagement to create awareness about the proposed project and obtain people's opinions, concerns and suggestions. The Key Informant Questionnaire is one of the data collection tools being used by the ESIA team to obtain project information. Your assistance in filling the questionnaire will significantly help in the preparation of the ESIA report.

KEY INFORMANT QUESTIONNAIRE	
A. PERSONAL DETAILS OF THE RESPONDENT	
NAME	MARTIN JOHN
OCCUPATION	Teacher
ORGANIZATION	Illiangari Primary School.
COUNTY	YUBA
PAYAM	LIRYA
BOMA	ILLIANGARI
VILLAGE	VEDA
CONTACT DETAILS	0921898859
B. PROJECT QUESTIONS	
B1. Are you aware of the proposed road project? *(Tick the appropriate answer)*	
YES [✓]	NO [ ]
B2. Do you think that the road will have a positive impact on the residents of this area? *(Tick the appropriate answer)*	
YES [✓]	NO [ ]
C. POTENTIAL PROJECT IMPACTS	
C1. How do you think the project will **positively** impact the economic growth of the project area and the country in general?	
1. The safety of the students will be enhanced.	
Negative Impact	**Proposed Mitigation Measure**
C2. In what ways do you think the project will **negatively** impact the economic growth of the project area and the country in general? For each negative impact identified, please propose a mitigation measure to address the adverse impact.	
1. Incidents of students.	

253 students: 97 girls, 156 boys.
11 teachers: 2 female 9 males.
2018 - Year the new school began operations.

What other opinion, recommendation do you have regarding the proposed project that will ensure the successful implementation of the project?	
1. Enhance road safety of students as they cross.	
2.	
3.	
4.	
Respondent Signature & Date:	
Signature:	Date: 4/19/2024

The Government of the Republic of South Sudan (GRSS) has received funding from the International Development Association (IDA) in the form of a Project Preparation Advance (PPA) for the proposed South Sudan Transport Sector Development and Regional Integration Project (SS-TSDRIP) to expedite the project preparation process and support the initial capacity strengthening of the implementing agencies. World Bank has assessed the project environment and social risks for the Juba-Torit-Kapoeta-Nadapal road for upgrading from gravel to bitumen standards and assigned a High-Risk rating for both Environmental and Social. The GRSS through the Ministry of Roads and Bridges has engaged an independent environmental consulting firm to undertake Environmental and Social Impact Assessment (Howard Humphreys East Africa Ltd). The study involves conducting stakeholder engagement to create awareness about the proposed project and obtain people's opinions, concerns and suggestions. The Key Informant Questionnaire is one of the data collection tools being used by the ESIA team to obtain project information. Your assistance in filling the questionnaire will significantly help in the preparation of the ESIA report.

KEY INFORMANT QUESTIONNAIRE		
A. PERSONAL DETAILS OF THE RESPONDENT		
NAME	John Julius	
OCCUPATION	Clinical officer	
ORGANIZATION	Illiangari PHCU	
COUNTY	Juba County	
PAYAM	Liriya	
BOMA	Illiangari	
VILLAGE	Veda	
CONTACT DETAILS	0927288895	
B. PROJECT QUESTIONS		
B1. Are you aware of the proposed road project? *(Tick the appropriate answer)*		
YES [✓]	NO [ ]	
B2. Do you think that the road will have a positive impact on the residents of this area? *(Tick the appropriate answer)*		
YES [✓]	NO [ ]	
C. POTENTIAL PROJECT IMPACTS		
C1. How do you think the project will **positively** impact the economic growth of the project area and the country in general?		
1. It will improve movement of people, transport sector and referral of patients. It will avoid delays in ambulances.		
2. Human population will increase in the rural area.		
	Negative Impact	**Proposed Mitigation Measure**
C2. In what ways do you think the project will **negatively** impact the economic growth of the project area and the country in general? For each negative impact identified, please propose a mitigation measure to address the adverse impact.		
1. Destruction of property		

2. Limited access to the facility	-Provide access to public facility during construction and operation
3. Loss of land	
4. Lack of address / delay in addressing complaints.	
5. Poor drainage leading to flooding of the facility.	- Put culverts to open the water ways.
What other opinion, recommendation do you have regarding the proposed project that will ensure the successful implementation of the project?	
1. CSR - water supply project to the facility.	
2. - Expansion of the facility. (2 rooms)	
3. Access to source of energy. Currently using solar to power fridge.	
4. No space for staff accommodation.	
Respondent Signature & Date:	
Signature:	Date: 4/9/2024

The Government of the Republic of South Sudan (GRSS) has received funding from the International Development Association (IDA) in the form of a Project Preparation Advance (PPA) for the proposed South Sudan Transport Sector Development and Regional Integration Project (SS-TSDRIP) to expedite the project preparation process and support the initial capacity strengthening of the implementing agencies. World Bank has assessed the project environment and social risks for the Juba-Torit-Kapoeta-Nadapal road for upgrading from gravel to bitumen standards and assigned a High-Risk rating for both Environmental and Social. The GRSS through the Ministry of Roads and Bridges has engaged an independent environmental consulting firm to undertake Environmental and Social Impact Assessment (Howard Humphreys East Africa Ltd). The study involves conducting stakeholder engagement to create awareness about the proposed project and obtain people's opinions, concerns and suggestions. The Key Informant Questionnaire is one of the data collection tools being used by the ESIA team to obtain project information. Your assistance in filling the questionnaire will significantly help in the preparation of the ESIA report.

KEY INFORMANT QUESTIONNAIRE		
A. PERSONAL DETAILS OF THE RESPONDENT		
NAME	Noel Clement	
OCCUPATION	Headteacher – Ngulere Pri School	
ORGANIZATION	Ngulere Pri School.	
COUNTY	Juba County - Central Equatoria State.	
PAYAM	Liriya	
BOMA	Ngulere.	
VILLAGE		
CONTACT DETAILS	0922421589.	
B. PROJECT QUESTIONS		
B1. Are you aware of the proposed road project? *(Tick the appropriate answer)*		
YES [✓]	NO [ ]	
B2. Do you think that the road will have a positive impact on the residents of this area? *(Tick the appropriate answer)*		
YES [✓]	NO [ ]	
C. POTENTIAL PROJECT IMPACTS		
C1. How do you think the project will **positively** impact the economic growth of the project area and the country in general?		
1. Improved transport in the area and time.		
2. It will open up the community to a larger market for their goods		
3. Increased access to the school leading to higher enrollment.		
4. It will improve the insecurity incidences.		
5. It will help reduce the dust emissions.		
	Negative Impact	**Proposed Mitigation Measure**
C2. In what ways do you think the project will **negatively** impact the economic growth of the project area and the country in general? For each negative impact identified, please propose a mitigation measure to address the adverse impact.		
1. High speed leading to accidents	- Erect speed bumps. - Student designated crossing areas.	

2. Trees may be cut and abandoned	- The materials (trees) should be well preserved to prevent aesthetics.
3. Dust may increase during Construction.	- Contractor to manage them.
What other opinion, recommendation do you have regarding the proposed project that will ensure the successful implementation of the project?	
1. Pleased to see if the road is constructed as it will promote the market for goods.	
2. Awareness on road safety needs to be done among students.	
3. Fence needed around the school.	
4.	
Respondent Signature & Date:	
Signature: [signature]	Date: 04-09-2024

The Government of the Republic of South Sudan (GRSS) has received funding from the International Development Association (IDA) in the form of a Project Preparation Advance (PPA) for the proposed South Sudan Transport Sector Development and Regional Integration Project (SS-TSDRIP) to expedite the project preparation process and support the initial capacity strengthening of the implementing agencies. World Bank has assessed the project environment and social risks for the Juba-Torit-Kapoeta-Nadapal road for upgrading from gravel to bitumen standards and assigned a High-Risk rating for both Environmental and Social. The GRSS through the Ministry of Roads and Bridges has engaged an independent environmental consulting firm to undertake Environmental and Social Impact Assessment (Howard Humphreys East Africa Ltd). The study involves conducting stakeholder engagement to create awareness about the proposed project and obtain people's opinions, concerns and suggestions. The Key Informant Questionnaire is one of the data collection tools being used by the ESIA team to obtain project information. Your assistance in filling the questionnaire will significantly help in the preparation of the ESIA report.

KEY INFORMANT QUESTIONNAIRE	
A. PERSONAL DETAILS OF THE RESPONDENT	
NAME	Francis Iwa
OCCUPATION	Health worker (Hospital Administrator
ORGANIZATION	SMOH
COUNTY	TORIT
PAYAM	NYONG
BOMA	NYONG
VILLAGE	Hai Mesesfa
CONTACT DETAILS	0925999114
B. PROJECT QUESTIONS	
B1. Are you aware of the proposed road project? *(Tick the appropriate answer)*	
YES [✓]	NO [ ]
B2. Do you think that the road will have a positive impact on the residents of this area? *(Tick the appropriate answer)*	
YES [ ]	NO [✓]
C. POTENTIAL PROJECT IMPACTS	
C1. How do you think the project will **positively** impact the economic growth of the project area and the country in general?	
- It will boost business along the highway.	
- Travelers will be lodging in the state, hence economic improvement.	
- It will reduce the travel distance accross the County	
- It will reduce road accidents due to bad roads during rainy season	
Negative Impact	**Proposed Mitigation Measure**
C2. In what ways do you think the project will **negatively** impact the economic growth of the project area and the country in general? For each negative impact identified, please propose a mitigation measure to address the adverse impact.	
Noise	Build a high wall/fence for the hospita

High way traffic accident	Equipt the traffic police to properly manage traffic along the road,

What other opinion, recommendation do you have regarding the proposed project that will ensure the successful implementation of the project?
1. The government must enforce the laws along the roads
2. The communities affected by the project must be compaciat
3. For the success of the projet, bridges must be built
4. up to the international standard.
Respondent Signature & Date:

Signature:	Date: 5/9/2024.

KEY INFORMANT QUESTIONNAIRE

The Government of the Republic of South Sudan (GRSS) has received funding from the International Development Association (IDA) in the form of a Project Preparation Advance (PPA) for the proposed South Sudan Transport Sector Development and Regional Integration Project (SS-TSDRIP) to expedite the project preparation process and support the initial capacity strengthening of the implementing agencies. World Bank has assessed the project environment and social risks for the Juba-Torit-Kapoeta-Nadapal road for upgrading from gravel to bitumen standards and assigned a High-Risk rating for both Environmental and Social.

The GRSS through the Ministry of Roads and Bridges has engaged an independent environmental consulting firm to undertake Environmental and Social Impact Assessment (Howard Humphreys East Africa Ltd). The study involves conducting stakeholder engagement to create awareness about the proposed project and obtain people's opinions, concerns and suggestions. The Key Informant Questionnaire is one of the data collection tools being used by the ESIA team to obtain project information. Your assistance in filling the questionnaire will significantly help in the preparation of the ESIA report.

A. PERSONAL PROFILE

NAME		
ORGANIZATION		
POSITION		
CONTACT DETAILS		
STATE	(1.) Central Equatoria	2. Eastern Equatoria
DATE	03/09/2024	
SIGN/STAMP		

B. PROJECT QUESTIONS

1. Are you aware of the proposed construction of the Juba-Torit-Kapoeta-Nadapal road Project?

   YES ☑ NO ☐ (tick one)

2. Do you think the proposed construction of the Juba-Torit-Kapoeta-Nadapal road Project will help improve in improving the transport sector at large?

   YES ☑ NO ☐ (tick one)

3. In which ways will the proposed construction of the Juba-Torit-Kapoeta-Nadapal road Project promote the growth of the country in general?

   The construction of Juba-Torit-Kapoeta-Nadapal road ~~Project~~ Promote the County by Linking Producers to Markets.

4. What do you think are the positive environmental and social impacts of the proposed construction of the Juba-Torit-Kapoeta-Nadapal road Project?

a. During Construction Phase

Howard Humphreys
Consulting Engineers

Environmental issues are of great importance, especially to those who work within the construction and built environment.

b. During Operation Phase

It is by using clean energy, Protecting natural preserves and forests to maintain the natural biodiversity.

5. What do you think are the negative environmental and social impacts of the proposed construction of the Juba-Torit-Kapoeta-Nadapal road Project and the possible mitigation measures?

a. During Construction Phase

Negative Impacts	Proposed Mitigation Measure
These impacts include environmental pollution, negative health effects, and deterioration of water.	This include Policies concering energy.

b. During Operation Phase

Negative Impacts	Proposed Mitigation Measure
It is by change of lands cape, displacement of human settlement, change in air or water & soil quality.	Preventive measures that avoid the occurrence of impacts and thus avoid harm or even produce positive outcomes

6. What are the existing land tenure systems in the project area?

7. What CSR projects would you wish the project to invest in this community?

8. What other comments/opinions do you have regarding the proposed project?

My comment is I thank the People who came out with this project.

KEY INFORMANT QUESTIONNAIRE

The Government of the Republic of South Sudan (GRSS) has received funding from the International Development Association (IDA) in the form of a Project Preparation Advance (PPA) for the proposed South Sudan Transport Sector Development and Regional Integration Project (SS-TSDRIP) to expedite the project preparation process and support the initial capacity strengthening of the implementing agencies. World Bank has assessed the project environment and social risks for the Juba-Torit-Kapoeta-Nadapal road for upgrading from gravel to bitumen standards and assigned a High-Risk rating for both Environmental and Social.

The GRSS through the Ministry of Roads and Bridges has engaged an independent environmental consulting firm to undertake Environmental and Social Impact Assessment (Howard Humphreys East Africa Ltd). The study involves conducting stakeholder engagement to create awareness about the proposed project and obtain people's opinions, concerns and suggestions. The Key Informant Questionnaire is one of the data collection tools being used by the ESIA team to obtain project information. Your assistance in filling the questionnaire will significantly help in the preparation of the ESIA report.

A. PERSONAL PROFILE

NAME		
ORGANIZATION		
POSITION		
CONTACT DETAILS		
STATE	(1) Central Equatoria	2. Eastern Equatoria
DATE		
SIGN/STAMP		

B. PROJECT QUESTIONS

1. Are you aware of the proposed construction of the Juba-Torit-Kapoeta-Nadapal road Project?

   YES ☐ NO ☑ (tick one)

2. Do you think the proposed construction of the Juba-Torit-Kapoeta-Nadapal road Project will help improve in improving the transport sector at large?

   YES ☑ NO ☐ (tick one)

3. In which ways will the proposed construction of the Juba-Torit-Kapoeta-Nadapal road Project promote the growth of the country in general?

   The Proposed construction of Juba Torit will help to promote the growth of the County

4. What do you think are the positive environmental and social impacts of the proposed construction of the Juba-Torit-Kapoeta-Nadapal road Project?

a. During Construction Phase

Howard Humphreys
Consulting Engineers

Environment issues is good for especially to the People like Work Within the construction .

b. During Operation Phase

Protecting of Natural .

5. What do you think are the negative environmental and social impacts of the proposed construction of the Juba-Torit-Kapoeta-Nadapal road Project and the possible mitigation measures?

a. During Construction Phase

Negative Impacts	Proposed Mitigation Measure
It being Pollution of air	Control adverse the environment effects.

b. During Operation Phase

Negative Impacts	Proposed Mitigation Measure
Adding health risks to humans and Wildlife	Planning and zoning floodplain protection.

6. What are the existing land tenure systems in the project area?

7. What CSR projects would you wish the project to invest in this community?

8. What other comments/opinions do you have regarding the proposed project?

I love the Project too much, make the road in good wish.

KEY INFORMANT QUESTIONNAIRE

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A. PERSONAL PROFILE

NAME		
ORGANIZATION		
POSITION		
CONTACT DETAILS		
STATE	(1.) Central Equatoria	2. Eastern Equatoria
DATE	03/09/2024	
SIGN/STAMP		

B. PROJECT QUESTIONS

1. Are you aware of the proposed construction of the Juba-Torit-Kapoeta-Nadapal road Project?

   YES [✓] NO [ ] (tick one)

2. Do you think the proposed construction of the Juba-Torit-Kapoeta-Nadapal road Project will help improve in improving the transport sector at large?

   YES [✓] NO [ ] (tick one)

3. In which ways will the proposed construction of the Juba-Torit-Kapoeta-Nadapal road Project promote the growth of the country in general?

   In the construction of of the road in this article, We will analyze some measures and actions that can begin to implement and to receive from Government and private sectors.

4. What do you think are the positive environmental and social impacts of the proposed construction of the Juba-Torit-Kapoeta-Nadapal road Project?

   a. During Construction Phase

It lead to job for the people a community of that place.

b. During Operation Phase

lead to health effects.

5. What do you think are the negative environmental and social impacts of the proposed construction of the Juba-Torit-Kapoeta-Nadapal road Project and the possible mitigation measures?

a. During Construction Phase

Negative Impacts	Proposed Mitigation Measure
Overpopulation, burning fossil fuels and deforestation.	This include restitution for any damage to the environment caused by these effect Through replacement.

b. During Operation Phase

Negative Impacts	Proposed Mitigation Measure
Gkebal Warming, overharvesting Pollution and agriculture.	can help in accomplish this goal in several ways.

6. What are the existing land tenure systems in the project area? It is owned by community.

7. What CSR projects would you wish the project to invest in this community?

8. What other comments/opinions do you have regarding the proposed project?

I wish the company good luck and being love to the people of south sudan and the community.

The Government of the Republic of South Sudan (GRSS) has received funding from the International Development Association (IDA) in the form of a Project Preparation Advance (PPA) for the proposed South Sudan Transport Sector Development and Regional Integration Project (SS-TSDRIP) to expedite the project preparation process and support the initial capacity strengthening of the implementing agencies. World Bank has assessed the project environment and social risks for the Juba-Torit-Kapoeta-Nadapal road for upgrading from gravel to bitumen standards and assigned a High-Risk rating for both Environmental and Social. The GRSS through the Ministry of Roads and Bridges has engaged an independent environmental consulting firm to undertake Environmental and Social Impact Assessment (Howard Humphreys East Africa Ltd). The study involves conducting stakeholder engagement to create awareness about the proposed project and obtain people's opinions, concerns and suggestions. The Key Informant Questionnaire is one of the data collection tools being used by the ESIA team to obtain project information. Your assistance in filling the questionnaire will significantly help in the preparation of the ESIA report.

KEY INFORMANT QUESTIONNAIRE		
A. PERSONAL DETAILS OF THE RESPONDENT		
NAME	Ingani Wilson	
OCCUPATION		
ORGANIZATION	Drive	
COUNTY	Juba Country	
PAYAM	Lekiri Payam	
BOMA	Kudida Boma	
VILLAGE		
CONTACT DETAILS		
B. PROJECT QUESTIONS		
B1. Are you aware of the proposed road project? *(Tick the appropriate answer)*		
YES [ ]	NO [✓]	
B2. Do you think that the road will have a positive impact on the residents of this area? *(Tick the appropriate answer)*		
YES [✓]	NO [ ]	
C. POTENTIAL PROJECT IMPACTS		
C1. How do you think the project will **positively** impact the economic growth of the project area and the country in general?		
The Positively impact of economic growth is the higher Living Standards of the People.		
	Negative Impact	**Proposed Mitigation Measure**
C2. In what ways do you think the project will **negatively** impact the economic growth of the project area and the country in general? For each negative impact identified, please propose a mitigation measure to address the adverse impact.		

The impact of technology on the creation of new opportunities for the growth.	
What other opinion, recommendation do you have regarding the proposed project that will ensure the successful implementation of the project?	
1. Points of measurement or review.	
2. Any known issues or risk and how they will have	
3. You need to have Plan.	
4. Project exclusions, if any need to be defined.	
Respondent Signature & Date:	
Signature:	Date: 03/09/2024

The Government of the Republic of South Sudan (GRSS) has received funding from the International Development Association (IDA) in the form of a Project Preparation Advance (PPA) for the proposed South Sudan Transport Sector Development and Regional Integration Project (SS-TSDRIP) to expedite the project preparation process and support the initial capacity strengthening of the implementing agencies. World Bank has assessed the project environment and social risks for the Juba-Torit-Kapoeta-Nadapal road for upgrading from gravel to bitumen standards and assigned a High-Risk rating for both Environmental and Social. The GRSS through the Ministry of Roads and Bridges has engaged an independent environmental consulting firm to undertake Environmental and Social Impact Assessment (Howard Humphreys East Africa Ltd). The study involves conducting stakeholder engagement to create awareness about the proposed project and obtain people's opinions, concerns and suggestions. The Key Informant Questionnaire is one of the data collection tools being used by the ESIA team to obtain project information. Your assistance in filling the questionnaire will significantly help in the preparation of the ESIA report.

KEY INFORMANT QUESTIONNAIRE		
A. PERSONAL DETAILS OF THE RESPONDENT		
NAME		
OCCUPATION	Driver	
ORGANIZATION	Juba County	
COUNTY	Lekiir Payam	
PAYAM	Jokuku Boma	
BOMA	—	
VILLAGE	—	
CONTACT DETAILS		
B. PROJECT QUESTIONS		
B1. Are you aware of the proposed road project? *(Tick the appropriate answer)*		
YES [ ]	NO [✓]	
B2. Do you think that the road will have a positive impact on the residents of this area? *(Tick the appropriate answer)*		
YES [✓]	NO [ ]	
C. POTENTIAL PROJECT IMPACTS		
C1. How do you think the project will **positively** impact the economic growth of the project area and the country in general?		
It will bring the an effect on employment to the People living there.		
	Negative Impact	**Proposed Mitigation Measure**
C2. In what ways do you think the project will **negatively** impact the economic growth of the project area and the country in general? For each negative impact identified, please propose a mitigation measure to address the adverse impact.		

Howard Humphreys
Consulting Engineers

- It will creative destruction the natural Social -	- Increased Pollution and depletion of natural resources.
- It will also increase in income inequality	

What other opinion, recommendation do you have regarding the proposed project that will ensure the successful implementation of the project?

1. You need to have assumptions.
2. You will be able to address uncertain information
3. Written document outlining everything -
4. Stakeholders should know about a Project -

Respondent Signature & Date:

Signature:	Date: 03/09/2024

The Government of the Republic of South Sudan (GRSS) has received funding from the International Development Association (IDA) in the form of a Project Preparation Advance (PPA) for the proposed South Sudan Transport Sector Development and Regional Integration Project (SS-TSDRIP) to expedite the project preparation process and support the initial capacity strengthening of the implementing agencies. World Bank has assessed the project environment and social risks for the Juba-Torit-Kapoeta-Nadapal road for upgrading from gravel to bitumen standards and assigned a High-Risk rating for both Environmental and Social. The GRSS through the Ministry of Roads and Bridges has engaged an independent environmental consulting firm to undertake Environmental and Social Impact Assessment (Howard Humphreys East Africa Ltd). The study involves conducting stakeholder engagement to create awareness about the proposed project and obtain people's opinions, concerns and suggestions. The Key Informant Questionnaire is one of the data collection tools being used by the ESIA team to obtain project information. Your assistance in filling the questionnaire will significantly help in the preparation of the ESIA report.

KEY INFORMANT QUESTIONNAIRE		
A. PERSONAL DETAILS OF THE RESPONDENT		
NAME	Peter	
OCCUPATION	Driver	
ORGANIZATION		
COUNTY	Juba County	
PAYAM	Lekiliri Payam	
BOMA	Kudwa Boma	
VILLAGE		
CONTACT DETAILS		
B. PROJECT QUESTIONS		
B1. Are you aware of the proposed road project? *(Tick the appropriate answer)*		
YES [✓]	NO [ ]	
B2. Do you think that the road will have a positive impact on the residents of this area? *(Tick the appropriate answer)*		
YES [✓]	NO [ ]	
C. POTENTIAL PROJECT IMPACTS		
C1. How do you think the project will **positively** impact the economic growth of the project area and the country in general?		
Yes of cause because there will be road that can let to the movement of people and goods throughout the country.		
	Negative Impact	**Proposed Mitigation Measure**
C2. In what ways do you think the project will **negatively** impact the economic growth of the project area and the country in general? For each negative impact identified, please propose a mitigation measure to address the adverse impact.		

- Impacts is the displacement of People Living there.	- It will leing the extinction of speeies.
- it can lead to the eviction of People Living there.	
What other opinion, recommendation do you have regarding the proposed project that will ensure the successful implementation of the project?	
1. Elements every Project Proposal	
2. Project background	
3. Project objectives -	
4. Project scope	
Respondent Signature & Date:	
Signature: [redacted]	Date: 03/09/2024

The Government of the Republic of South Sudan (GRSS) has received funding from the International Development Association (IDA) in the form of a Project Preparation Advance (PPA) for the proposed South Sudan Transport Sector Development and Regional Integration Project (SS-TSDRIP) to expedite the project preparation process and support the initial capacity strengthening of the implementing agencies. World Bank has assessed the project environment and social risks for the Juba-Torit-Kapoeta-Nadapal road for upgrading from gravel to bitumen standards and assigned a High-Risk rating for both Environmental and Social. The GRSS through the Ministry of Roads and Bridges has engaged an independent environmental consulting firm to undertake Environmental and Social Impact Assessment (Howard Humphreys East Africa Ltd). The study involves conducting stakeholder engagement to create awareness about the proposed project and obtain people's opinions, concerns and suggestions. The Key Informant Questionnaire is one of the data collection tools being used by the ESIA team to obtain project information. Your assistance in filling the questionnaire will significantly help in the preparation of the ESIA report.

KEY INFORMANT QUESTIONNAIRE		
A. PERSONAL DETAILS OF THE RESPONDENT		
NAME		
OCCUPATION	Driver	
ORGANIZATION	Juba Country	
COUNTY	Lekiji Payam	
PAYAM	Kuchilo Boma	
BOMA		
VILLAGE		
CONTACT DETAILS		
B. PROJECT QUESTIONS		
B1. Are you aware of the proposed road project? *(Tick the appropriate answer)*		
YES [✓]	NO [ ]	
B2. Do you think that the road will have a positive impact on the residents of this area? *(Tick the appropriate answer)*		
YES [✓]	NO [ ]	
C. POTENTIAL PROJECT IMPACTS		
C1. How do you think the project will **positively** impact the economic growth of the project area and the country in general?		
It should also bring improvements in Technology of the people ~~[illegible]~~ living there-		
	Negative Impact	**Proposed Mitigation Measure**
C2. In what ways do you think the project will **negatively** impact the economic growth of the project area and the country in general? For each negative impact identified, please propose a mitigation measure to address the adverse impact.		

- Some Projeef can lead to an increase in ~~that~~ illegal legging	
- Some also Poaching and fires.	
What other opinion, recommendation do you have regarding the proposed project that will ensure the successful implementation of the project?	
1. They should have Plan.	
2. They Projeef should have budgef.	
3. They should tabde the contents.	
4. Abstreact or Projeef summary.	
Respondent Signature & Date:	
Signature: ~~Name~~	Date: 03/09/2022

The Government of the Republic of South Sudan (GRSS) has received funding from the International Development Association (IDA) in the form of a Project Preparation Advance (PPA) for the proposed South Sudan Transport Sector Development and Regional Integration Project (SS-TSDRIP) to expedite the project preparation process and support the initial capacity strengthening of the implementing agencies. World Bank has assessed the project environment and social risks for the Juba-Torit-Kapoeta-Nadapal road for upgrading from gravel to bitumen standards and assigned a High-Risk rating for both Environmental and Social. The GRSS through the Ministry of Roads and Bridges has engaged an independent environmental consulting firm to undertake Environmental and Social Impact Assessment (Howard Humphreys East Africa Ltd). The study involves conducting stakeholder engagement to create awareness about the proposed project and obtain people's opinions, concerns and suggestions. The Key Informant Questionnaire is one of the data collection tools being used by the ESIA team to obtain project information. Your assistance in filling the questionnaire will significantly help in the preparation of the ESIA report.

KEY INFORMANT QUESTIONNAIRE		
A. PERSONAL DETAILS OF THE RESPONDENT		
NAME	—	
OCCUPATION	Driver	
ORGANIZATION	Juba Country	
COUNTY	Lekiliri Payam	
PAYAM	Jokuche Boma	
BOMA	—	
VILLAGE	—	
CONTACT DETAILS		
B. PROJECT QUESTIONS		
B1. Are you aware of the proposed road project? *(Tick the appropriate answer)*		
YES [✓]	NO [ ]	
B2. Do you think that the road will have a positive impact on the residents of this area? *(Tick the appropriate answer)*		
YES [✓]	NO [ ]	
C. POTENTIAL PROJECT IMPACTS		
C1. How do you think the project will **positively** impact the economic growth of the project area and the country in general?		
It will general growth of labor force increase of human capital.		
	Negative Impact	**Proposed Mitigation Measure**
C2. In what ways do you think the project will **negatively** impact the economic growth of the project area and the country in general? For each negative impact identified, please propose a mitigation measure to address the adverse impact.		

Howard Humphreys
Consulting Engineers

- They can have an negatively impact of the ~~ecosys~~ ecosystems of rivers.	

What other opinion, recommendation do you have regarding the proposed project that will ensure the successful implementation of the project?
1. Facilities equipment.
2. You should cover sheet / face Page.
3. Biographical Sketch.
4. Bibliography and Reference Cited.

Respondent Signature & Date:	
Signature: ~~Sand~~	Date: 03/09/2024

The Government of the Republic of South Sudan (GRSS) has received funding from the International Development Association (IDA) in the form of a Project Preparation Advance (PPA) for the proposed South Sudan Transport Sector Development and Regional Integration Project (SS-TSDRIP) to expedite the project preparation process and support the initial capacity strengthening of the implementing agencies. World Bank has assessed the project environment and social risks for the Juba-Torit-Kapoeta-Nadapal road for upgrading from gravel to bitumen standards and assigned a High-Risk rating for both Environmental and Social. The GRSS through the Ministry of Roads and Bridges has engaged an independent environmental consulting firm to undertake Environmental and Social Impact Assessment (Howard Humphreys East Africa Ltd). The study involves conducting stakeholder engagement to create awareness about the proposed project and obtain people's opinions, concerns and suggestions. The Key Informant Questionnaire is one of the data collection tools being used by the ESIA team to obtain project information. Your assistance in filling the questionnaire will significantly help in the preparation of the ESIA report.

KEY INFORMANT QUESTIONNAIRE		
A. PERSONAL DETAILS OF THE RESPONDENT		
NAME	—	
OCCUPATION	Driver	
ORGANIZATION	—	
COUNTY	Juba County	
PAYAM	Lokiliri Payam	
BOMA	Jokkikide Boma	
VILLAGE	—	
CONTACT DETAILS	—	
B. PROJECT QUESTIONS		
B1. Are you aware of the proposed road project? *(Tick the appropriate answer)*		
YES [ ]	NO [✓]	
B2. Do you think that the road will have a positive impact on the residents of this area? *(Tick the appropriate answer)*		
YES [✓]	NO [ ]	
C. POTENTIAL PROJECT IMPACTS		
C1. How do you think the project will **positively** impact the economic growth of the project area and the country in general?		
If there is a Project like this in the country. There should be many Work to the people that live there.		
	Negative Impact	**Proposed Mitigation Measure**
C2. In what ways do you think the project will **negatively** impact the economic growth of the project area and the country in general? For each negative impact identified, please propose a mitigation measure to address the adverse impact.		

- Through high labor turnover can impact Project -	requirement -
- The project also can re-evaluate project	
What other opinion, recommendation do you have regarding the proposed project that will ensure the successful implementation of the project?	
1. Organizational background of the project.	
2. Project should rational.	
3. Project Narrative	
4. Project Description goals and objectives.	
Respondent Signature & Date:	
Signature:	Date: 03/09/2024

The Government of the Republic of South Sudan (GRSS) has received funding from the International Development Association (IDA) in the form of a Project Preparation Advance (PPA) for the proposed South Sudan Transport Sector Development and Regional Integration Project (SS-TSDRIP) to expedite the project preparation process and support the initial capacity strengthening of the implementing agencies. World Bank has assessed the project environment and social risks for the Juba-Torit-Kapoeta-Nadapal road for upgrading from gravel to bitumen standards and assigned a High-Risk rating for both Environmental and Social. The GRSS through the Ministry of Roads and Bridges has engaged an independent environmental consulting firm to undertake Environmental and Social Impact Assessment (Howard Humphreys East Africa Ltd). The study involves conducting stakeholder engagement to create awareness about the proposed project and obtain people's opinions, concerns and suggestions. The Key Informant Questionnaire is one of the data collection tools being used by the ESIA team to obtain project information. Your assistance in filling the questionnaire will significantly help in the preparation of the ESIA report.

KEY INFORMANT QUESTIONNAIRE		
A. PERSONAL DETAILS OF THE RESPONDENT		
NAME	~~Driver~~	
OCCUPATION	Driver	
ORGANIZATION	Juba County	
COUNTY	Lekiliri Payam	
PAYAM	Mutita B.	
BOMA		
VILLAGE		
CONTACT DETAILS		
B. PROJECT QUESTIONS		
B1. Are you aware of the proposed road project? *(Tick the appropriate answer)*		
YES [✓]	NO [ ]	
B2. Do you think that the road will have a positive impact on the residents of this area? *(Tick the appropriate answer)*		
YES [✓]	NO [ ]	
C. POTENTIAL PROJECT IMPACTS		
C1. How do you think the project will **positively** impact the economic growth of the project area and the country in general?		
It will bring development of new goods and services also generates economic growth.		
	Negative Impact	**Proposed Mitigation Measure**
C2. In what ways do you think the project will **negatively** impact the economic growth of the project area and the country in general? For each negative impact identified, please propose a mitigation measure to address the adverse impact.		

Howard Humphreys
Consulting Engineers

It could lead to Urban sprawl.	
Regardless of the outcome of the individual Project.	

What other opinion, recommendation do you have regarding the proposed project that will ensure the successful implementation of the project?

1. Define the Project and it goals.
2. You should list what resources you need.
3. Your should be persuasive.
4. Project summary.

Respondent Signature & Date:

Signature:	Date: 03/09/2024

Howard Humphreys
Consulting Engineers

The Government of the Republic of South Sudan (GRSS) has received funding from the International Development Association (IDA) in the form of a Project Preparation Advance (PPA) for the proposed South Sudan Transport Sector Development and Regional Integration Project (SS-TSDRIP) to expedite the project preparation process and support the initial capacity strengthening of the implementing agencies. World Bank has assessed the project environment and social risks for the Juba-Torit-Kapoeta-Nadapal road for upgrading from gravel to bitumen standards and assigned a High-Risk rating for both Environmental and Social. The GRSS through the Ministry of Roads and Bridges has engaged an independent environmental consulting firm to undertake Environmental and Social Impact Assessment (Howard Humphreys East Africa Ltd). The study involves conducting stakeholder engagement to create awareness about the proposed project and obtain people's opinions, concerns and suggestions. The Key Informant Questionnaire is one of the data collection tools being used by the ESIA team to obtain project information. Your assistance in filling the questionnaire will significantly help in the preparation of the ESIA report.

KEY INFORMANT QUESTIONNAIRE	
A. PERSONAL DETAILS OF THE RESPONDENT	
NAME	JUMA JUSTIN APEY
OCCUPATION	EXECUTIVE DIRECTOR
ORGANIZATION	LOCAL GOVERNMENT
COUNTY	KAPOETA SOUTH
PAYAM	KAPOETA TOWN
BOMA	HAI-PALAKAL
VILLAGE	PALAKAL
CONTACT DETAILS	0920325412
B. PROJECT QUESTIONS	
B1. Are you aware of the proposed road project? *(Tick the appropriate answer)*	
YES [✓]	NO [ ]
B2. Do you think that the road will have a positive impact on the residents of this area? *(Tick the appropriate answer)*	
YES [✓]	NO [ ]
C. POTENTIAL PROJECT IMPACTS	
C1. How do you think the project will **positively** impact the economic growth of the project area and the country in general?	
There are Many Impacts - Reduce Insecurity - Improve economic - Will Improve refferal of patients - Improve bussness and transports aspects	
Negative Impact	**Proposed Mitigation Measure**
C2. In what ways do you think the project will **negatively** impact the economic growth of the project area and the country in general? For each negative impact identified, please propose a mitigation measure to address the adverse impact.	
Poor road assessment	proper technician & participa
Road accident	- Improve Driving modes

Over speeding	provision of speed governor
Life/livestock interference	livestock herds to take full grown
poor road Materials for constructions.	provision of quality Material for road constructions
Lack of permanent bridges construction Mechanism	- Proper Construction of durable bridge standard by:
What other opinion, recommendation do you have regarding the proposed project that will ensure the successful implementation of the project?	
1. Easy transportation of goods and public services	
2. Investors will increase and improve economic growth	
3. Citizen will enjoy safety in regard of time & reduce	
4.	
Respondent Signature & Date:	
Signature:	Date: 11th/9/2024

KAPOETA SOUTH COUNTY
EXECUTIVE DIRECTOR'S
11 SEP 2024
OFFICE
EASTERN EQUOTORIA STATE

KEY INFORMANT QUESTIONNAIRE

The Government of the Republic of South Sudan (GRSS) has received funding from the International Development Association (IDA) in the form of a Project Preparation Advance (PPA) for the proposed South Sudan Transport Sector Development and Regional Integration Project (SS-TSDRIP) to expedite the project preparation process and support the initial capacity strengthening of the implementing agencies. World Bank has assessed the project environment and social risks for the Juba-Torit-Kapoeta-Nadapal road for upgrading from gravel to bitumen standards and assigned a High-Risk rating for both Environmental and Social.

The GRSS through the Ministry of Roads and Bridges has engaged an independent environmental consulting firm to undertake Environmental and Social Impact Assessment (Howard Humphreys East Africa Ltd). The study involves conducting stakeholder engagement to create awareness about the proposed project and obtain people's opinions, concerns and suggestions. The Key Informant Questionnaire is one of the data collection tools being used by the ESIA team to obtain project information. Your assistance in filling the questionnaire will significantly help in the preparation of the ESIA report.

A. PERSONAL PROFILE

NAME	OTING GAIT METODIOUS	
ORGANIZATION	KAPOETA EAST COUNTY	
POSITION	EXECUTIVE DIRECTOR	
CONTACT DETAILS	0924378895 / 0922122185	
STATE	1. Central Equatoria	2. Eastern Equatoria ✓
DATE	11/9/2024	
SIGN/STAMP		

EXECUTIVE DIRECTOR OFFICE
KAPOETA EAST COUNTY
EASTERN EQUATORIA STATE-TORIT
11 SEP 2024

B. PROJECT QUESTIONS

1. Are you aware of the proposed construction of the Juba-Torit-Kapoeta-Nadapal road Project?

   YES ☑ NO ☐ (tick one)

2. Do you think the proposed construction of the Juba-Torit-Kapoeta-Nadapal road Project will help improve in improving the transport sector at large?

   YES ☑ NO ☐ (tick one)

3. In which ways will the proposed construction of the Juba-Torit-Kapoeta-Nadapal road Project promote the growth of the country in general?

   - It will helps the Country to develop
   - Promote and Boosting business activities
   - It will create Job Opportunities
   - reduce insecurity along the highway

4. What do you think are the positive environmental and social impacts of the proposed construction of the Juba-Torit-Kapoeta-Nadapal road Project?

a. During Construction Phase

- Creation of trading center
- Building good relationship with the Community

b. During Operation Phase

- Job opportunity
- High demands on good and services

5. What do you think are the negative environmental and social impacts of the proposed construction of the Juba-Torit-Kapoeta-Nadapal road Project and the possible mitigation measures?

a. During Construction Phase

Negative Impacts	Proposed Mitigation Measure
- Displacement - Spread diseases	- relocation - Awareness

b. During Operation Phase

Negative Impacts	Proposed Mitigation Measure
- Accident - HIV	- Creating Punk hump's along the roads or Humps - Sign Post

6. What are the existing land tenure systems in the project area?

7. What CSR projects would you wish the project to invest in this community?

Community Business activities

8. What other comments/opinions do you have regarding the proposed project?

The construction of the highway should also be extended up to the feeder roads e.g road to Boma side and Ethiopia border.

KEY INFORMANT QUESTIONNAIRE

The Government of the Republic of South Sudan (GRSS) has received funding from the International Development Association (IDA) in the form of a Project Preparation Advance (PPA) for the proposed South Sudan Transport Sector Development and Regional Integration Project (SS-TSDRIP) to expedite the project preparation process and support the initial capacity strengthening of the implementing agencies. World Bank has assessed the project environment and social risks for the Juba-Torit-Kapoeta-Nadapal road for upgrading from gravel to bitumen standards and assigned a High-Risk rating for both Environmental and Social.

The GRSS through the Ministry of Roads and Bridges has engaged an independent environmental consulting firm to undertake Environmental and Social Impact Assessment (Howard Humphreys East Africa Ltd). The study involves conducting stakeholder engagement to create awareness about the proposed project and obtain people's opinions, concerns and suggestions. The Key Informant Questionnaire is one of the data collection tools being used by the ESIA team to obtain project information. Your assistance in filling the questionnaire will significantly help in the preparation of the ESIA report.

A. PERSONAL PROFILE

NAME	DARIO LOWI LOPUAMOI	
ORGANIZATION	COMMUNITY ELDER REPRESENTATIVE	
POSITION	COUNTY SURVEYER.	
CONTACT DETAILS		
STATE	1. Central Equatoria	2. Eastern Equatoria
DATE		EASTERN EQUATORIA
SIGN/STAMP		

B. PROJECT QUESTIONS

1. Are you aware of the proposed construction of the Juba-Torit-Kapoeta-Nadapal road Project?

   YES ☑ NO ☐ (tick one)

2. Do you think the proposed construction of the Juba-Torit-Kapoeta-Nadapal road Project will help improve in improving the transport sector at large?

   YES ☑ NO ☐ (tick one)

3. In which ways will the proposed construction of the Juba-Torit-Kapoeta-Nadapal road Project promote the growth of the country in general?

(a) SHOULD WIDELY PROMOTE THE COMMUNITY IN COME TO THE COUNTRY.
(b) TO OPEN THE FIDA ROADS WITHIN THE COUNTY RESIDENTS.
Easy movement from Nadapal to Kapoeta
It create good relationship to the community

4. What do you think are the positive environmental and social impacts of the proposed construction of the Juba-Torit-Kapoeta-Nadapal road Project?

a. During Construction Phase
- Job opportunity CREATION OF TRAINING CENTRE IN THE COMMUNITY.
- Creation of relationship
- Creation of new centre (trading centres).

- Job opportunity
- Creation of new trading centres
- Creating good relationship in the community.

b. During Operation Phase

- spread of disease e.g HIV.
- Occurance of accident.

5. What do you think are the negative environmental and social impacts of the proposed construction of the Juba-Torit-Kapoeta-Nadapal road Project and the possible mitigation measures?

a. During Construction Phase

Negative Impacts	Proposed Mitigation Measure
- Land degredation - Displacement of the households. - Lost of lives, human, animals	- Relocation of people. - Awareness on HIV spreads - Awareness to the community

b. During Operation Phase

Negative Impacts	Proposed Mitigation Measure
- spread of HIV - Accident - Animals may losse their lives	- sign post should be put at the place where animals cross. - putting humps in the centres where people are many.

6. What are the existing land tenure systems in the project area? - community land.

7. What CSR projects would you wish the project to invest in this community? - Business activi

8. What other comments/opinions do you have regarding the proposed project?

The construction of this high way should be extended to the fider roads.

KEY INFORMANT QUESTIONNAIRE

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A. PERSONAL PROFILE

NAME		
ORGANIZATION		
POSITION		
CONTACT DETAILS		
STATE	1. Central Equatoria	2. Eastern Equatoria
DATE		
SIGN/STAMP		

B. PROJECT QUESTIONS

1. Are you aware of the proposed construction of the Juba-Torit-Kapoeta-Nadapal road Project?

   YES [✓] NO [ ] (tick one)

2. Do you think the proposed construction of the Juba-Torit-Kapoeta-Nadapal road Project will help improve in improving the transport sector at large?

   YES [✓] NO [ ] (tick one)

3. In which ways will the proposed construction of the Juba-Torit-Kapoeta-Nadapal road Project promote the growth of the country in general?

   Easy Transportation people and their goods to business centres within S. Sudan increase of farmers produces.

4. What do you think are the positive environmental and social impacts of the proposed construction of the Juba-Torit-Kapoeta-Nadapal road Project?

   a. During Construction Phase The communities along roads side will have Jobs opportunity availability of cars for Transportation all the time may also have businesses activities easy our local population may developed skills of construction when told

b. During Operation Phase

- compensations of the affected families

5. What do you think are the negative environmental and social impacts of the proposed construction of the Juba-Torit-Kapoeta-Nadapal road Project and the possible mitigation measures?

a. During Construction Phase

Negative Impacts	Proposed Mitigation Measure
We may have negative impacts if those affected are not compensated on whatever for them to start begin their life with	

b. During Operation Phase

Negative Impacts	Proposed Mitigation Measure
- marram mining holes being dug near the roads which will cause more harm to car and motorcycle that have lost control	- Mining holes for marram should be far abit from the road sides.

6. What are the existing land tenure systems in the project area?

7. What CSR projects would you wish the project to invest in this community?

8. What other comments/opinions do you have regarding the proposed project?

- Helping fidder roads to ~~school~~ nearby schools and health centres

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Consulting Engineers

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KEY INFORMANT QUESTIONNAIRE		
A. PERSONAL DETAILS OF THE RESPONDENT		
NAME	Galdino Joseph Ingobe	
OCCUPATION	Teacher	
ORGANIZATION	Ministry of General Education & Instructions	
COUNTY	Torit	
PAYAM	Hyong	
BOMA	Ilangi Block "C"	
VILLAGE	Ilangi	
CONTACT DETAILS	0922207892	
B. PROJECT QUESTIONS		
B1. Are you aware of the proposed road project? *(Tick the appropriate answer)*		
YES [✓]	NO [ ]	
B2. Do you think that the road will have a positive impact on the residents of this area? *(Tick the appropriate answer)*		
YES [✓]	NO [ ]	
C. POTENTIAL PROJECT IMPACTS		
C1. How do you think the project will **positively** impact the economic growth of the project area and the country in general?		
- This project will improve the GDP of the project area and it will also pave way the whole country to improve its socio-economy and it will facilitate good road transport system which will make business to and will improve economic viability of south Sudan.		
	Negative Impact	**Proposed Mitigation Measure**
C2. In what ways do you think the project will **negatively** impact the economic growth of the project area and the country in general? For each negative impact identified, please propose a mitigation measure to address the adverse impact.		
Poor road construction is	- slow system of transportation	

Insecurity and life threat.	people who use it will run away
.Displacement	- It will make people displaced
- poor bitumen standard.	- It will lead to flood up
Lack of co-operation	- mismanagement.
- Corruption	poor accountability.
- Bribery	- Lead to lost of job.
What other opinion, recommendation do you have regarding the proposed project that will ensure the successful implementation of the project?	
1. Team work and coordination	
2. Security stability	
3. co-operation from the hosts communities	
4. Confidentiality and commitment.	
Respondent Signature & Date:	
Signature:	Date: 6/09/2024.

THE HEADTEACHER TORIT DAY SEC. SCHOOL EES, TORIT SOUTH SUDAN

The Government of the Republic of South Sudan (GRSS) has received funding from the International Development Association (IDA) in the form of a Project Preparation Advance (PPA) for the proposed South Sudan Transport Sector Development and Regional Integration Project (SS-TSDRIP) to expedite the project preparation process and support the initial capacity strengthening of the implementing agencies. World Bank has assessed the project environment and social risks for the Juba-Torit-Kapoeta-Nadapal road for upgrading from gravel to bitumen standards and assigned a High-Risk rating for both Environmental and Social. The GRSS through the Ministry of Roads and Bridges has engaged an independent environmental consulting firm to undertake Environmental and Social Impact Assessment (Howard Humphreys East Africa Ltd). The study involves conducting stakeholder engagement to create awareness about the proposed project and obtain people's opinions, concerns and suggestions. The Key Informant Questionnaire is one of the data collection tools being used by the ESIA team to obtain project information. Your assistance in filling the questionnaire will significantly help in the preparation of the ESIA report.

KEY INFORMANT QUESTIONNAIRE		
A. PERSONAL DETAILS OF THE RESPONDENT		
NAME	Oromo Peter Oliha	
OCCUPATION	Teacher	
ORGANIZATION		
COUNTY	Torit	
PAYAM	N-Yang	
BOMA	Fodofodo	
VILLAGE	Asigal	
CONTACT DETAILS	0925147126	
B. PROJECT QUESTIONS		
B1. Are you aware of the proposed road project? *(Tick the appropriate answer)*		
YES [✓]	NO [ ]	
B2. Do you think that the road will have a positive impact on the residents of this area? *(Tick the appropriate answer)*		
YES [✓]	NO [ ]	
C. POTENTIAL PROJECT IMPACTS		
C1. How do you think the project will **positively** impact the economic growth of the project area and the country in general?		
Development would be booming at the project area, Cooperation among the people as well as promoting trade. The county shall earns alot of foreign exchange and the people will enjoy the incomes. The area would enjoy good security incase of insecurity.		
	Negative Impact	**Proposed Mitigation Measure**
C2. In what ways do you think the project will **negatively** impact the economic growth of the project area and the country in general? For each negative impact identified, please propose a mitigation measure to address the adverse impact.		
It destroys businesses	The owners need to be compensated.	

Not well constructed.	Rehabilitation is needed.
Destruction of farmlands.	Compensate the owners.

What other opinion, recommendation do you have regarding the proposed project that will ensure the successful implementation of the project?

1. Enough funding for the Success of the project.
2. Security personnel should be available.
3. Proper management of finance.
4.

Respondent Signature & Date:

Signature:	Date: 06/09/2024.

THE HEADTEACHER
TORIT DAY SEC. SCHOOL
EES, TORIT SOUTH SUDAN

The Government of the Republic of South Sudan (GRSS) has received funding from the International Development Association (IDA) in the form of a Project Preparation Advance (PPA) for the proposed South Sudan Transport Sector Development and Regional Integration Project (SS-TSDRIP) to expedite the project preparation process and support the initial capacity strengthening of the implementing agencies. World Bank has assessed the project environment and social risks for the Juba-Torit-Kapoeta-Nadapal road for upgrading from gravel to bitumen standards and assigned a High-Risk rating for both Environmental and Social. The GRSS through the Ministry of Roads and Bridges has engaged an independent environmental consulting firm to undertake Environmental and Social Impact Assessment (Howard Humphreys East Africa Ltd). The study involves conducting stakeholder engagement to create awareness about the proposed project and obtain people's opinions, concerns and suggestions. The Key Informant Questionnaire is one of the data collection tools being used by the ESIA team to obtain project information. Your assistance in filling the questionnaire will significantly help in the preparation of the ESIA report.

KEY INFORMANT QUESTIONNAIRE		
A. PERSONAL DETAILS OF THE RESPONDENT		
NAME	Lokiu John Cypriano	
OCCUPATION	Teacher	
ORGANIZATION	Ministry of Education and instruction,	
COUNTY	Torit	
PAYAM	Ngong	
BOMA	Hawai Masiri	
VILLAGE	Iluhum	
CONTACT DETAILS	0928645550	
B. PROJECT QUESTIONS		
B1. Are you aware of the proposed road project? *(Tick the appropriate answer)*		
YES [✓]	NO [ ]	
B2. Do you think that the road will have a positive impact on the residents of this area? *(Tick the appropriate answer)*		
YES [✓]	NO [ ]	
C. POTENTIAL PROJECT IMPACTS		
C1. How do you think the project will **positively** impact the economic growth of the project area and the country in general?		
- Through supply of goods and services		
- The government will earn enough revenues		
- Jobs opportunities will be created.		
- Security will be improved		
- Business opportunities will be increasing		
	Negative Impact	**Proposed Mitigation Measure**
C2. In what ways do you think the project will **negatively** impact the economic growth of the project area and the country in general? For each negative impact identified, please propose a mitigation measure to address the adverse impact.		
Displacement of business	compensation	

Distructions of property	property should be compensated
Sustainability issue	There should be Sustainability
poor management	good management
insecurity	peace must prevail.

What other opinion, recommendation do you have regarding the proposed project that will ensure the successful implementation of the project?

1. There should be peace in the project areas.
2. There should be proper management
3. Recruitment of locals along the roads.
4. The road should be of standard

Respondent Signature & Date:

Signature:	Date: 6/9/2024

THE HEADTEACHER
TORIT DAY SSC. SCHOOL
EES, TORIT SOUTH SUDAN

The Government of the Republic of South Sudan (GRSS) has received funding from the International Development Association (IDA) in the form of a Project Preparation Advance (PPA) for the proposed South Sudan Transport Sector Development and Regional Integration Project (SS-TSDRIP) to expedite the project preparation process and support the initial capacity strengthening of the implementing agencies. World Bank has assessed the project environment and social risks for the Juba-Torit-Kapoeta-Nadapal road for upgrading from gravel to bitumen standards and assigned a High-Risk rating for both Environmental and Social. The GRSS through the Ministry of Roads and Bridges has engaged an independent environmental consulting firm to undertake Environmental and Social Impact Assessment (Howard Humphreys East Africa Ltd). The study involves conducting stakeholder engagement to create awareness about the proposed project and obtain people's opinions, concerns and suggestions. The Key Informant Questionnaire is one of the data collection tools being used by the ESIA team to obtain project information. Your assistance in filling the questionnaire will significantly help in the preparation of the ESIA report.

KEY INFORMANT QUESTIONNAIRE		
A. PERSONAL DETAILS OF THE RESPONDENT		
NAME	Gideon Challong Atabo Olwe	
OCCUPATION	Head Teacher	
ORGANIZATION	Dr. John Garang Memorial Secondary School	
COUNTY	Torit	
PAYAM	Nyong	
BOMA	Elangi	
VILLAGE	Abwallaw	
CONTACT DETAILS	0921705600	
B. PROJECT QUESTIONS		
B1. Are you aware of the proposed road project? *(Tick the appropriate answer)*		
YES [✓]	NO [ ]	
B2. Do you think that the road will have a positive impact on the residents of this area? *(Tick the appropriate answer)*		
YES [✓]	NO [ ]	
C. POTENTIAL PROJECT IMPACTS		
C1. How do you think the project will **positively** impact the economic growth of the project area and the country in general?		
- Through good roads can give us low prices in the market.		
- Link us with Kenya and Other World.		
- Economic problem will come down.		
	Negative Impact	**Proposed Mitigation Measure**
C2. In what ways do you think the project will **negatively** impact the economic growth of the project area and the country in general? For each negative impact identified, please propose a mitigation measure to address the adverse impact.		
Prices is not up to date	Action must be taken	

- Bridges is one of Negetive part.	- Auld-ing of Bridges
- Rain Irosins	- Strong Road.

What other opinion, recommendation do you have regarding the proposed project that will ensure the successful implementation of the project?

1. Let it be done fast to help our living stile
2. To Improve our Economic in South Sudan.
3. Good transportation helps alot.
4. Good Security to Project.

Respondent Signature & Date:

Signature:	Date: 6th-09-2024

06 SEP 2024

Howard Humphreys
Consulting Engineers

The Government of the Republic of South Sudan (GRSS) has received funding from the International Development Association (IDA) in the form of a Project Preparation Advance (PPA) for the proposed South Sudan Transport Sector Development and Regional Integration Project (SS-TSDRIP) to expedite the project preparation process and support the initial capacity strengthening of the implementing agencies. World Bank has assessed the project environment and social risks for the Juba-Torit-Kapoeta-Nadapal road for upgrading from gravel to bitumen standards and assigned a High-Risk rating for both Environmental and Social. The GRSS through the Ministry of Roads and Bridges has engaged an independent environmental consulting firm to undertake Environmental and Social Impact Assessment (Howard Humphreys East Africa Ltd). The study involves conducting stakeholder engagement to create awareness about the proposed project and obtain people's opinions, concerns and suggestions. The Key Informant Questionnaire is one of the data collection tools being used by the ESIA team to obtain project information. Your assistance in filling the questionnaire will significantly help in the preparation of the ESIA report.

KEY INFORMANT QUESTIONNAIRE		
A. PERSONAL DETAILS OF THE RESPONDENT		
NAME	Liyin Ugwak Simon	
OCCUPATION	Local government Administrative	
ORGANIZATION	Local government - EES	
COUNTY	TORIT	
PAYAM	Nyong	
BOMA	Enyiit	
VILLAGE	Block B2	
CONTACT DETAILS	0921593144/0921000176 uyinugwak2017@gmail.com	
B. PROJECT QUESTIONS		
B1. Are you aware of the proposed road project? *(Tick the appropriate answer)*		
YES [✓]	NO [ ]	
B2. Do you think that the road will have a positive impact on the residents of this area? *(Tick the appropriate answer)*		
YES [✓]	NO [ ]	
C. POTENTIAL PROJECT IMPACTS		
C1. How do you think the project will **positively** impact the economic growth of the project area and the country in general?		
Shall build strong trade through import and export Agricultural sector shall have been improved Free movement of goods and people - peace Improve revenue generation to the country Indirectly improve health financing		
	Negative Impact	**Proposed Mitigation Measure**
C2. In what ways do you think the project will **negatively** impact the economic growth of the project area and the country in general? For each negative impact identified, please propose a mitigation measure to address the adverse impact.		
Dominant by foreigners	Encourage agricultural loans	

more foreign beverages	Reduce importation
Influx of foreigners	Regulate movement of people
Lost of economical land	compensation of population
Flooding of project area	proper dreinege system

What other opinion, recommendation do you have regarding the proposed project that will ensure the successful implementation of the project?

1. Employment of local people for security.
2. Construction of feeder roads to affected areas.
3. Installation of communication network
4. Handing over of project essets to project sites.

Respondent Signature & Date:

Signature:	Date: 6/9/2024

The Government of the Republic of South Sudan (GRSS) has received funding from the International Development Association (IDA) in the form of a Project Preparation Advance (PPA) for the proposed South Sudan Transport Sector Development and Regional Integration Project (SS-TSDRIP) to expedite the project preparation process and support the initial capacity strengthening of the implementing agencies. World Bank has assessed the project environment and social risks for the Juba-Torit-Kapoeta-Nadapal road for upgrading from gravel to bitumen standards and assigned a High-Risk rating for both Environmental and Social. The GRSS through the Ministry of Roads and Bridges has engaged an independent environmental consulting firm to undertake Environmental and Social Impact Assessment (Howard Humphreys East Africa Ltd). The study involves conducting stakeholder engagement to create awareness about the proposed project and obtain people's opinions, concerns and suggestions. The Key Informant Questionnaire is one of the data collection tools being used by the ESIA team to obtain project information. Your assistance in filling the questionnaire will significantly help in the preparation of the ESIA report.

KEY INFORMANT QUESTIONNAIRE		
A. PERSONAL DETAILS OF THE RESPONDENT		
NAME	CHRISTOPHER ANDREW PHILIPSON	
OCCUPATION	Commissioner of Torit County	
ORGANIZATION	Torit County	
COUNTY	Torit	
PAYAM	Ifwtou payam	
BOMA	Gownorowo Boma	
VILLAGE	GOWnorowo	
CONTACT DETAILS	+211922323651	
B. PROJECT QUESTIONS		
B1. Are you aware of the proposed road project? *(Tick the appropriate answer)*		
YES [✓]	NO [ ]	
B2. Do you think that the road will have a positive impact on the residents of this area? *(Tick the appropriate answer)*		
YES [✓]	NO [ ]	
C. POTENTIAL PROJECT IMPACTS		
C1. How do you think the project will **positively** impact the economic growth of the project area and the country in general?		
The positive impact will be because all Commodities is brought to south Sudan from Kenya and its goes through Uganda and after implementation of this project the Commodities will be brought direct from Kenya where by the price of goods will be low.		
	Negative Impact	**Proposed Mitigation Measure**
C2. In what ways do you think the project will **negatively** impact the economic growth of the project area and the country in general? For each negative impact identified, please propose a mitigation measure to address the adverse impact.		
It may affect some residential		

Area along the main road	It can be resolved by Compensation
It may effect some farms	
Which is owned by individuals	Through Compensation to the
	affected farms.

What other opinion, recommendation do you have regarding the proposed project that will ensure the successful implementation of the project?

1. It will be great inspect to the Economic of the Country and state
2. Helping the Community for Sustainable life
3. Ensuring the security on the road.
4. Involving the Community members in employment classified/unclassified

Respondent Signature & Date:

Signature:	Date: 5/9/2024

Howard Humphreys
Consulting Engineers

KEY INFORMANT QUESTIONNAIRE

The Government of the Republic of South Sudan (GRSS) has received funding from the International Development Association (IDA) in the form of a Project Preparation Advance (PPA) for the proposed South Sudan Transport Sector Development and Regional Integration Project (SS-TSDRIP) to expedite the project preparation process and support the initial capacity strengthening of the implementing agencies. World Bank has assessed the project environment and social risks for the Juba-Torit-Kapoeta-Nadapal road for upgrading from gravel to bitumen standards and assigned a High-Risk rating for both Environmental and Social.

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A. PERSONAL PROFILE

NAME	LOKUDA ELIA LONYIA	
ORGANIZATION	KAPOETA MUNICIPAL COUNCIL	
POSITION	MAYOR	
CONTACT DETAILS	0922205763 / 0917777098	
STATE	1. Central Equatoria	✓2. Eastern Equatoria
DATE	09/09/2024	
SIGN/STAMP		

B. PROJECT QUESTIONS

1. Are you aware of the proposed construction of the Juba-Torit-Kapoeta-Nadapal road Project?

   YES ☑ NO ☐ (tick one)

2. Do you think the proposed construction of the Juba-Torit-Kapoeta-Nadapal road Project will help improve in improving the transport sector at large?

   YES ☑ NO ☐ (tick one)

3. In which ways will the proposed construction of the Juba-Torit-Kapoeta-Nadapal road Project promote the growth of the country in general?

   It will improve movement of goods and services resulting to an improved economy.

4. What do you think are the positive environmental and social impacts of the proposed construction of the Juba-Torit-Kapoeta-Nadapal road Project?

a. During Construction Phase

Howard Humphreys
Consulting Engineers

- Job opportunities to the Local Community will be awarded
- Market boosting due to demand increase for goods etc
- Increased exchange rate (forex exchange rate).

b. During Operation Phase

- Quick and fast delivery of goods to the Markets
- Reduction on the highway robberies and Killing
- Improved Security on the high ways.
- leads to quick and fast development.

5. What do you think are the negative environmental and social impacts of the proposed construction of the Juba-Torit-Kapoeta-Nadapal road Project and the possible mitigation measures?

a. During Construction Phase

Negative Impacts	Proposed Mitigation Measure
- Felling of trees Gender Base Violence (GBV) will increase	Propose Planting of more trees along the road Come up with By-laws to Control the Mess.

b. During Operation Phase

Negative Impacts	Proposed Mitigation Measure
- Overspeeding leading to accidents	Set up Speed limits.

6. What are the existing land tenure systems in the project area?
lots of Seasonal rivers all over all the way from Nadapal.
7. What CSR projects would you wish the project to invest in this community?
Connecting and Improving the Interior road network with in Kapoeta town
8. What other comments/opinions do you have regarding the proposed project?
I would propose for Including of Strong bridges, as well as drainage Systems to be part of the proposed projects to reach the Interior parts of roads with in Kapoeta town

KEY INFORMANT QUESTIONNAIRE

The Government of the Republic of South Sudan (GRSS) has received funding from the International Development Association (IDA) in the form of a Project Preparation Advance (PPA) for the proposed South Sudan Transport Sector Development and Regional Integration Project (SS-TSDRIP) to expedite the project preparation process and support the initial capacity strengthening of the implementing agencies. World Bank has assessed the project environment and social risks for the Juba-Torit-Kapoeta-Nadapal road for upgrading from gravel to bitumen standards and assigned a High-Risk rating for both Environmental and Social.

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A. PERSONAL PROFILE

NAME	Tombe Wani	
ORGANIZATION	Gender, Children and Social Welfare	
POSITION	Director General	
CONTACT DETAILS	+211 92883 2346	
STATE	(1.) Central Equatoria	2. Eastern Equatoria
DATE	2-9-2024	
SIGN/STAMP		

B. PROJECT QUESTIONS

1. Are you aware of the proposed construction of the Juba-Torit-Kapoeta-Nadapal road Project?

   YES [X] NO [ ] (tick one)

2. Do you think the proposed construction of the Juba-Torit-Kapoeta-Nadapal road Project will help improve in improving the transport sector at large?

   YES [X] NO [ ] (tick one)

3. In which ways will the proposed construction of the Juba-Torit-Kapoeta-Nadapal road Project promote the growth of the country in general?

   1. Increased movement of People
   2. Improved trade

4. What do you think are the positive environmental and social impacts of the proposed construction of the Juba-Torit-Kapoeta-Nadapal road Project?

a. During Construction Phase

- Employment creation

• Increased business

b. During Operation Phase

• Reduction in child abduction of children. • Cultural mix and change • Easy to supply/provide services to communities

5. What do you think are the negative environmental and social impacts of the proposed construction of the Juba-Torit-Kapoeta-Nadapal road Project and the possible mitigation measures?

a. During Construction Phase

Negative Impacts	Proposed Mitigation Measure
• Dust • Conflict over employment. • Employment of children	Water Suppression Each Section to have a quota All employed to be certified by chief as adult.

b. During Operation Phase

Negative Impacts	Proposed Mitigation Measure
• Increased road accidents	- Put road signs

6. What are the existing land tenure systems in the project area? In towns private but in rural it is communal.
7. What CSR projects would you wish the project to invest in this community?
- Water
8. What other comments/opinions do you have regarding the proposed project?

• It should commence as soon as possible.
• It will open up South Sudan.

KEY INFORMANT QUESTIONNAIRE

The Government of the Republic of South Sudan (GRSS) has received funding from the International Development Association (IDA) in the form of a Project Preparation Advance (PPA) for the proposed South Sudan Transport Sector Development and Regional Integration Project (SS-TSDRIP) to expedite the project preparation process and support the initial capacity strengthening of the implementing agencies. World Bank has assessed the project environment and social risks for the Juba-Torit-Kapoeta-Nadapal road for upgrading from gravel to bitumen standards and assigned a High-Risk rating for both Environmental and Social.

The GRSS through the Ministry of Roads and Bridges has engaged an independent environmental consulting firm to undertake Environmental and Social Impact Assessment (Howard Humphreys East Africa Ltd). The study involves conducting stakeholder engagement to create awareness about the proposed project and obtain people's opinions, concerns and suggestions. The Key Informant Questionnaire is one of the data collection tools being used by the ESIA team to obtain project information. Your assistance in filling the questionnaire will significantly help in the preparation of the ESIA report.

A. PERSONAL PROFILE

NAME	Rita Dominic Jaba	
ORGANIZATION	Youth Culture and Sports	
POSITION	Director General	
CONTACT DETAILS	+211 092 288 2910	
STATE	(1.) Central Equatoria	2. Eastern Equatoria
DATE	2-9-2024	
SIGN/STAMP		

B. PROJECT QUESTIONS

1. Are you aware of the proposed construction of the Juba-Torit-Kapoeta-Nadapal road Project?

   YES [X] NO [ ] (tick one)

2. Do you think the proposed construction of the Juba-Torit-Kapoeta-Nadapal road Project will help improve in improving the transport sector at large?

   YES [X] NO [ ] (tick one)

3. In which ways will the proposed construction of the Juba-Torit-Kapoeta-Nadapal road Project promote the growth of the country in general?

- Improve connectivity to the region
- Diversity in goods supply.

4. What do you think are the positive environmental and social impacts of the proposed construction of the Juba-Torit-Kapoeta-Nadapal road Project?

a. During Construction Phase

- Increased culture change

• Increased markets due to staff employed on the road

b. During Operation Phase

• More people will attend the festival at Ngulere. • More business at Ngulere.

5. What do you think are the negative environmental and social impacts of the proposed construction of the Juba-Torit-Kapoeta-Nadapal road Project and the possible mitigation measures?

a. During Construction Phase

Negative Impacts	Proposed Mitigation Measure
• Increased road accidents • Cattle will be crushed on the road	• Road signs - Speed bumps • Cattle keepers be sensitized to keep cattle off

b. During Operation Phase

Negative Impacts	Proposed Mitigation Measure
• More road accidents due to speeding vehicles • More cattle/goats crushed	• Road signs • Sensitize cattle keepers early

6. What are the existing land tenure systems in the project area? – communal. Must have no title

7. What CSR projects would you wish the project to invest in this community?
-Museum – Cultural Centre at Ngulere – Playground – Market – Hospital – Stadi

8. What other comments/opinions do you have regarding the proposed project?
• Keep existing bridges in the museum
• It will be cheaper and faster for people to travel.

KEY INFORMANT QUESTIONNAIRE

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The GRSS through the Ministry of Roads and Bridges has engaged an independent environmental consulting firm to undertake Environmental and Social Impact Assessment (Howard Humphreys East Africa Ltd). The study involves conducting stakeholder engagement to create awareness about the proposed project and obtain people's opinions, concerns and suggestions. The Key Informant Questionnaire is one of the data collection tools being used by the ESIA team to obtain project information. Your assistance in filling the questionnaire will significantly help in the preparation of the ESIA report.

A. PERSONAL PROFILE

NAME	~~Ministry of Water - South Sudan Urban Water Corp~~ Gabriel Alueth	
ORGANIZATION	Ministry of Water South Sudan Urban Water Corp	
POSITION	Director-General for Managmnt Info Systems	
CONTACT DETAILS	+211 929 928 878	
STATE	(1.) Central Equatoria	2. Eastern Equatoria
DATE	3-9-2024	
SIGN/STAMP		

B. PROJECT QUESTIONS

1. Are you aware of the proposed construction of the Juba-Torit-Kapoeta-Nadapal road Project?

   YES ☐ NO ☒ (tick one)

2. Do you think the proposed construction of the Juba-Torit-Kapoeta-Nadapal road Project will help improve in improving the transport sector at large?

   YES ☒ NO ☐ (tick one)

3. In which ways will the proposed construction of the Juba-Torit-Kapoeta-Nadapal road Project promote the growth of the country in general?

   It will improve transport of goods
   It will improve transport of people.
   It will improve servicing urban water projects

4. What do you think are the positive environmental and social impacts of the proposed construction of the Juba-Torit-Kapoeta-Nadapal road Project?

a. During Construction Phase

- Employment for youth

b. During Operation Phase

• It will be ~~as~~ easy to supply water to areas using trucks • It will be easy to reach Torit to service water systems

5. What do you think are the negative environmental and social impacts of the proposed construction of the Juba-Torit-Kapoeta-Nadapal road Project and the possible mitigation measures?

a. During Construction Phase

Negative Impacts	Proposed Mitigation Measure
• Water pipes in the urban section of Torit town may be damaged	• Engage urban water authority to identify location of water pipes in Torit town.

b. During Operation Phase

Negative Impacts	Proposed Mitigation Measure
—	—

6. What are the existing land tenure systems in the project area? communal

7. What CSR projects would you wish the project to invest in this community?
   • Elevated water tanks in Torit town.
8. What other comments/opinions do you have regarding the proposed project?

• Road design should have provision for water supply in future.

KEY INFORMANT QUESTIONNAIRE

The Government of the Republic of South Sudan (GRSS) has received funding from the International Development Association (IDA) in the form of a Project Preparation Advance (PPA) for the proposed South Sudan Transport Sector Development and Regional Integration Project (SS-TSDRIP) to expedite the project preparation process and support the initial capacity strengthening of the implementing agencies. World Bank has assessed the project environment and social risks for the Juba-Torit-Kapoeta-Nadapal road for upgrading from gravel to bitumen standards and assigned a High-Risk rating for both Environmental and Social.

The GRSS through the Ministry of Roads and Bridges has engaged an independent environmental consulting firm to undertake Environmental and Social Impact Assessment (Howard Humphreys East Africa Ltd). The study involves conducting stakeholder engagement to create awareness about the proposed project and obtain people's opinions, concerns and suggestions. The Key Informant Questionnaire is one of the data collection tools being used by the ESIA team to obtain project information. Your assistance in filling the questionnaire will significantly help in the preparation of the ESIA report.

A. PERSONAL PROFILE

NAME	Luate William Alex	
ORGANIZATION	Ministry of General Education and Instruction	
POSITION	Director General	
CONTACT DETAILS	0928633373/0981040972	
STATE	(1) Central Equatoria	2. Eastern Equatoria
DATE	3-9-2024	
SIGN/STAMP		

B. PROJECT QUESTIONS

1. Are you aware of the proposed construction of the Juba-Torit-Kapoeta-Nadapal road Project?

   YES [X] NO [ ] (tick one)

2. Do you think the proposed construction of the Juba-Torit-Kapoeta-Nadapal road Project will help improve in improving the transport sector at large?

   YES [X] NO [ ] (tick one)

3. In which ways will the proposed construction of the Juba-Torit-Kapoeta-Nadapal road Project promote the growth of the country in general?

   It will improve access to education in the rural sections of Central Equatorial State

4. What do you think are the positive environmental and social impacts of the proposed construction of the Juba-Torit-Kapoeta-Nadapal road Project?

a. During Construction Phase

- It will create employment.

b. During Operation Phase

- It will improve access to schools. Faster to respond to disasters.
- More children are likely to join schools near the road.
- Reduce cost of taxing children to school.
- It will improve security.
- Will improve movement of staff salaries

5. What do you think are the negative environmental and social impacts of the proposed construction of the Juba-Torit-Kapoeta-Nadapal road Project and the possible mitigation measures?

a. During Construction Phase

Negative Impacts	Proposed Mitigation Measure
• Increased road accidents involving children.	• Sensitization be done in schools.

b. During Operation Phase

Negative Impacts	Proposed Mitigation Measure
• Increased road accidents	• Sensitization be done in schools • Put road signs • Speed bumps near schools.

6. What are the existing land tenure systems in the project area? communal

7. What CSR projects would you wish the project to invest in this community?
- Like a secondary school be supported
- Improvement of existing schools. • Construct new schools

8. What other comments/opinions do you have regarding the proposed project?
- Schools near the road to have access roads improved.

KEY INFORMANT QUESTIONNAIRE

The Government of the Republic of South Sudan (GRSS) has received funding from the International Development Association (IDA) in the form of a Project Preparation Advance (PPA) for the proposed South Sudan Transport Sector Development and Regional Integration Project (SS-TSDRIP) to expedite the project preparation process and support the initial capacity strengthening of the implementing agencies. World Bank has assessed the project environment and social risks for the Juba-Torit-Kapoeta-Nadapal road for upgrading from gravel to bitumen standards and assigned a High-Risk rating for both Environmental and Social.

The GRSS through the Ministry of Roads and Bridges has engaged an independent environmental consulting firm to undertake Environmental and Social Impact Assessment (Howard Humphreys East Africa Ltd). The study involves conducting stakeholder engagement to create awareness about the proposed project and obtain people's opinions, concerns and suggestions. The Key Informant Questionnaire is one of the data collection tools being used by the ESIA team to obtain project information. Your assistance in filling the questionnaire will significantly help in the preparation of the ESIA report.

A. PERSONAL PROFILE

NAME	Abraham Agany	
ORGANIZATION	Army Camp 15 (near Loriyok)	
POSITION	Commander	
CONTACT DETAILS	-	
STATE	1. Central Equatoria	(2.) Eastern Equatoria
DATE	9-9-2024	
SIGN/STAMP		

B. PROJECT QUESTIONS

1. Are you aware of the proposed construction of the Juba-Torit-Kapoeta-Nadapal road Project?

   YES [X] NO [ ] (tick one)

2. Do you think the proposed construction of the Juba-Torit-Kapoeta-Nadapal road Project will help improve in improving the transport sector at large?

   YES [X] NO [ ] (tick one)

3. In which ways will the proposed construction of the Juba-Torit-Kapoeta-Nadapal road Project promote the growth of the country in general?

   Link the Eastern side to Juba.

4. What do you think are the positive environmental and social impacts of the proposed construction of the Juba-Torit-Kapoeta-Nadapal road Project?

a. During Construction Phase

- Improve movement of the army in the region.

- Army offices to have regular income for security services
- Due to frequent movement of many vehicles there will be improved security.
- Support by road contractors will improve the working of the army

b. During Operation Phase

- Faster response for the army in cases of insecurity
- Security of the general area to improve
- Army to have better offices to work from

5. What do you think are the negative environmental and social impacts of the proposed construction of the Juba-Torit-Kapoeta-Nadapal road Project and the possible mitigation measures?

a. During Construction Phase

Negative Impacts	Proposed Mitigation Measure
• Road accidents may increase	• Road signs • Educate road users.

b. During Operation Phase

Negative Impacts	Proposed Mitigation Measure
• Road accidents to increase - Army officers will lose regular income for services provided to contractors.	• Educate road users

6. What are the existing land tenure systems in the project area?

7. What CSR projects would you wish the project to invest in this community?
   • Build a school near the camp for children of soldiers.
8. What other comments/opinions do you have regarding the proposed project?
   • Contractors camps be handed over to the army at Camp 15.

KEY INFORMANT QUESTIONNAIRE

The Government of the Republic of South Sudan (GRSS) has received funding from the International Development Association (IDA) in the form of a Project Preparation Advance (PPA) for the proposed South Sudan Transport Sector Development and Regional Integration Project (SS-TSDRIP) to expedite the project preparation process and support the initial capacity strengthening of the implementing agencies. World Bank has assessed the project environment and social risks for the Juba-Torit-Kapoeta-Nadapal road for upgrading from gravel to bitumen standards and assigned a High-Risk rating for both Environmental and Social.

The GRSS through the Ministry of Roads and Bridges has engaged an independent environmental consulting firm to undertake Environmental and Social Impact Assessment (Howard Humphreys East Africa Ltd). The study involves conducting stakeholder engagement to create awareness about the proposed project and obtain people's opinions, concerns and suggestions. The Key Informant Questionnaire is one of the data collection tools being used by the ESIA team to obtain project information. Your assistance in filling the questionnaire will significantly help in the preparation of the ESIA report.

A. PERSONAL PROFILE

NAME	Kamilo Santo	
ORGANIZATION	~~Eastern~~ Kapoeta East County at Narus town	
POSITION	Director of Accounts (rep Commissioner)	
CONTACT DETAILS	+211 092341846	
STATE	1. Central Equatoria	(2.) Eastern Equatoria
DATE	10-9-2024	
SIGN/STAMP		

B. PROJECT QUESTIONS

1. Are you aware of the proposed construction of the Juba-Torit-Kapoeta-Nadapal road Project?

   YES [X] NO [ ] (tick one)

2. Do you think the proposed construction of the Juba-Torit-Kapoeta-Nadapal road Project will help improve in improving the transport sector at large?

   YES [X] NO [ ] (tick one)

3. In which ways will the proposed construction of the Juba-Torit-Kapoeta-Nadapal road Project promote the growth of the country in general?

   - Easy movement of goods to Juba and from Juba.
   - Easy movement of goods from Kenya.

4. What do you think are the positive environmental and social impacts of the proposed construction of the Juba-Torit-Kapoeta-Nadapal road Project?

a. During Construction Phase

- Will improve ~~seenty~~ Security on the road.
- Bandit attacks will ~~stop~~ end.
- Cheaper to travel to and from Juba
- Connectivity to Kuyu will be easy
- ~~Employment~~

b. During Operation Phase

- Employment of youth in business
- Improved market for goods.
- Reduced time on the road.
- Many means of transport will be used.

5. What do you think are the negative environmental and social impacts of the proposed construction of the Juba-Torit-Kapoeta-Nadapal road Project and the possible mitigation measures?

a. During Construction Phase

Negative Impacts	Proposed Mitigation Measure
• Likely conflict between communities over sharing of employment vacancies	• Criteria for employment be clearly explained to communities ahead of time.

b. During Operation Phase

Negative Impacts	Proposed Mitigation Measure
• Increased road accidents	• Livestock keepers be targeted for education

6. What are the existing land tenure systems in the project area? communal

7. What CSR projects would you wish the project to invest in this community? —

8. What other comments/opinions do you have regarding the proposed project?

Tarmack the road to the County Commissioners office.

Howard Humphreys
Consulting Engineers

KEY INFORMANT QUESTIONNAIRE

The Government of the Republic of South Sudan (GRSS) has received funding from the International Development Association (IDA) in the form of a Project Preparation Advance (PPA) for the proposed South Sudan Transport Sector Development and Regional Integration Project (SS-TSDRIP) to expedite the project preparation process and support the initial capacity strengthening of the implementing agencies. World Bank has assessed the project environment and social risks for the Juba-Torit-Kapoeta-Nadapal road for upgrading from gravel to bitumen standards and assigned a High-Risk rating for both Environmental and Social.

The GRSS through the Ministry of Roads and Bridges has engaged an independent environmental consulting firm to undertake Environmental and Social Impact Assessment (Howard Humphreys East Africa Ltd). The study involves conducting stakeholder engagement to create awareness about the proposed project and obtain people's opinions, concerns and suggestions. The Key Informant Questionnaire is one of the data collection tools being used by the ESIA team to obtain project information. Your assistance in filling the questionnaire will significantly help in the preparation of the ESIA report.

A. PERSONAL PROFILE

NAME	Ajak Ajuong	
ORGANIZATION	Ministry of Interior - Immigration Nadapal	
POSITION	Head of Immigration	
CONTACT DETAILS	+211092936827 / 0769395863	
STATE	1. Central Equatoria	2. Eastern Equatoria
DATE	11/9/2024	
SIGN/STAMP		

B. PROJECT QUESTIONS

1. Are you aware of the proposed construction of the Juba-Torit-Kapoeta-Nadapal road Project?

   YES [X] NO [ ] (tick one)

2. Do you think the proposed construction of the Juba-Torit-Kapoeta-Nadapal road Project will help improve in improving the transport sector at large?

   YES [X] NO [ ] (tick one)

3. In which ways will the proposed construction of the Juba-Torit-Kapoeta-Nadapal road Project promote the growth of the country in general?

   Improve the processing of travellers from Kenya and South Sudan.

4. What do you think are the positive environmental and social impacts of the proposed construction of the Juba-Torit-Kapoeta-Nadapal road Project?

a. During Construction Phase

- Employment of youth

- Better offices for immigration staff.

b. During Operation Phase

- Reduce the smuggling of goods. Better staff coopera with Kenya SI
- Reduce human and child trafficking from Kakuma to South Sudan
- Faster response by immigration officers

5. What do you think are the negative environmental and social impacts of the proposed construction of the Juba-Torit-Kapoeta-Nadapal road Project and the possible mitigation measures?

a. During Construction Phase

Negative Impacts	Proposed Mitigation Measure
• Increased road accidents	Educate road users

b. During Operation Phase

Negative Impacts	Proposed Mitigation Measure
• Road accidents with livestock on the road	Pedestrians be advised to keep livestock from roads.

6. What are the existing land tenure systems in the project area? communal

7. What CSR projects would you wish the project to invest in this community? —

8. What other comments/opinions do you have regarding the proposed project?

The project should begin as soon as possible.

Howard Humphreys
Consulting Engineers

The Government of the Republic of South Sudan (GRSS) has received funding from the International Development Association (IDA) in the form of a Project Preparation Advance (PPA) for the proposed South Sudan Transport Sector Development and Regional Integration Project (SS-TSDRIP) to expedite the project preparation process and support the initial capacity strengthening of the implementing agencies. World Bank has assessed the project environment and social risks for the Juba-Torit-Kapoeta-Nadapal road for upgrading from gravel to bitumen standards and assigned a High Risk rating for both Environmental and Social. The GRSS through the Ministry of Roads and Bridges has engaged an independent environmental consulting firm to undertake Environmental and Social Impact Assessment (Howard Humphreys East Africa Ltd). The study is/also conducting stakeholder engagement to create awareness about the proposed project and obtain people's opinions, concerns and suggestions. The Key Informant Questionnaire is one of the data collection tools being used by the ESIA team to obtain project information. Your assistance in filling the questionnaire will significantly help in the preparation of the ESIA report.

KEY INFORMANT QUESTIONNAIRE	
A. PERSONAL DETAILS OF THE RESPONDENT	
NAME	Mustafa Albino Zakaria
OCCUPATION	Mayor - Torit Municipality
ORGANIZATION	Torit Municipality - Local Government
COUNTY	Torit
PAYAM	Torit town Block
BOMA	Buruhutule
VILLAGE	Buruhutule
CONTACT DETAILS	092124 0991
B. PROJECT QUESTIONS	
B1. Are you aware of the proposed road project? (Tick the appropriate answer)	
YES [✓]	NO [ ]
B2. Do you think that the road will have a positive impact on the residents of this area? (Tick the appropriate answer)	
YES [✓]	NO [ ]
C. POTENTIAL PROJECT IMPACTS	
C1. How do you think the project will positively impact the economic growth of the project area and the country in general?	
The road project Connecting the TWO Countries S. Sudan and Kenya will foster economic growth of both Countries through exchange of goods and Service and minimizing taxes.	
Negative Impact	Proposed Mitigation Measure
C2. In what ways do you think the project will negatively impact the economic growth of the project area and the country in general? For each negative impact identified, please propose a mitigation measure to address the adverse impact	

I don't see any negative impact of the project	

What other opinion, recommendation so you have regarding the proposed project that will ensure the successful implementation of the project?

1. Employment of the indiginous population
2.
3.
4.

Respondent Signature & Date	
Signature	Date 18 Sept 2024

Appendix B.2: Socio-Economic Survey Questionnaires

Howard Humphreys
Consulting Engineers

SOCIO-ECONOMIC QUESTIONNAIRE

The Government of the Republic of South Sudan (GRSS) has received funding from the International Development Association (IDA) in the form of a Project Preparation Advance (PPA) for the proposed South Sudan Transport Sector Development Project (SS-TSDP) to expedite the project preparation process and support the initial capacity strengthening of the implementing agencies. World Bank has assessed the project environment and social risks for the Juba-Torit-Kapoeta-Nadapal road (358.2Km) for upgrading from gravel to bitumen standards and assigned a High-Risk rating for both Environmental and Social.

The GRSS through the Ministry of Roads and Bridges has engaged an independent environmental consulting firm to undertake Environmental and Social Impact Assessment (Howard Humphreys East Africa Ltd). The study involves conducting stakeholder engagement to create awareness about the proposed project and obtain people's opinions, concerns and suggestions. The Socio-Economic Questionnaire is one of the data collection tools being used by the ESIA team to obtain project information. Your assistance in filling the questionnaire will significantly help in the preparation of the ESIA report.

A. PERSONAL DETAILS OF THE RESPONDENT		
NAME	GEORGE LOKWAR	
STATE	1. Central Equatoria	2✓ Eastern Equatoria ✓
COUNTY	BUDI	
PAYAM	NGARICH	
BOMA	LORIYOK	
VILLAGE	LORIYOK	
RESIDENCE	1✓Rural Area ✓	2. Urban Area
NAME OF ENUMERATOR	Malamoi Peter Lopul	
Time:	Start: 7/9/20 8:00AM	End: 8:30 Am
SIGNATURE & DATE	8/9/2024	

B. BACKGROUND INFORMATION

B1. Gender of the respondent (*tick where appropriate*)

a) Male ✓	b) Female	c) Other

B2. What is your Age Group in years?

a) Below 18	b)✓19-35	c) 36-45	d) 46 – 55	e) 56 – 65	f) 66 – 75	g) Above 79

B3. Marital status

a) Married ✓	b) Single	c) Widow/Widower	d) Divorced	e) Separated

B4. What is the highest level of education you have obtained?

a) Never attended school	b) Primary school	c) Secondary school✓	d) Tertiary	e) Other Specify

B4.1 If you have ever attended school, for how many years were you in School?

a) 1-2years	b) 2-3years	c) 3-4 years	d) 4-5years	e) 6-7years	f) Over 8years ✓

B4.2 What is the distance to the nearest primary School from this village in kilometres 1 KM

B4.3 If you did not complete school what was the main reason?

a) Lack of fees ✓	b) Conflict	c) Too far	d) Family relocated	e) No teachers	f) School closed	g) Other Specify

B4.4 What is the number of children of School going Age not in School Currently?

Boys_____ Girls_____

B5. Religious affiliation of the respondent?

a) Christian ✓	b) Muslim	c) Hindu	d) Other specify

B6. What is the total size of your household? four(4)

B6.1 How many are: Male (3) three Female (1) one Total (4) four

B6.2 How many are: Below 18yrs 2 Over 18yrs 2 Total four(4)

B6.3 Who is the head of the household? a father

B7. Does any of your household members live with any form of disability? a) Yes b) No ✓

B7.1 If answer to (B7) above is yes, state the type of disability and fill the table below:

Type of disability _____

No of Males	Age	Employment status	Profession	Source of livelihood	Contact details
No. of Females	Age	Employment status	Profession	Source of livelihood	Contact details

B8. Does your household have orphans? a). Yes b) No ✓

B8.1 If answer to B8 above is yes, kindly provide the information below:

No of Males	Age	Employment status	Profession	Source of livelihood	Contact details
No. of Females	Age	Employment status	Profession	Source of livelihood	Contact details

B9 Does your Household have elderly persons? a) Yes b) No ✓

B9.1 If yes, kindly provide the information below

No of Males	Age	Employment status	Profession	Source of livelihood	Contact details

No. of Females	Age	Employment status	Profession	Source of livelihood	Contact details

B10. What is your ethnicity? Lagrim

C. SOURCE OF LIVELIHOOD

C1. Are you in employment or not? Not

If not, state if you are self-employed, what is the nature of your work?

a) Farming ✓	b) Grazing	c) Trading (tick the type of trade you practice)	Shop keeper Hotel business Sale of Charcoal Sale of grass Hunting game meat Other specify_____

If yes, what is your profession and where are you employed?

(*fill profession here*)	Place of employment (*tick where appropriate*)		
	a) Government sector	b) Humanitarian sector	c) Business Enterprise

C2. What is the MAIN source of Income for the Household? Sales of firewood & charcoal

C3. What is the average monthly income in SDP per month from the following?

0-10,000 ✓	10,001-20,000	20,001-30,000	30,001-40,000	40,000-50,000	Above 50,000

D. ENERGY

D1. Indicate the most common source of energy for lighting.

a) Electricity	b) Paraffin	c) Solar	d) Candle ✓	e) Other Specify

D2. Indicate the source of cooking energy.

a) Firewood ✓	b) charcoal ✓	c) Gas	d) Paraffin	e) Other Specify

E. HIV/AIDS KNOWLEDGE AND PREVENTION

E1. Have you ever taken an HIV test?

a) Yes ✓	b) No

E2. Are you aware that there are Sexually Transmitted Infections (STIs)? a). Yes ✓ b), No

E3. What methods would you say are mostly used to protect oneself from getting STIs in your area?

a) Condom use ✓	b) Abstinence	c) Stick to one faithful partner.	d) Other specify

F. HOUSING

F1. Do you rent or own the house that you currently live in? own

F2. What is the type of house that you live in?

a) Permanent	b) Semi-permanent	c) Temporary ✓

G. WATER

G1. What is the Main source of water used in your household?

a) Piped into house	b) Purchase from water bowser	c) Borehole ✓	d) River/spring	e) Roof catchment	f) Other Specify

G2. How do you dispose the wastewater in your household?

a) Sewer	b) Pit Latrine	c) ✓ Direct to the ground	d) Other Specify

H. TRANSPORT

H1. What is the common means of transport that you use?

a) Air	b) public vehicle	c) Personal car	d) Motorbike ✓	e) Bicycle	f) Rickshaw (Tuk Tuk)	g) Other Specify

H2. What do you think should be done to enhance the road safety of the pedestrians?

Tarmacking of the roads to make it smooth
Installation of the symbols along the roads e.g zebra crossing, flyovers and lights to controll vehicles & pedestrians

I. ACCESS TO HEALTH

I1. Do you have access to a health facility within your area of residence? Yes

I2. How far in kilometres is the nearest health facility? 2 KM

I3. What challenge do people here face when they visit a health facility?

a) Lack of drugs and medical equipment ✓	b) Inexperienced staff ✓	c) Lack of staff	d) waiting for too long	e) Other specify

I4. Where did the last birth in the household take place? 2016/2020

a) Public health facility	b) private health facility	c) At home ✓	d) Other Specify

J. LAND

J1. Do you own land? Yes

J1.1 If yes, is it under (a) ✓ customary tenure, (b) freehold tenure or (c) leasehold tenure?

J1.2. Also, indicate the type of classification of the land you own and the type of documentation you possess as proof of ownership.

a) Public	b) Private	c) Community ✓

K. OWNERSHIP OF MOBILE PHONE

K1. Do you own a mobile phone? (a) Yes ✓ (b) No

K2. Are you registered for mobile money transfer? (a) Yes (b) No ✓

L. PROJECT INFORMATION

K1. Do you support the proposed construction of the Juba-Torit-Kapoeta-Nadapal Road? (a) Yes ✓ (b) No

K2. Regarding the proposed construction of the Juba-Torit-Kapoeta-Nadapal Road, how will it impact (positively and negatively) the community operations and means of transport?

Positively - Community accessment to markets is easier for their goods to reach their destination faster.
* Sick people will be easily transported to health facilities faster.
* It will bring development to the community due to Investors will come in because of good roads connections to the neighbouring countries

K3. What are some of the transport challenges faced by people living and working in this area:

* Lack of bridges that makes cars or motorbikes not to cross flooded river streams
* Lack of Vehicles in the area.
* Insecurity that make people not to travel frequently

K4. Perception of the proposed construction of the Juba-Torit-Kapoeta-Nadapal Road

K4.1 Do you consider the proposed construction of the Juba-Torit-Kapoeta-Nadapal Road a worthwhile investment by the Government of Republic of South Sudan?

1) yes ✓
2) no

K4.2 Please explain your answer.

* Connection of the roads to various countries will make Investors brings their goods & services to the country
* Good roads always bring

K5. Do you have any other comments about the proposed project?

* Please we need this time the proposed projects to be Implemented straight away.

Howard Humphreys
Consulting Engineers

SOCIO-ECONOMIC QUESTIONNAIRE

The Government of the Republic of South Sudan (GRSS) has received funding from the International Development Association (IDA) in the form of a Project Preparation Advance (PPA) for the proposed South Sudan Transport Sector Development Project (SS-TSDP) to expedite the project preparation process and support the initial capacity strengthening of the implementing agencies. World Bank has assessed the project environment and social risks for the Juba-Torit-Kapoeta-Nadapal road (358.2Km) for upgrading from gravel to bitumen standards and assigned a High-Risk rating for both Environmental and Social.

The GRSS through the Ministry of Roads and Bridges has engaged an independent environmental consulting firm to undertake Environmental and Social Impact Assessment (Howard Humphreys East Africa Ltd). The study involves conducting stakeholder engagement to create awareness about the proposed project and obtain people's opinions, concerns and suggestions. The Socio-Economic Questionnaire is one of the data collection tools being used by the ESIA team to obtain project information. Your assistance in filling the questionnaire will significantly help in the preparation of the ESIA report.

A. PERSONAL DETAILS OF THE RESPONDENT		
NAME	Teresa Mauro Alaun	
STATE	1. Central Equatoria	(2.) Eastern Equatoria
COUNTY	Torit	
PAYAM	Nyong	
BOMA	Nyong	
VILLAGE	Torit	
RESIDENCE	1.Rural Area	2. Urban Area
NAME OF ENUMERATOR	Nicola Tom mathew	
Time:	Start: 2:12 PM	End: 2:22 PM
SIGNATURE & DATE		

B. BACKGROUND INFORMATION

B1. Gender of the respondent (*tick where appropriate*)

a) Male	(b) Female	c) Other

B2. What is your Age Group in years?

a) Below 18	(b) 19-35	c) 36-45	d) 46 – 55	e) 56 – 65	f) 66 – 75	g) Above 79

B3. Marital status

(a) Married	b) Single	c) Widow/Widower	d) Divorced	e) Separated

B4. What is the highest level of education you have obtained?

a) Never attended school	(b) Primary school	c) Secondary school	d) Tertiary	e) Other Specify

B4.1 If you have ever attended school, for how many years were you in School?

a) 1-2years	b) 2-3years	c) 3-4 years	d) 4-5years	(e) 6-7years	f) Over 8years

B4.2 What is the distance to the nearest primary School from this village in kilometres One Kms

B4.3 If you did not complete school what was the main reason?

(a) Lack of fees	b) Conflict	c) Too far	d) Family relocated	e) No teachers	f) School closed	g) Other Specify

B4.4 What is the number of children of School going Age not in School Currently?

Boys 3 Girls 3

B5. Religious affiliation of the respondent?

(a) Christian	b) Muslim	c) Hindu	d) Other specify

B6. What is the total size of your household? 8 household

B6.1 How many are: Male 4 Female 4 Total 8

B6.2 How many are: Below 18yrs 6 Over 18yrs 2 Total 8

B6.3 Who is the head of the household? Man

B7. Does any of your household members live with any form of disability? a) Yes (b) No

B7.1 If answer to (B7) above is yes, state the type of disability and fill the table below:

Type of disability _____

No of Males	Age	Employment status	Profession	Source of livelihood	Contact details
No. of Females	Age	Employment status	Profession	Source of livelihood	Contact details

B8. Does your household have orphans? a). Yes (b) No

B8.1 If answer to B8 above is yes, kindly provide the information below:

No of Males	Age	Employment status	Profession	Source of livelihood	Contact details
No. of Females	Age	Employment status	Profession	Source of livelihood	Contact details

B9 Does your Household have elderly persons? (a) Yes b) No

B9.1 If yes, kindly provide the information below

No of Males	Age	Employment status	Profession	Source of livelihood	Contact details
	85 yrs				

No. of Females	Age	Employment status	Profession	Source of livelihood	Contact details
	85 Yrs				

B10. What is your ethnicity? _____

C. SOURCE OF LIVELIHOOD

C1. Are you in employment or not? NO

If **not**, state if you are self-employed, what is the nature of your work? Farmer

(a) Farming ✓	b) Grazing	c) Trading (tick the type of trade you practice)	Shop keeper Hotel business Sale of Charcoal Sale of grass Hunting game meat Other specify_____

If **yes**, what is your profession and where are you employed?

(fill profession here)	Place of employment (*tick where appropriate*)		
	a) Government sector	b) Humanitarian sector	c) Business Enterprise

C2. What is the MAIN source of Income for the Household? _____

C3. What is the average monthly income in SDP per month from the following?

0-10,000	10,001-20,000 ✓	20,001-30,000	30,001-40,000	40,000-50,000	Above 50,000

D. ENERGY

D1. Indicate the most common source of energy for lighting.

a) Electricity	b) Paraffin	c) Solar	(d) Candle	e) Other Specify

D2. Indicate the source of cooking energy.

(a) Firewood	b) charcoal	c) Gas	d) Paraffin	e) Other Specify

E. HIV/AIDS KNOWLEDGE AND PREVENTION

E1. Have you ever taken an HIV test?

(a) Yes	b) No

E2. Are you aware that there are Sexually Transmitted Infections (STIs)? (a). Yes b), No

E3. What methods would you say are mostly used to protect oneself from getting STIs in your area?

(a) Condom use	b) Abstinence	c) Stick to one faithful partner.	d) Other specify

F. HOUSING

F1. Do you rent or own the house that you currently live in? Renting

F2. What is the type of house that you live in?

a) Permanent	b) Semi-permanent	(c) Temporary

G. WATER

G1. What is the Main source of water used in your household?

a) Piped into house	b) Purchase from water bowser	c) Borehole	(d) River/spring	e) Roof catchment	f) Other Specify

G2. How do you dispose the wastewater in your household?

a) Sewer	b) Pit Latrine	(c) Direct to the ground	d) Other Specify

H. TRANSPORT

H1. What is the common means of transport that you use?

a) Air	b) public vehicle	c) Personal car	d) Motorbike	e) Bicycle	f) Rickshaw (Tuk Tuk)	g) Other Specify Footing

H2. What do you think should be done to enhance the road safety of the pedestrians?

_____

_____

I. ACCESS TO HEALTH

I1. Do you have access to a health facility within your area of residence? Yes

I2. How far in kilometres is the nearest health facility? 400 Kms

I3. What challenge do people here face when they visit a health facility?

(a) Lack of drugs and medical equipment	b) Inexperienced staff	c) Lack of staff	d) waiting for too long	e) Other specify

I4. Where did the last birth in the household take place?

(a) Public health facility	b) private health facility	c) At home	d) Other Specify

J. LAND

J1. Do you own land? No

J1.1 If yes, is it under (a) customary tenure, (b) freehold tenure or (c) leasehold tenure?

J1.2. Also, indicate the type of classification of the land you own and the type of documentation you possess as proof of ownership.

a) Public	b) Private	(c) Community

K. OWNERSHIP OF MOBILE PHONE

K1. Do you own a mobile phone? (a) Yes (b) No

K2. Are you registered for mobile money transfer? (a) Yes (b) No

L. PROJECT INFORMATION

K1. Do you support the proposed construction of the Juba-Torit-Kapoeta-Nadapal Road? (a) Yes (b) No

K2. Regarding the proposed construction of the Juba-Torit-Kapoeta-Nadapal Road, how will it impact (positively and negatively) the community operations and means of transport?

Positivesy impact
1- Economicaly
2- Trasportatinoly

K3. What are some of the transport challenges faced by people living and working in this area:

1- Lack of road
2- Lack of Bredges

K4. Perception of the proposed construction of the Juba-Torit-Kapoeta-Nadapal Road

K4.1 Do you consider the proposed construction of the Juba-Torit-Kapoeta-Nadapal Road a worthwhile investment by the Government of Republic of South Sudan?

(1) yes
2) no

K4.2 Please explain your answer.

K5. Do you have any other comments about the proposed project?

Howard Humphreys
Consulting Engineers

SOCIO-ECONOMIC QUESTIONNAIRE

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A. PERSONAL DETAILS OF THE RESPONDENT		
NAME SALTO IHumoi		
STATE EET	1. Central Equatoria	2. Eastern Equatoria
COUNTY TORIT		
PAYAM HIYALA		
BOMA TIRRALGORE		
VILLAGE TIRRALGORE		
RESIDENCE	1.Rural Area	2. Urban Area
NAME OF ENUMERATOR		
Time:	Start:	End:
SIGNATURE & DATE		

B. BACKGROUND INFORMATION

B1. Gender of the respondent (*tick where appropriate*)

a) Male	b) Female	c) Other

B2. What is your Age Group in years?

a) Below 18	b) 19-35	c) 36-45	d) 46 – 55	e) 56 – 65	f) 66 – 75	g) Above 79

B3. Marital status

a) Married ✓	b) Single	c) Widow/Widower	d) Divorced	e) Separated

B4. What is the highest level of education you have obtained?

a) Never attended school	b) Primary school	c) Secondary school S.3	d) Tertiary	e) Other Specify

B4.1 If you have ever attended school, for how many years were you in School?

a) 1-2years	b) 2-3years	c) 3-4 years	d) 4-5years	e) 6-7years	f) Over 8years

B4.2 What is the distance to the nearest primary School from this village in kilometres_____

B4.3 If you did not complete school what was the main reason?

a) Lack of fees	b) Conflict	c) Too far	d) Family relocated	e) No teachers	f) School closed	g) Other Specify

B4.4 What is the number of children of School going Age not in School Currently?

Boys_____ Girls_____

B5. Religious affiliation of the respondent?

a) Christian	b) Muslim	c) Hindu	d) Other specify

B6. What is the total size of your household? _____

B6.1 How many are: Male 10 Female 5 Total 15

B6.2 How many are: Below 18yrs 6 Over 18yrs 4 Total 10

B6.3 Who is the head of the household? Dominic Ofula

B7. Does any of your household members live with any form of disability? a) Yes b) No

B7.1 If answer to (B7) above is yes, state the type of disability and fill the table below:

Type of disability _____

No of Males	Age	Employment status	Profession	Source of livelihood	Contact details
No. of Females	Age	Employment status	Profession	Source of livelihood	Contact details

B8. Does your household have orphans? a). Yes b) No

B8.1 If answer to B8 above is yes, kindly provide the information below:

No of Males	Age	Employment status	Profession	Source of livelihood	Contact details
No. of Females	Age	Employment status	Profession	Source of livelihood	Contact details

B9 Does your Household have elderly persons? a) Yes b) No

B9.1 If yes, kindly provide the information below

No of Males	Age	Employment status	Profession	Source of livelihood	Contact details

No. of Females	Age	Employment status	Profession	Source of livelihood	Contact details

B10. What is your ethnicity? _____

C. SOURCE OF LIVELIHOOD

C1. Are you in employment or not? _____
If not, state if you are self-employed, what is the nature of your work?

a) Farming	b) Grazing	c) Trading (tick the type of trade you practice)	Shop keeper Hotel business Sale of Charcoal Sale of grass Hunting game meat Other specify_____

If yes, what is your profession and where are you employed?

(fill profession here)	Place of employment (*tick where appropriate*)		
	a) Government sector	b) Humanitarian sector	c) Business Enterprise

C2. What is the MAIN source of Income for the Household? digging

C3. What is the average monthly income in SDP per month from the following?

0-10,000	10,001-20,000	20,001-30,000	30,001-40,000	40,000-50,000	Above 50,000

D. ENERGY

D1. Indicate the most common source of energy for lighting.

a) Electricity	b) Paraffin	c) Solar	d) Candle	e) Other Specify

D2. Indicate the source of cooking energy.

a) Firewood	b) charcoal	c) Gas	d) Paraffin	e) Other Specify

E. HIV/AIDS KNOWLEDGE AND PREVENTION

E1. Have you ever taken an HIV test?

a) Yes	b) No

E2. Are you aware that there are Sexually Transmitted Infections (STIs)? a). Yes b), No
E3. What methods would you say are mostly used to protect oneself from getting STIs in your area?

a) Condom use	b) Abstinence	c) Stick to one faithful partner.	d) Other specify

F. HOUSING

F1. Do you rent or own the house that you currently live in? _____
F2. What is the type of house that you live in?

a) Permanent	b) Semi-permanent	c) Temporary

G. WATER

G1. What is the Main source of water used in your household?

a) Piped into house	b) Purchase from water bowser	(c) Borehole	d) River/spring	e) Roof catchment	f) Other Specify

G2. How do you dispose the wastewater in your household?

a) Sewer	b) Pit Latrine	(c) Direct to the ground	d) Other Specify

H. TRANSPORT

H1. What is the common means of transport that you use?

a) Air	b) public vehicle	c) Personal car	d) Motorbike	e) Bicycle	f) Rickshaw (Tuk Tuk)	(g) Other Specify

H2. What do you think should be done to enhance the road safety of the pedestrians?

Road

I. ACCESS TO HEALTH

I1. Do you have access to a health facility within your area of residence? Road

I2. How far in kilometres is the nearest health facility? 7 kilometeres

I3. What challenge do people here face when they visit a health facility?

a) Lack of drugs and medical equipment	b) Inexperienced staff	c) Lack of staff	d) waiting for too long	e) Other specify

I4. Where did the last birth in the household take place?

(a) Public health facility	b) private health facility	c) At home	d) Other Specify

J. LAND

J1. Do you own land? Yes

J1.1 If yes, is it under (a) customary tenure, (b) freehold tenure or (c) leasehold tenure?

J1.2. Also, indicate the type of classification of the land you own and the type of documentation you possess as proof of ownership.

a) Public	b) Private	c) Community

K. OWNERSHIP OF MOBILE PHONE

K1. Do you own a mobile phone? (a) Yes (b) No

K2. Are you registered for mobile money transfer? (a) Yes (b) No

L. PROJECT INFORMATION

K1. Do you support the proposed construction of the Juba-Torit-Kapoeta-Nadapal Road? (a) Yes (b) No

Howard Humphreys
Consulting Engineers

K2. Regarding the proposed construction of the Juba-Torit-Kapoeta-Nadapal Road, how will it impact (positively and negatively) the community operations and means of transport?

(1) The implemeet of Road it help us TO carry our goods
(2) it help us to transfer our Goods

K3. What are some of the transport challenges faced by people living and working in this area:

luck of Good transport

K4. Perception of the proposed construction of the Juba-Torit-Kapoeta-Nadapal Road

K4.1 Do you consider the proposed construction of the Juba-Torit-Kapoeta-Nadapal Road a worthwhile investment by the Government of Republic of South Sudan?

(1) yes
2) no

K4.2 Please explain your answer.

because it help us TO pass Throught

K5. Do you have any other comments about the proposed project?

Yes

Howard Humphreys
Consulting Engineers

SOCIO-ECONOMIC QUESTIONNAIRE

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A. PERSONAL DETAILS OF THE RESPONDENT		
NAME	LOLUP LOKAI STEPHEN	
STATE	1. Central Equatoria	2. Eastern Equatoria ✓
COUNTY	KAPOETA EAST COUNTY	
PAYAM	KATOBOKI	
BOMA	LOWOYAKALI	
VILLAGE	LOWOYAKALI	
RESIDENCE	1.Rural Area	2. Urban Area ✓
NAME OF ENUMERATOR		
Time: SEPT. 2024	Start: NOW	End: 2027
SIGNATURE & DATE		

B. BACKGROUND INFORMATION

B1. Gender of the respondent (*tick where appropriate*)

a) Male ✓	b) Female	c) Other

B2. What is your Age Group in years?

a) Below 18	b) 19-35	c) 36-45 ✓	d) 46 – 55	e) 56 – 65	f) 66 – 75	g) Above 79

B3. Marital status

a) Married ✓	b) Single	c) Widow/Widower	d) Divorced	e) Separated

B4. What is the highest level of education you have obtained?

a) Never attended school	b) Primary school	c) ✓ Secondary school	d) Tertiary	e) Other Specify

B4.1 If you have ever attended school, for how many years were you in School?

a) 1-2years	b) 2-3years	c) 3-4 years	d) 4-5years	e) 6-7years	f) Over 8years ✓

B4.2 What is the distance to the nearest primary School from this village in kilometres 1.5 kilometers

B4.3 If you did not complete school what was the main reason?

a) Lack of fees ✓	b) Conflict	c) Too far	d) Family relocated	e) No teachers	f) School closed	g) Other Specify

B4.4 What is the number of children of School going Age not in School Currently?

Boys_____ Girls_____

B5. Religious affiliation of the respondent?

a) Christian ✓	b) Muslim	c) Hindu	d) Other specify

B6. What is the total size of your household? 3

B6.1 How many are: Male 3 Female 4 Total 7

B6.2 How many are: Below 18yrs 4 Over 18yrs 3 Total 07

B6.3 Who is the head of the household? [illegible]

B7. Does any of your household members live with any form of disability? a) Yes ✓ b) No

B7.1 If answer to (B7) above is yes, state the type of disability and fill the table below:

Type of disability [illegible]

No of Males 3	Age 24, 19, 14	Employment status	Profession STUDENTS	Source of livelihood	Contact details
No. of Females 4	Age 18, 16, 15, 13	Employment status	Profession STUDENTS	Source of livelihood	Contact details

B8. Does your household have orphans? a). Yes ✓ b) No

B8.1 If answer to B8 above is yes, kindly provide the information below:

No of Males NIL	Age	Employment status	Profession	Source of livelihood	Contact details
No. of Females 1	Age 2-1/5 MOTHER She was died 2018	Employment status	Profession STUDENT NIL	Source of livelihood	Contact details NO.

B9 Does your Household have elderly persons? a) Yes ✓ b) No

B9.1 If yes, kindly provide the information below

No of Males 1	Age 45	Employment status YES	Profession NURSE INCHARGE	Source of livelihood	Contact details 0912383377

No. of Females	Age	Employment status	Profession	Source of livelihood	Contact details

B10. What is your ethnicity? _____

C. SOURCE OF LIVELIHOOD

C1. Are you in employment or not? yes

If not, state if you are self-employed, what is the nature of your work?

a) ✓ Farming	b) Grazing	c) Trading (tick the type of trade you practice)	Shop keeper Hotel business Sale of Charcoal Sale of grass Hunting game meat Other specify_____

If yes, what is your profession and where are you employed?

(fill profession here)	Place of employment (*tick where appropriate*)		
	a) ✓ Government sector	b) Humanitarian sector	c) Business Enterprise

C2. What is the MAIN source of Income for the Household? Farming

C3. What is the average monthly income in SDP per month from the following?

0-10,000	10,001-20,000	20,001-30,000	30,001-40,000	40,000-50,000	Above 50,000 ✓

D. ENERGY

D1. Indicate the most common source of energy for lighting.

a) Electricity	b) Paraffin	c) Solar	d) ✓ Candle	e) Other Specify

D2. Indicate the source of cooking energy.

a) ✓ Firewood	b) ✓ charcoal	c) Gas	d) Paraffin	e) Other Specify

E. HIV/AIDS KNOWLEDGE AND PREVENTION

E1. Have you ever taken an HIV test?

a) Yes ✓	b) No

E2. Are you aware that there are Sexually Transmitted Infections (STIs)? a). Yes ✓ b), No

E3. What methods would you say are mostly used to protect oneself from getting STIs in your area?

a) ✓ Condom use	b) Abstinence	c) ✓ Stick to one faithful partner.	d) Other specify

F. HOUSING

F1. Do you rent or own the house that you currently live in? NO

F2. What is the type of house that you live in?

a) Permanent	b) Semi-permanent	c) ✓ Temporary

G. WATER

G1. What is the Main source of water used in your household?

a) Piped into house	b) Purchase from water bowser	c) Borehole	d) River/spring	e) Roof catchment	f) Other Specify
		✓			

G2. How do you dispose the wastewater in your household?

a) Sewer	b) Pit Latrine	c) Direct to the ground	d) Other Specify
		✓	

H. TRANSPORT

H1. What is the common means of transport that you use?

a) Air	b) public vehicle	c) Personal car	d) Motorbike	e) Bicycle	f) Rickshaw (Tuk Tuk)	g) Other Specify
						Expansion of road

H2. What do you think should be done to enhance the road safety of the pedestrians?

Marking Good Bridges to maintain for Public vehicle

To concreting wiring Our Acres Paved Country Roads and Locations and making Income from Trading

I. ACCESS TO HEALTH

I1. Do you have access to a health facility within your area of residence? PHCU

I2. How far in kilometres is the nearest health facility? 2kms

I3. What challenge do people here face when they visit a health facility?

a) Lack of drugs and medical equipment	b) Inexperienced staff	c) Lack of staff	d) waiting for too long	e) Other specify
		✓		

I4. Where did the last birth in the household take place?

a) Public health facility	b) private health facility	c) At home	d) Other Specify
✓			

J. LAND

J1. Do you own land? Person ownership

J1.1 If yes, is it under (a) customary tenure, (b) freehold tenure or (c) leasehold tenure?

J1.2. Also, indicate the type of classification of the land you own and the type of documentation you possess as proof of ownership.

a) Public	b) Private	c) Community
		✓

K. OWNERSHIP OF MOBILE PHONE

K1. Do you own a mobile phone? (a) Yes (b) No

K2. Are you registered for mobile money transfer? (a) Yes (b) No

L. PROJECT INFORMATION

K1. Do you support the proposed construction of the Juba-Torit-Kapoeta-Nadapal Road? (a) Yes (b) No

K2. Regarding the proposed construction of the Juba-Torit-Kapoeta-Nadapal Road, how will it impact (positively and negatively) the community operations and means of transport?

Good Construction Very happy because of Road Construction
Community will very happy of making Bussiness
Sitaring Good Bussiness from Community and County.
people should move free from ~~going~~ to ~~to~~ going.

K3. What are some of the transport challenges faced by people living and working in this area:

people will need motorbike.
Bicycles.
Vechiles.

K4. Perception of the proposed construction of the Juba-Torit-Kapoeta-Nadapal Road

K4.1 Do you consider the proposed construction of the Juba-Torit-Kapoeta-Nadapal Road a worthwhile investment by the Government of Republic of South Sudan?

1) ✓yes
2) no

K4.2 Please explain your answer.

We will need
Our Community here in Lemogwaki Kapoeta East

K5. Do you have any other comments about the proposed project?

-yes We Need Investment of Road Consiruction.
We Proposed Our Government of South Sundan to go ahead.

Howard Humphreys
Consulting Engineers

SOCIO-ECONOMIC QUESTIONNAIRE

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A. PERSONAL DETAILS OF THE RESPONDENT		
NAME	FRANCIS NATO LOPUKEI	
STATE	1. Central Equatoria	2. Eastern Equatoria
COUNTY	NAPUS	
PAYAM	NAPUS	
BOMA	NAPUS	
VILLAGE	Kalock @ Lolimme	
RESIDENCE	1.Rural Area	2. Urban Area
NAME OF ENUMERATOR		
Time:	Start: 1:25	End:
SIGNATURE & DATE		

B. BACKGROUND INFORMATION

B1. Gender of the respondent (*tick where appropriate*)

a) Male ✓	b) Female	c) Other

B2. What is your Age Group in years?

a) Below 18	b) 19-35 ✓	c) 36-45	d) 46 – 55	e) 56 – 65	f) 66 – 75	g) Above 79

B3. Marital status

a) Married ✓	b) Single	c) Widow/Widower	d) Divorced	e) Separated

B4. What is the highest level of education you have obtained?

a) Never attended school	b) Primary school	c) Secondary school ✓	d) Tertiary	e) Other Specify

B4.1 If you have ever attended school, for how many years were you in School?

a) 1-2years	b) 2-3years	c) 3-4 years ✓	d) 4-5years	e) 6-7years	f) Over 8years

B4.2 What is the distance to the nearest primary School from this village in kilometres 3

B4.3 If you did not complete school what was the main reason?

a) Lack of fees	b) Conflict	c) Too far	d) Family relocated	e) No teachers	f) School closed	g) ✓ Other Specify

B4.4 What is the number of children of School going Age not in School Currently?

Boys 8 Girls 6

B5. Religious affiliation of the respondent?

a) Christian ✓	b) Muslim	c) Hindu	d) Other specify

B6. What is the total size of your household? 15

B6.1 How many are: Male 9 Female 6 Total 15

B6.2 How many are: Below 18yrs 6 Over 18yrs 9 Total 15

B6.3 Who is the head of the household? Father

B7. Does any of your household members live with any form of disability? a) Yes b) No

B7.1 If answer to (B7) above is yes, state the type of disability and fill the table below:

Type of disability [redacted] legs problem

No of Males ✓ Akim peter	Age 17	Employment status NO	Profession ~~Stud~~ NO A learn	Source of livelihood farming	Contact details 0928209053
No. of Females	Age	Employment status	Profession	Source of livelihood	Contact details

B8. Does your household have orphans? a). Yes b) No

B8.1 If answer to B8 above is yes, kindly provide the information below:

No of Males peter ~~Ato~~ Aton	Age 12	Employment status NO	Profession A learn	Source of livelihood farming	Contact details 0928209053
No. of Females Night Abao	Age 15	Employment status NO	Profession A learn	Source of livelihood farming	Contact details 0928209053

B9 Does your Household have elderly persons? a) Yes b) No

B9.1 If yes, kindly provide the information below

No of Males Ipia Nagie	Age 71	Employment status NO ~~police office~~	Profession ~~farming~~ farmer	Source of livelihood ~~Farming~~	Contact details ~~0928209053~~

No. of Females	Age	Employment status	Profession	Source of livelihood	Contact details
Ipia Nagle	71	N/A	farmer	Farming	0923209058

B10. What is your ethnicity? _____

C. SOURCE OF LIVELIHOOD

C1. Are you in employment or not? NO

If not, state if you are self-employed, what is the nature of your work?

a) Farming	b) Grazing	c) Trading (tick the type of trade you practice)	Shop keeper Hotel business Sale of Charcoal Sale of grass Hunting game meat Other specify_____
✓			

If yes, what is your profession and where are you employed?

(fill profession here)	Place of employment (*tick where appropriate*)		
	✓ a) Government sector	b) Humanitarian sector	c) Business Enterprise

C2. What is the MAIN source of Income for the Household? Farming

C3. What is the average monthly income in SDP per month from the following?

0-10,000	10,001-20,000	20,001-30,000	30,001-40,000	✓ 40,000-50,000	Above 50,000

D. ENERGY

D1. Indicate the most common source of energy for lighting.

a) Electricity	b) Paraffin	c) Solar ✓	d) Candle	e) Other Specify

D2. Indicate the source of cooking energy.

a) Firewood ✓	b) charcoal	c) Gas	d) Paraffin	e) Other Specify

E. HIV/AIDS KNOWLEDGE AND PREVENTION

E1. Have you ever taken an HIV test?

✓ a) Yes	b) No

E2. Are you aware that there are Sexually Transmitted Infections (STIs)? a). Yes b), No

E3. What methods would you say are mostly used to protect oneself from getting STIs in your area?

a) Condom use ✓	b) Abstinence	c) Stick to one faithful partner.	d) Other specify

F. HOUSING

F1. Do you rent or own the house that you currently live in? NO own house

F2. What is the type of house that you live in?

a) Permanent	b) Semi-permanent	c) Temporary ✓

G. WATER

G1. What is the Main source of water used in your household?

a) Piped into house	b) Purchase from water bowser	c) Borehole ✓	d) River/spring	e) Roof catchment	f) Other Specify

G2. How do you dispose the wastewater in your household?

a) Sewer	b) Pit Latrine	c) Direct to the ground ✓	d) Other Specify

H. TRANSPORT

H1. What is the common means of transport that you use?

a) Air	b) public vehicle ✓	c) Personal car	d) Motorbike	e) Bicycle	f) Rickshaw (Tuk Tuk)	g) Other Specify

H2. What do you think should be done to enhance the road safety of the pedestrians?

Constructing good footmarks next road

I. ACCESS TO HEALTH

I1. Do you have access to a health facility within your area of residence? Yes

I2. How far in kilometres is the nearest health facility? 2 meter

I3. What challenge do people here face when they visit a health facility?

a) Lack of drugs and medical equipment ✓	b) Inexperienced staff	c) Lack of staff	d) waiting for too long	e) Other specify

I4. Where did the last birth in the household take place?

a) Public health facility	b) private health facility	c) At home ✓	d) Other Specify

J. LAND

J1. Do you own land? Yes

J1.1 If yes, is it under (a) customary tenure, (b) freehold tenure or (c) leasehold tenure? ✓

J1.2. Also, indicate the type of classification of the land you own and the type of documentation you possess as proof of ownership.

a) Public	b) Private	c) Community ✓

K. OWNERSHIP OF MOBILE PHONE

K1. Do you own a mobile phone? (a) ✓ Yes (b) No

K2. Are you registered for mobile money transfer? (a) ✓ Yes (b) No

L. PROJECT INFORMATION

K1. Do you support the proposed construction of the Juba-Torit-Kapoeta-Nadapal Road? (a) ✓ Yes (b) No

K2. Regarding the proposed construction of the Juba-Torit-Kapoeta-Nadapal Road, how will it impact (positively and negatively) the community operations and means of transport?

By Bridmy good roads
By Creater Jobs opp Opportunities to the peoples
by giver awarness to the people

K3. What are some of the transport challenges faced by people living and working in this area:

animals cross
robber on the roadside

K4. Perception of the proposed construction of the Juba-Torit-Kapoeta-Nadapal Road

K4.1 Do you consider the proposed construction of the Juba-Torit-Kapoeta-Nadapal Road a worthwhile investment by the Government of Republic of South Sudan?

✓ 1) yes
2) no

K4.2 Please explain your answer.

Boosts it creates good movement of people

K5. Do you have any other comments about the proposed project?

NO

18

Howard Humphreys
Consulting Engineers

SOCIO-ECONOMIC QUESTIONNAIRE

The Government of the Republic of South Sudan (GRSS) has received funding from the International Development Association (IDA) in the form of a Project Preparation Advance (PPA) for the proposed South Sudan Transport Sector Development Project (SS-TSDP) to expedite the project preparation process and support the initial capacity strengthening of the implementing agencies. World Bank has assessed the project environment and social risks for the Juba-Torit-Kapoeta-Nadapal road (358.2Km) for upgrading from gravel to bitumen standards and assigned a High-Risk rating for both Environmental and Social.

The GRSS through the Ministry of Roads and Bridges has engaged an independent environmental consulting firm to undertake Environmental and Social Impact Assessment (Howard Humphreys East Africa Ltd). The study involves conducting stakeholder engagement to create awareness about the proposed project and obtain people's opinions, concerns and suggestions. The Socio-Economic Questionnaire is one of the data collection tools being used by the ESIA team to obtain project information. Your assistance in filling the questionnaire will significantly help in the preparation of the ESIA report.

A. PERSONAL DETAILS OF THE RESPONDENT		
NAME	SOLOMON FADIRI PARISIO	
STATE	1. Central Equatoria	2. Eastern Equatoria
COUNTY	IKWOTO COUNTY	
PAYAM	CHATHARY	
BOMA	BANAYA BOMA	
VILLAGE	OBIRA VILLAGE	
RESIDENCE	1.Rural Area	2. Urban Area
NAME OF ENUMERATOR		
Time:	Start: 12:34 pm	End: 2:10 pm
SIGNATURE & DATE	7th/09/2024	

B. BACKGROUND INFORMATION

B1. Gender of the respondent (*tick where appropriate*)

a) Male ✓	b) Female	c) Other

B2. What is your Age Group in years?

a) Below 18 ✓	b) 19-35	c) 36-45	d) 46 – 55	e) 56 – 65	f) 66 – 75	g) Above 79

B3. Marital status

a) Married	b) Single ✓	c) Widow/Widower	d) Divorced	e) Separated

B4. What is the highest level of education you have obtained?

a) Never attended school	b) Primary school	c) Secondary school ✓	d) Tertiary	e) Other Specify

B4.1 If you have ever attended school, for how many years were you in School?

a) 1-2years	b) 2-3years	c) 3-4 years	d) 4-5years	e) 6-7years	f) Over 8years ✓

B4.2 What is the distance to the nearest primary School from this village in kilometres 0.5Km

B4.3 If you did not complete school what was the main reason?

a) Lack of fees	b) Conflict	c) Too far	d) Family relocated	e) No teachers	f) School closed	g) Other Specify

B4.4 What is the number of children of School going Age not in School Currently?

Boys 34 Girls 31

B5. Religious affiliation of the respondent?

a) Christian ✓	b) Muslim	c) Hindu	d) Other specify

B6. What is the total size of your household? _____

B6.1 How many are: Male 64 Female 32 Total 98

B6.2 How many are: Below 18yrs 22 Over 18yrs 15 Total 37

B6.3 Who is the head of the household? Patricia Situchali

B7. Does any of your household members live with any form of disability? a) Yes ✓ b) No

B7.1 If answer to (B7) above is yes, state the type of disability and fill the table below:

Type of disability yes Cripple

No of Males	Age	Employment status	Profession	Source of livelihood	Contact details
No. of Females	Age	Employment status	Profession	Source of livelihood	Contact details

B8. Does your household have orphans? a). Yes ✓ b) No

B8.1 If answer to B8 above is yes, kindly provide the information below:

No of Males	Age	Employment status	Profession	Source of livelihood	Contact details
No. of Females	Age	Employment status	Profession	Source of livelihood	Contact details

B9 Does your Household have elderly persons? a) Yes ✓ b) No

B9.1 If yes, kindly provide the information below

No of Males	Age	Employment status	Profession	Source of livelihood	Contact details

No. of Females	Age	Employment status	Profession	Source of livelihood	Contact details

B10. What is your ethnicity? My Ethnicity is

C. SOURCE OF LIVELIHOOD

C1. Are you in employment or not? I am not in Employement.
If not, state if you are self-employed, what is the nature of your work?

✓a) Farming	b) Grazing	c) Trading (tick the type of trade you practice)	Shop keeper Hotel business Sale of Charcoal Sale of grass Hunting game meat Other specify_____

If yes, what is your profession and where are you employed?

(fill profession here)	Place of employment (*tick where appropriate*)		
	a) Government sector	b) Humanitarian sector	c) Business Enterprise

C2. What is the MAIN source of Income for the Household? FitH Humanitarian Sector

C3. What is the average monthly income in SDP per month from the following?

0-10,000	10,001-20,000	20,001-30,000	30,001-40,000	40,000-50,000	Above 50,000

D. ENERGY

D1. Indicate the most common source of energy for lighting.

a) Electricity	b) Paraffin	c) Solar	(d) Candle	e) Other Specify

D2. Indicate the source of cooking energy.

(a) Firewood	b) charcoal	c) Gas	d) Paraffin	e) Other Specify

E. HIV/AIDS KNOWLEDGE AND PREVENTION

E1. Have you ever taken an HIV test?

a) Yes	(b) No

E2. Are you aware that there are Sexually Transmitted Infections (STIs)? (a). Yes b), No
E3. What methods would you say are mostly used to protect oneself from getting STIs in your area?

(a) Condom use	b) Abstinence	c) Stick to one faithful partner.	d) Other specify

F. HOUSING

F1. Do you rent or own the house that you currently live in? YES No
F2. What is the type of house that you live in?

a) Permanent	b) Semi-permanent	(c) Temporary

G. WATER

G1. What is the Main source of water used in your household?

a) Piped into house	b) Purchase from water bowser	(c) Borehole	d) River/spring	e) Roof catchment	f) Other Specify

G2. How do you dispose the wastewater in your household?

(a) Sewer	b) Pit Latrine	c) Direct to the ground	d) Other Specify

H. TRANSPORT

H1. What is the common means of transport that you use?

a) Air	b) public vehicle	c) Personal car	d) Motorbike	(e) Bicycle	f) Rickshaw (Tuk Tuk)	g) Other Specify

H2. What do you think should be done to enhance the road safety of the pedestrians?

you Should Constructed Road in to our village.

I. ACCESS TO HEALTH

I1. Do you have access to a health facility within your area of residence? _____

I2. How far in kilometres is the nearest health facility? _____

I3. What challenge do people here face when they visit a health facility?

a) Lack of drugs and medical equipment	b) Inexperienced staff	c) Lack of staff	d) waiting for too long	e) Other specify

I4. Where did the last birth in the household take place?

(a) Public health facility	b) private health facility	c) At home	d) Other Specify

J. LAND

J1. Do you own land? _____

J1.1 If yes, is it under (a) customary tenure, (b) freehold tenure or (c) leasehold tenure?

J1.2. Also, indicate the type of classification of the land you own and the type of documentation you possess as proof of ownership.

a) Public	b) Private	(c) Community

K. OWNERSHIP OF MOBILE PHONE

K1. Do you own a mobile phone? (a) Yes (b) No

K2. Are you registered for mobile money transfer? (a) Yes (b) No

L. PROJECT INFORMATION

K1. Do you support the proposed construction of the Juba-Torit-Kapoeta-Nadapal Road? (a) Yes (b) No

K2. Regarding the proposed construction of the Juba-Torit-Kapoeta-Nadapal Road, how will it impact (positively and negatively) the community operations and means of transport?

K3. What are some of the transport challenges faced by people living and working in this area:

The problem which facing people poor road Construction

K4. Perception of the proposed construction of the Juba-Torit-Kapoeta-Nadapal Road

K4.1 Do you consider the proposed construction of the Juba-Torit-Kapoeta-Nadapal Road a worthwhile investment by the Government of Republic of South Sudan?

(1) yes
2) no

K4.2 Please explain your answer.

I am appriciate for that if your help us iwill be very glad ter your

K5. Do you have any other comments about the proposed project?

yes in my Comment i like it too these protect if you help us people.

Appendix B.3: Minutes of Meetings

Meeting Notes

Project:	Consultancy Services for the Environmental and Social Impact Assessment of the Juba-Torit-Kapoeta-Nadapal Road Upgrading to Bitumen Standards
Subject:	Focused Group Discussion at Nesitu Village-Kudwo Boma

Meeting place:	Kudwo Community Hall	Meeting no:	01
Date and time:	3/09/2024 10:45am	Minutes by:	Anne Rita Koki

Attendees

1. Urudi Caesar 2. Pareng Philip 3. Anne Rita Koki 4. Chief Modi Modi 5. 30No Attendees	Representing:	MRB/PIU-Social Management Officer MRB/PIU-Environmental Officer HHEA-Sociologist Boma Chief-Kudwo Boma

Agenda

1. Introduction
2. Opening Remarks
3. Project Brief
4. Plenary Session
5. Closing Remarks

Introduction

Chief Modi Modi welcomed the members present to the meeting. He indicated that the Ministry of Roads and Bridges had asked for a meeting with the community members to discuss about the proposed Juba-Torit-Kapoeta-Nadapal Road Project. He asked for apologies as he could not attend the entire meeting but requested the community members for cooperation.

Item No.	Description and Action	Action Deadline	Responsible
1.0	Opening Remarks		
	MRB/PIU (CLIENT) The Government of the Republic of South Sudan (GRSS) seeks to tarmac the Juba-Torit-Kapoeta Nadapal Road. The road is a regional road that connects South Sudan to neighbouring Kenya and potentially to Ethiopia. The World Bank intends to finance the construction of the road, but as part of the project preparation process, the previous ESIA studies undertaken in 2013 needs to be updated. In this regard, the Ministry of Roads and Bridges (MRB) has engaged Howard Humphreys East Africa Ltd - a Kenyan firm (HHEA) to undertake Environmental and Social Impact Assessment (ESIA) Studies. The Ministry has also engaged other two consultants to undertake Design review of the road and the other to prepare the Resettlement Action Plan.		
2.0	Project Brief		
	HHEA (CONSULTANT) The road project is currently in the planning phase and its upon completion that the construction phase will commence. The ESIA studies are undertaken during the planning phase. It involves assessment of the existing environmental and social conditions before construction with the aim of identifying potential impacts that may arise during the construction and operation phases. All interested and affected stakeholders along the road corridor are also consulted to create awareness about the project and obtain their views, concerns and opinions about the projects. The Consultant seeks to understand the following aspects: ▪ Whether they accept the implementation of the road project. ▪ How the Nesitu village is likely to be impacted by the road project; positively and negatively. ▪ Where does the local community report their complaints and how are they addressed? ▪ Any existing migration routes for wild animals along the proposed road project. ▪ Any existing cultural heritage within the road corridor and cultural practices that are likely to be affected by the implementation of the road project. ▪ Any existing cases of GBV/SEAH ▪ Any other concern. The feedback will help in foreseeing potential risks and development of the necessary management plans before the construction phase commences.		
3.0	Plenary Session		
	a. Project acceptance		

Item No.	Description and Action	Action Deadline	Responsible
	The community was pleased with the approach undertaken by the MRB. The previous road construction just commenced without prior notice or community consultations. The Kudwo community embraces the proposed development. The road is a crucial need within the area and the entire country. Construction needs to commence as soon as possible. **b. Project Benefits** The road will promote the free movement of people and commodities. Job opportunities will be created, and the local youths should be prioritized during recruitment. **c. Borrow Pits** During previous construction, the community offered free murram to the contractor. However, the borrow pits remain unrehabilitated and they pose a safety risk to the community and their livestock. **d. Drainage System** The current road condition has poor drainage that results in flooding of homes during the rainy season. The previous contractor raised the road level which interfered with the natural water flow. **e. Grievances** The community reports their issues directly to the Boma chief who resolves them. **f. Road Design** The community requests for the road to remain at ground level because of poor drainage. Also, when its raised, there is a high risk of accidents from vehicles. The contractor should consult with the community on camp site locations. They also requested the contractor to build permanent camp sites so that after construction, they can be inherited by the community as public facilities. **g. Extent of Road Corridor** The road corridor has already been demarcated and the designer is urged to stick to the existing space to avoid any displacement or loss of livelihood. **h. Road Safety** Bumps should be erected across the road to regulate the speed of vehicles and enhance safety of the community. **i. GBV/SEAH** There are no cases of GBV/SEAH that are reported within the community. If they exist, they are not aware. **j. Wildlife migration points** Wild animals are rarely seen in their village. However, a potential crossing point is near the army camp site at Jebel Maluk. **k. Community requests** They requested that during construction, the road from the highway leading to Kudwo Public Hall and Kudwo Nursery		

Item No.	Description and Action	Action Deadline	Responsible
	and Primary to be improved and made more accessible to the public. **l. Cultural heritage/practices** Before construction commences, the contractor needs to engage the traditional leaders/elders to conduct the initiation ceremony. Also, before they obtain any materials (e.g. murram) from the area, the elders need to conduct certain traditional practices at the area. Specific details of the practices can be obtained from the elders. If the contractor experiences misfortunes such as breaking down of machinery during the construction phase, they need to consult with the elders as well.		
4.0	Closing Remarks		
	a. HHEA-Consultant Appreciated the community for the insightful feedback. The consultant is proposing a three-tier grievance mechanism where issues reported are solved by the boma chief and a local committee. If the complainant is not satisfied with the resolution, the matter is escalated to the mediation committee that is headed by the payam administrator. If one is still unsatisfied, they are free to file a case in a court of law or report directly to the financier for resolution. **b. MRB -Client** For purposes of addressing grievances that will arise during the construction phase, the community needs to form a committee that will work alongside the boma chief to resolve the issues reported. The contractor will be required to develop a code of conduct outlining how the contractor and the workers will behave and interact with the community. **c. Youth representative** Appreciated the client and consultant for the meeting and the approach undertaken. He emphasised on the need for the contractor to work closely with the community. He urged the design team to be keen on drainage. **d. Women representative** They are pleased with the approach adopted and they pledge to cooperate with the government to ensure the road is successfully constructed. When the youth are employed, the income will change how they behave, but they will guide them as necessary. **e. Men representative** The community will be showing the design team of any wild animal crossings they might observe before the road construction commences. He emphasized that traditional practices must be observed, and it will help in promoting awareness among the community. He indicated that the community needs awareness on road safety campaigns.		

Howard Humphreys
Consulting Engineers

ATTENDANCE LIST

CONSULTANCY SERVICES FOR THE ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT OF THE JUBA-TORIT-KAPOETA-NADAPAL ROAD UPGRADING TO BITUMEN STANDARDS

Title: KUDHO. BOMA - LOKIRILI PAYAM – FGD

Venue: NESITU - KUDHO COMMUNITY HALL Time: 10:45am Date: 3/09/2024.

S/No.	Name	Gender (M/F)	Organization	Designation	Phone Number	Email	Signature
1.	Anne Rita Koki	F	HHEA	Sociologist	0928761270	anne.rita.koki@howard humphreys.coke	
2.	Darenge Philip	M	PIU/MRB	Environmentalist	0924687157	Darengejcom@gmail.com	
3-	Urudi Caesar	M	MRB/PIU	Social Mgt Off	0927565090	Urudicaesar@gmail.com	
4-	Simon wani	M	Youth Leader		0927276783	Simonwani9696@	
5-	Justin Mogga Lino	M	—	—	0927044444	Justin Mogga	
6	Louis Ladu	M	—	—	0921421402		
07	charles Jada	M	-	-	0923239672		
08	Paulino Jada saverio	m	-		0924774406		
09	Simon Jada Festo	m			0920943420		
10	Modesto Ladu	m			0926106557		
11	Gabriel Pitia Evelini	m			0925106557		

KUDWO BOMA - NESITU VILLAGE - FGD
JUBA - TORIT - KAPOETA - NADAPAL ROAD.
ESIA COMMUNITY CONSULTATION.

Howard Humphreys
Consulting Engineers

S/No.	Name	Gender (M/F)	Organization	Designation	Phone Number	Email	Signature
12	Flora moyo's	F					
13	Joseph Albino	m			0925700		
14	Rose Bernado	F					
15	Lilian Acho	F					
16	Lilian charles	F					
17	marcelino Lofu	m					
18	Peter Ofello	m					
19	Nablion Wani	m					
20	Asebia Lofu	F					
21	Rose Keji	F					
22	Esther Poni	F					
23	Mary Pete	F					
24	Paskelin Poni	F					
25	Lilian Juan	F					
26	Everyday Poni	F					

Howard Humphreys
Consulting Engineers

ATTENDANCE LIST

CONSULTANCY SERVICES FOR THE ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT OF THE JUBA-TORIT-KAPOETA-NADAPAL ROAD UPGRADING TO BITUMEN STANDARDS

Title: KUDWU BOMA - LOKIRILI PAYAM - FGD .

Venue: NESITU VILLAGE - KUDWO COMMUNITY HALL **Time:** 10:45AM **Date:** 3/9/2024

S/No.	Name	Gender (M/F)	Organization	Designation	Phone Number	Email	Signature
27	Onorina Fani	F					
28	~~Vo~~ Viola Alex	F					
29	Mary Khalisto	F			0923688352		
30	Agnes Lino	F			0926418011		
31	Angelina Moyoo	F					
32	Samuel Jada	M			0925463206		
33	Joseph Wani	M					
34	Modi Modi Tombe	M	~~Exec~~ chief of kudwo boma				

Meeting Notes

Project:	Consultancy Services for the Environmental and Social Impact Assessment of the Juba-Torit-Kapoeta-Nadapal Road Upgrading to Bitumen Standards
Subject:	ESIA Public Meeting at Ng'ang'ala Settlement

Meeting place:	Ng'ang'ala Settlement	Meeting no:1	<no>
Date and time:	September 4, 2024, at 2.00pm	Minutes by:	B. Mutsotso

Attendees

1. 29No. attendees	Representing:	MRB/PIU HHEA Consultant Community Members

Agenda

1. Opening Prayer
2. Introduction
3. Project Presentation
4. Plenary
5. Closing Remarks
6, Closing Prayer

1. Opening Prayer

The meeting was called to order at 2.00 P.m. the Sultan/Chief asked one of the community members to offer a prayer

ITEM	DESCRIPTION AND ACTION	DEADLINE	RESPONSIBLE
2.	**Introduction**		
	The chief introduced himself and welcomed the participants to the meeting. He then requested the representatives of the Ministry of Roads and Bridges to introduce his team. He introduced the team from the Ministry and later asked the Consultant from Howard Humphrey Engineers to		

ITEM	DESCRIPTION AND ACTION	DEADLINE	RESPONSIBLE
	introduce himself and make his remarks about the project.		
3.	**Project Presentation**		
	The Consultant said he was from Howard Humphrey Engineers Ltd from Nairobi. Howard Humphrey was contracted by the Ministry of Roads and Bridges to undertake the ESIA study for the Juba-Torit-Kapoeta-Nadapal Road. The planned tarmacking of this road is part of the EARTTFP. It is part of the greater Eastern Africa Project already completed in Kenya and Tanzania and the Juba-Nadapal section is the only one remaining. The purpose of the meeting is to share project information with the community and also obtain feedback form the community that can be used for final road design. The project has an urban roads component for Kapoeta and Torit towns. The community is free to make proposals for any CSR projects that may be considered by the project during construction. The project will bring many benefits to the community in terms of employment, time saving, cheaper transport costs, free and faster flow of goods, open up new business opportunities and link the community to the region. He then asked the community to ask questions, provide views or any recommendations.		
4.	**Plenary**		
	Pascal Samba. The former company accepted to re-align the road. Will the new road project avoid the mango trees in the village. And will the road have any benefits to the community. Response The road has been re-aligned to outside the village in order to avoid the mango trees. Similarly the road has many benefits to the community including employment and faster movement of people and goods. Question Will the contractor consult the community on where construction materials will be procured. Response The company will decide on where appropriate material will be procured. The community in that area will be consulted. Question The community is happy that for the first time it is being consulted before a project. Response		

ITEM	DESCRIPTION AND ACTION	DEADLINE	RESPONSIBLE
	It is a requirement and good practice by World Bank that community consultation be undertaken before road construction commences. The community then made the following CSR proposals: 1. Relocate and upgrade Ngangala Primary school 2. Upgrade Ngangala Primary Health Centre 3. Network for telephone 4. Upgrade existing road to murram		
5.	**Closing Remarks**		
	The Sultan said that the community supports the project as it represents development. He then asked one of the participants to say the closing prayers.		
6.	**Closing Prayer**		
	A participant said the closing prayer after which the meeting ended		

Howard Humphreys
Consulting Engineers

ATTENDANCE LIST

CONSULTANCY SERVICES FOR THE ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT OF THE JUBA-TORIT-KAPOETA-NADAPAL ROAD UPGRADING TO BITUMEN STANDARDS

Title: ESIA Public Meeting for the Juba – Torit – Kapoeta Nadapal Road

Venue: Ngangala Time: 12 noon Date: 4-9-2024

S/No.	Name	Gender (M/F)	Organization	Designation	Phone Number	Email	Signature
01	Parbeus Pitia	M	Youth m.	Ngangala	-	-	
2	James Alphonce	M	Youth m	Ngangala	-	-	
3	Ragis Wani	M	Youth m	Ngangala	092080006		
4	James Zakaria	M	Youth m	Ngangala	-		
5	Stephen Odhogo	M	m-p	Ngangala	-		
6	Jamelusarano	M	Youth m	Ngangala	0926588185		
7	Joshep Okuk	M	m-p	Ngangala	-		
8	Moresalani	M	Youth m	Ngangala	-		
9	Moresusarano	M	m-p	Ngangala	092673552		
10	Zakaio Ludo	M	Community Aleader	Ngangala	-		
11	Samuel Efrem	M	Teacher	Ngangala	092585602		
12	Prof Beneah Mutebo	M	Consultant	Consultant	0722833012		

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S/No.	Name	Gender (M/F)	Organization	Designation	Phone Number	Email	Signature
12	WILSON TABAN	M	M.P	NGANGELA	0926621230		
13	Patrick omitting	M	Teacher	Ngengala	0929685786	omitting patrick	
14	AJelina Ipon	F	Farming	Ngengala		-	
15	Noroma Fekio	F	Farming	Ngengala			
16	Jaekline Omer	F	Farming	Ngengala			
17	Rose Poni	F	farming	Ngengala		-	

Howard Humphreys
Consulting Engineers

ATTENDANCE LIST

CONSULTANCY SERVICES FOR THE ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT OF THE JUBA-TORIT-KAPOETA-NADAPAL ROAD UPGRADING TO BITUMEN STANDARDS

Title: ESIA Public Meeting for the Juba–Torit–Kapoeta–Nadapal Road

Venue: Ngangala Time: 12.00noon Date: 4–9–2024

S/No.	Name	Gender (M/F)	Organization	Designation	Phone Number	Email	Signature
1-	Bortio Pombe	M	Chief	Elder	–	–	–
2-	Galdino Pitia	M	Elder	Farmer	–	–	–
3-	Pasquale Smsalio	M	Medical Per	In-charge Ngangala Pitea	092206590		
4	Henry Pitia	M	Community M-	Youth	092424075T		
5	James Tom	M	M+B	Ngangala	092—		
6	Saimon Lagga	M	Youth Member	Ngangala	–		
7	Stephen Pitia	M	Youth mem	Ngangala	092065385 9		
8	Charle Alphonse	M	Youth Ledd	Ngangala	092506150		
9	Victor lado Lus	M	Youth M	Ngangala	0920221.891		
10	Felgrino Tombi	M	Youth M	Ngangala	–		
11	Charle Ogalla	M	Youth M..	Ngangala	–		

Meeting Notes

Project:	Consultancy Services for the Environmental and Social Impact Assessment of the Juba-Torit-Kapoeta-Nadapal Road Upgrading to Bitumen Standards
Subject:	Focus Group Discussion at Ngulere Boma

Meeting place:	Ngulere Primary School	Meeting no:	03
Date and time:	4/09/2024	Minutes by:	Anne Rita Koki

Attendees

1. Urudi Caesar 2. Pareng Philip 3. Anne Rita Koki 4. 14 No attendees	Representing:	MRB/PIU-Social Risk Management Officer MRB/PIU-Environmentalist HHEA-Sociologist Community members

Agenda

1. Introduction
2. Opening Remarks
3. Project Brief
4. Plenary session
5. Closing Remarks

Absent with Apology

1. Justin John - Executive Chief, Ngulere Boma

Introduction

The sub-chief called the meeting to order at 1:00pm. Francis Mogga Sebastiano said a word of prayer. The Sub-chief welcomed the members present to the meeting. He reported that the Boma chief was absent, but they would brief him on the meeting proceedings. He appreciated and welcomed the team and indicated that they are looking forward to hear what information the Ministry of Roads and Bridges has for the Ngulere community.

Item No.	Description and Action	Action Deadline	Responsible
1.0	Opening Remarks		
	MRB/PIU (CLIENT) The Government of the Republic of South Sudan (GRSS) seeks to tarmac the Juba-Torit-Kapoeta Nadapal Road. The road is a regional road that connects South Sudan to neighbouring Kenya and potentially to Ethiopia. The World Bank intends to finance the construction of the road, but as part of the project preparation process, the previous ESIA studies undertaken in 2013 needs to be updated. In this regard, the Ministry of Roads and Bridges (MRB) has engaged Howard Humphreys East Africa Ltd - a Kenyan firm (HHEA) to undertake Environmental and Social Impact Assessment (ESIA) Studies. The Ministry has also engaged other two consultants to undertake Design review of the road and the other to prepare the Resettlement Action Plan (RAP). Previous contractor did not involve the community in their activities, but the government has now chosen a different approach. The community has been previously affected by demolitions and destruction of property during the road construction. The team involved in the RAP preparation shall be undertaking an asset inventory for purposes of ensuring the affected persons are compensated.		
2.0	Project Brief		
	HHEA (CONSULTANT) The road project is currently in the planning phase and its upon completion that the construction phase will commence. The ESIA studies are undertaken during the planning phase. It involves assessment of the existing environmental and social conditions before construction with the aim of identifying potential impacts that may arise during the construction and operation phases. All interested and affected stakeholders along the road corridor are also consulted to create awareness about the project and obtain their views, concerns and opinions about the projects. The Consultant seeks to understand the following aspects: ▪ Whether they accept the implementation of the road project. ▪ How Ngulere boma is likely to be impacted by the road project; positively and negatively. ▪ Where does the local community report their complaints and how are they addressed? ▪ Any existing migration routes for wild animals along the proposed road project. ▪ Any existing cultural heritage within the road corridor and cultural practices that are likely to be		

Item No.	Description and Action	Action Deadline	Responsible
	affected by the implementation of the road project. ▪ Any existing cases of GBV/SEAH ▪ Any other concern. The feedback will help in foreseeing potential risks and development of the necessary management plans before the construction phase commences.		
3.0	Plenary Session		
	a. Project Acceptance The community has had previous engagement about the tarmacking of the road, and they are really waiting for the construction to commence. They pledged their support to ensure the successful implementation of the project. b. Project benefits The road will enhance trade across countries. It will help in improving transportation of farm produce to the markets. c. Width of the road corridor The road is approximately 60m wide. However, the RAP team who will be undertaking the asset inventory will be measuring the exact extent of the road corridor and taking an inventory of all affected assets. d. Drainage The road level was raised during the previous construction, resulting in floods into the buildings located adjacent to the road. Water flows directly into the shops resulting in losses. e. Compensation of affected property The community indicated that they want trees such as mango and tamarind trees to be part of the affected property considered for compensation as well as the loss of land by farmers arising from displacement. Also, during past road construction, the compensation finances were issued to the Payam office and to date the affected persons have never received the money. They requested compensation to be done directly to the affected person. f. Construction material Uniform practices and policies should be adopted and practiced along the entire road corridor. The previous road construction utilized local materials such as murram at no cost, yet in other areas payments for the construction materials was done. g. Road Safety The design team should make provisions for road bumps and signages to enhance the safety of the road users. h. Cultural Practices It was reported that before construction commences, the elders need to perform a ceremony where a goat is slaughtered. In their community, if any of their cultural heritage sites is affected by the project, they are willing to relocate the site, but traditional rites have to be performed before relocating.		

Item No.	Description and Action	Action Deadline	Responsible
	i. Grievance Management During the previous road construction, there was no mechanism for addressing the grievances raised. They reported the issues to the boma chief who escalated them to the Payam, but they have never been addressed to date. Response: The consultant is proposing a three-tier grievance mechanism where issues reported are solved by the boma chief and a local committee. If the complainant is not satisfied with the resolution, the matter is escalated to the mediation committee that is headed by the payam administrator. If one is still unsatisfied, they are free to file a case in a court of law or report directly to the financier for resolution. j. Community requests The community requested for the construction of a health facility or construction of classrooms at Ngulere Primary school that currently lacks two classes, and the students have lessons under a tree. The contractor should construct a community hall, if any of the meetings they use for meetings is cut down for purposes of the road project. k. Employment opportunities The local youths should be prioritized for the job opportunities that will be available during the construction phase. l. Wildlife Migration Patterns The common crossing point for wild animals is at Abilingwa (near the second bridge past Ngangala). The animals were last seen in 2023 in this area. They include elephants, lion, leopard and hyena.		
4.0	Closing Remarks		
	HHEA- Consultant The consultant appreciated the community for the feedback and the concerns they have raised. MRB-Client The client indicated that it is also important for women to be involved in the development project meetings as they are part of the road users. Sub-Chief The road will help promote trade in the region and across the country. The community pledges their support even in future engagements.		

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Consulting Engineers

ATTENDANCE LIST

CONSULTANCY SERVICES FOR THE ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT OF THE JUBA-TORIT-KAPOETA-NADAPAL ROAD UPGRADING TO BITUMEN STANDARDS

Title: FGD at Ngulere Boma - Community Consultation.

Venue: Ngulere Primary School **Time:** 1:00pm **Date:** 4/09/2024

S/No.	Name	Gender (M/F)	Organization	Designation	Phone Number	Email	Signature
1.	Anne Rita Koki	F	HHEA	Sociologist	0928761270		~~ARK~~
2.	Parang Philip	M	MRB	Environmentalist	0924687757	Parangkom@gmail.com	
3	[illegible]						
4	CLEMENT DERE						
5	Charles [illegible]						
6	Francis Modi Ladu						
7	Ritia Mogga otto						
8	James Hogalek Lok	M					
9	Jada Kelsi Miria						
10	[illegible] Topher	M					
11	Tombek	M					

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Consulting Engineers

Ngulere Boma - Community Consultation - FGD
Ngulere Primary School.
4/09/2024.

S/No.	Name	Gender (M/F)	Organization	Designation	Phone Number	Email	Signature
12.	ادينلو جيمس	m					
13.	Francis mogga Sebastiano	M					
14.	Loponi Gedozio	m					
15.	Peter Modu Loggek	m					
16	Alfar Gabure	m					
17	وليم لوكر	M					
18	Dominic okenyi	M					
19.	Urudi Caesar	M	MRB/PIU	NSRMO	0 927 365090	urudiawi@gmail.com	

Meeting Notes

Project:	Consultancy Services for the Environmental and Social Impact Assessment of the Juba-Torit-Kapoeta-Nadapal Road Upgrading to Bitumen Standards
Subject:	Public Community Meeting at Illiangari Boma

Meeting place:	Illiangari	Meeting no:	03
Date and time:	4/09/2024 2:45pm	Minutes by:	Anne Rita Koki

Attendees

1. Urudi Caesar 2. Pareng Philip 3. Anne Rita Koki 4. 40 No attendees	Representing:	MRB/PIU-Social Risk Management Officer MRB/PIU-Environmentalist HHEA-Sociologist Community members

Agenda

1. Introduction
2. Opening Remarks
3. Project Brief
4. Plenary session
5. Closing Remarks

Introduction

The meeting was opened with a word of prayer. The chief welcomed the members present and indicated that the meeting had been requested by the National Government through the Ministry of Roads and Bridges. He then welcomed the team to introduce themselves and engage with the community.

Item No.	Description and Action	Action Deadline	Responsible
1.0	Opening Remarks		
	MRB/PIU (CLIENT) The Government of the Republic of South Sudan (GRSS) seeks to tarmac the Juba-Torit-Kapoeta Nadapal Road. The road is a regional road that		

Item No.	Description and Action	Action Deadline	Responsible
	connects South Sudan to neighbouring Kenya and potentially to Ethiopia. The World Bank intends to finance the construction of the road, but as part of the project preparation process, the previous ESIA studies undertaken in 2013 needs to be updated. In this regard, the Ministry of Roads and Bridges (MRB) has engaged Howard Humphreys East Africa Ltd - a Kenyan firm (HHEA) to undertake Environmental and Social Impact Assessment (ESIA) Studies. The Ministry has also engaged other two consultants to undertake Design review of the road and the other to prepare the Resettlement Action Plan (RAP). Previous contractor did not involve the community in their activities, but the government has now chosen a different approach. The community has been previously affected by demolitions and destruction of property during the road construction. The team involved in the RAP preparation shall be undertaking an asset inventory for purposes of ensuring the affected persons are compensated.		
2.0	Project Brief		
	HHEA (CONSULTANT) The road project is currently in the planning phase and its upon completion that the construction phase will commence. The ESIA studies are undertaken during the planning phase. It involves assessment of the existing environmental and social conditions before construction with the aim of identifying potential impacts that may arise during the construction and operation phases. All interested and affected stakeholders along the road corridor are also consulted to create awareness about the project and obtain their views, concerns and opinions about the projects. The Consultant seeks to understand the following aspects: ▪ Whether they accept the implementation of the road project. ▪ How Illiangari is likely to be impacted by the road project; positively and negatively. ▪ Where does the local community report their complaints and how are they addressed? ▪ Any existing migration routes for wild animals along the proposed road project. ▪ Any existing cultural heritage within the road corridor and cultural practices that are likely to be affected by the implementation of the road project. ▪ Any existing cases of GBV/SEAH ▪ Any other concern.		

Item No.	Description and Action	Action Deadline	Responsible
	The feedback will help in foreseeing potential risks and development of the necessary management plans before the construction phase commences.		
3.0	Plenary Session		
	a. Project Acceptance The community welcomes the road project. They are pleased with the approach undertaken because the previous contractor negatively affected their livelihood and to date they have never recovered. They do not wish to see the past mistakes repeated during the construction of the road. **b. Source of local materials** The community sought to understand if the construction materials would be sourced locally. **Response:** The contractor will source the materials locally if they are available and meet the standards needed for the construction of the road. However, the contractor will make an agreement with the community on the terms around if they are for sale or being offered for free or in exchange for a service like construction of a class, digging of a borehole etc. The Client will also ensure that the borrow pits are well rehabilitated after construction. **c. Compensation** The previous contractor destroyed much property with the promise that they would rebuild and offer compensation. It is said that the compensation money is with the Payam office, but the persons affected have never been compensated. They request that proper compensation is done. **Response**: Another consultant has been contracted by the MRB to prepare the Resettlement Action Plan. They will undertake an asset inventory where all affected persons and the affected property will be recorded and valued for purposes of budgeting so that compensation is done before the road construction begins. **d. Cultural Heritage & Practices** The community uses the indigenous and mango trees as meeting points and places for the elders to conduct their rituals. Before the trees are cut down, the contractor needs to consult with the local community because if it is a sacred tree, a sacrifice of a black goat must be done to appease the ancestors. **e. Grievances** The community formed a local committee to address the construction issues that they faced as Illiangari Boma. The local committee has not been successful in the resolution because the contractor would make deals with the Payams. The police would be called on the aggrieved parties who would pursue their issues and they would be arrested. **Response**: The project will develop a grievance redress mechanism that will monitor all the grievances that are reported to ensure that they are closed by the time the project implementation is completed.		

Item No.	Description and Action	Action Deadline	Responsible
	f. Wildlife migration routes Wild animals like monkeys, baboons, gazelles, snakes are often seen crossing between the Imotong ranges.		
4.0	Closing Remarks		
	HHEA- Consultant The consultant appreciated the community for the feedback and the concerns raised. **MRB-Client** The client also thanked the community for the concerns and views shared regarding the project. The feedback will significantly help in ensuring that the mistakes witnessed in the past are avoided and the project is implemented in an efficient manner. **Sub-Chief** The construction of the road has been discussed for over 10 years and it is their request that the construction works commence sooner. He urged the client to consider giving back to the community by improving the situation of the existing school. The Illiangari Health Care Unit needs to be expanded because once the road is improved, challenges like delay in supply of drugs and other medical equipment will be eradicated. The road design also needs to be improved because of the poor drainage.		
	There being no other business, the meeting ended with a word of prayer at 4:00pm.		

Howard Humphreys
Consulting Engineers

ATTENDANCE LIST

CONSULTANCY SERVICES FOR THE ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT OF THE JUBA-TORIT-KAPOETA-NADAPAL ROAD UPGRADING TO BITUMEN STANDARDS

Title: ILLIANGARI BOMA COMMUNITY CONSULTATION MEETING.

Venue: ILLIANGARI BOMA **Time:** 2:45pm **Date:** 4/09/2024.

S/No.	Name	Gender (M/F)	Organization	Designation	Phone Number	Email	Signature
1.	Anne Rita Koki	F	HHEA	Sociologist			ARK.
2.	Pareng Philip	M	PWMRB	Environmentalist			
3-	Khamis Modi	M	Lokoya		0925464371		
4-	Khamis Franco	M	-				
5-	Samuel Hakim	M	-		0928400842		
6-	George Thomas	M	-				
7	Juma Lecki	M	-				
8	MARTIN JOHN	M			0921898859		MJ
9	MORRIS EGINHO	M	-	-			
10	DARIO WANI	M	-	-			
11	ALFON ZACKARIA	M	-	-			

ILLIANGARI

Howard Humphreys
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S/No.	Name	Gender (M/F)	Organization	Designation	Phone Number	Email	Signature
12	HAKIM MARTIN	M	—	-			
13	DARIO SEVERINO	M	-	—			
14	JOHN WANI	M	—	-			
15	John HAKIM	m	—	—			
16	FALIX TANGON	m	—	—			
17	JUMA MURIS	m	—	—			
18	CHRISTIN Jada	F	—	—			
19	MARY AYO	F	—	—			
20	ROSE SIMON	F	-	-			
21	ROSE ANGELO	f	-	—			
22	JUSTIN TANGON	m	—	—			
23	ALISANDRO LADO	m	-	-			
24	BROCK KHAMIS	m	Teacher	—	—	—	
25	JAMES WANI	m	—	—	-	—	
26	JAMES	m	-	-			

Howard Humphreys
Consulting Engineers

ATTENDANCE LIST

CONSULTANCY SERVICES FOR THE ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT OF THE JUBA-TORIT-KAPOETA-NADAPAL ROAD UPGRADING TO BITUMEN STANDARDS

Title: ILLIANGARI BOMA COMMUNITY CONSULTATION MEETING

Venue: ILLIANGARI BOMA **Time:** 2:45pm. **Date:** 4/09/2024.

S/No.	Name	Gender (M/F)	Organization	Designation	Phone Number	Email	Signature
27	Charles	–					
28	Charles	–					
29	Samuel Mani thomas	M	–	–	0925061706	–	
30	Peter Tonga	M	–	–	0925/306/5	–	
31	[illegible]						
32	James Ladu Okeny	M		–	0920460987	–	
33	moses Sebit Ladu	M	–	–		–	
34	TONGUN KAMERINO	M	–	–	–	–	
35	SAMUEL LADO	M	–	–	–	–	
36	Peter Rino	M	–	–	0928281804	–	
37	[illegible]	M	–	–	–	–	

ILLIANGARI BOMA.

ILLIANGARI COMMUNITY CONSULTATION MEETING.

4/09/2024.

Howard Humphreys
Consulting Engineers

S/No.	Name	Gender (M/F)	Organization	Designation	Phone Number	Email	Signature
38	Clement ALBENO AB	M	—	—	—	—	
39	JOHN JULIUS	M	—	—	0927288895	—	
40	SAINDA ANTHONY	F	—	—	0922609221	—	
41	ALMERINA LOMERE	F	—	—	—	—	
42	ALPHEN MAMER	M	—	—	—	—	
43	Irudi Caesar	M	MRB/PIU	NSRMO	0927565090	irudiaw@gmail.com	

Meeting Notes

Project:	Consultancy Services for the Environmental and Social Impact Assessment of the Juba-Torit-Kapoeta-Nadapal Road Upgrading to Bitumen Standards		
Subject:	ESIA Public Meeting at Lirya Settlement		
Meeting place:	Lirya Settlement	Meeting no	<no>
Date and time:	September 5, 2024, at 10:00am	Minutes by:	B. Mutsotso

Attendees

1. 27No. attendees	Representing:	MRB/PIU HHEA Consultant Community Members

Agenda

1. Opening Prayer
2. Introduction
3. Project Presentation
4. Plenary
5. Closing Remarks
6. Closing Prayer

1. Opening Prayer

The sultan called the meeting to order and requested one of the participants to say a word of prayer. The participant said a word of prayer.

ITEM	DESCRIPTION AND ACTION	DEADLINE	RESPONSIBLE
2.	**Introduction**		
	The chief introduced himself and told the meeting that it was about the road. He said that the Ministry should do a good road and people will be happy. The improved road will bring development. He said Lirya community was happy for the project. He asked the community to wait for their time to make comments. He then asked the team to introduce themselves. The team from the Ministry of Roads		

ITEM	DESCRIPTION AND ACTION	DEADLINE	RESPONSIBLE
	and Bridges introduced the consultant. He said that there is a requirement to involve the community in development projects. The project is funded by the World Bank. He said that the road project is part of the greater Eastern Africa Road project connecting Kenya and Tanzania. In Tanzania and Kenya, the construction is completed and the South Sudan one is the incomplete section. He then invited the consultant to make his remarks.		
3.	**Project Presentation**		
	The Consultant said he was from Howard Humphrey Engineers Ltd from Nairobi. Howard Humphrey was contracted by the Ministry of Roads and Bridges to undertake the ESIA study for the Juba-Torit-Kapoeta-Nadapal Road. The planned tarmacking of this road is part of the EARTTFP. It is part of the greater Eastern Africa Project already completed in Kenya and Tanzania and the Juba-Nadapal section is the only one remaining. The purpose of the meeting is to share project information with the community and also obtain feedback form the community that can be used for final road design. The project has an urban roads component for Kapoeta and Torit towns. The community is free to make proposals for any CSR projects that may be considered by the project during construction. The project will bring many benefits to the community in terms of employment, time saving, cheaper transport costs, free and faster flow of goods, open up new business opportunities and link the community to the region. He then asked the community to ask questions, provide views or any recommendations.		
4.	**Plenary**		
	1. The community needs to support the chief because he was the community's eyes. **Comment** 2. Augustino. That previous projects especially ARC did not consult the community. He is happy this new project is consulting the community. **Comment** 3. Sebit Lobrado. Appreciated the projected. Lakoya is a peaceful community however they do not want a project that deceives the community. **Comment** 4. Andrew Lolega. How will complaints about the project be handled. He hoped the community		

ITEM	DESCRIPTION AND ACTION	DEADLINE	RESPONSIBLE
	views be considered in the project. that a previous project left borrow pits too close to the road and never filled them. The contractor never responded even when informed. He hoped the World Bank supported project will not be like the ARC project. He wished that the old contractor ARC would not be hired to construct this road. **Response** Complaints about the project will be handled by the Grievance Redress Mechanism which the project will form. All with complaints will report to the Grievance Redress Committee. The proposed road will be done to international standard and no gaps will be entertained. A new contractor will be hired to construct the road. The community proposed the following CSR projects for consideration. i. Upgrade Lirya Primary Health Centre to a health Centre ii. Upgrade Lirya Primary School iii. Drill a water borehole and raised water tanks iv. Propose a flyover near schools for crossing		
5.	**Closing Remarks**		
	The chief said he was happy about the project. He thanked the World Bank for sponsoring the road. The community has information about the road. He was, however, not happy with the previous construction by ARC. He also said that he supports the formation of a Grievance Redress Committee for the project.		
6.	**Closing Prayer**		
	The prayer was said by a priest who was present, and the meeting ended.		

Howard Humphreys
Consulting Engineers

ATTENDANCE LIST

CONSULTANCY SERVICES FOR THE ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT OF THE JUBA-TORIT-KAPOETA-NADAPAL ROAD UPGRADING TO BITUMEN STANDARDS

Title: ESIA Public Meeting for the Juba-Torit-Kapoeta-Nadapal Road

Venue: LIRYA Market Time: 10:30am Date: 5/9/2024

S/No.	Name	Gender (M/F)	Organization	Designation	Phone Number	Email	Signature
1-	Pasquale Kanduke	M			0923584041		
2-	Sebit amurato	M			092542641		
3	Joseph Lazarus	M			0922289852		
4-	[illegible]	M			0923545660		
5.	[illegible]	M			0923607594		
6-	[illegible]	M			0920850745		
7-	[illegible]	M					
8-	Cipriano Tibario	M			0929461632		
9-	Francis Marchelo	M			0928836003		
10-	Andrea Lolika	M			0924012024		
11.	Clement Lino	M			0926444229		

ATTENDANCE LIST

CONSULTANCY SERVICES FOR THE ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT OF THE JUBA-TORIT-KAPOETA-NADAPAL ROAD UPGRADING TO BITUMEN STANDARDS

Title: ESIA Public Meeting for the Juba-Torit-Kapoeta-Nadapal Road

Venue: LIRYA Payam/Market Time: 10:30am Date: 5/9/2024

S/No.	Name	Gender (M/F)	Organization	Designation	Phone Number	Email	Signature
1-	Peter Arapmoi	M			0922543045		
2-	John Ladu	M			0921252306		
3-	WANI KANGIDO	M			0928434208		
4-	Fedrickso Wani	M			0922264989		
5-	Peter Longoro 'A'				0925200020		
6-	Augustino Benjamin	M			0923128033		
7-	[illegible]	M			0929297837		
9-	[illegible]	M			0928774721		
10-	[illegible]	M			0925442503		
11-	[illegible]				0920103321		
12	Sebit Tibrato	M			0925427555		

REPUBLIC OF SOUTH SUDAN
MINISTRY OF ROADS AND BRIDGES

Howard Humphreys
Consulting Engineers

S/No.	Name	Gender (M/F)	Organization	Designation	Phone Number	Email	Signature
23	michael Lopeto	m			0928015309 90		
24	Stefano Elia	M			-		
25	وائي وديم	M			0925198534		
26	Lolia Okilong Lojing	M			0923180556		
27	Engr Benealy Mutscbu	M	HHEA	Consultant	0922833012		

Meeting Notes

Project:	Consultancy Services for the Environmental and Social Impact Assessment of the Juba-Torit-Kapoeta-Nadapal Road Upgrading to Bitumen Standards
Subject:	ESIA Public Meeting at Lofiri Settlement

Meeting place:	Lofiri Settlement	Meeting no	<no>
Date and time:	September 5, 2024,	Minutes by:	B. Mutsotso

Attendees

1. 101No. attendees	Representing:	MRB/PIU HHEA Consultant Community Members

Agenda

1. Opening Prayer
2. Introduction
3. Project Presentation
4. Plenary
5. Closing Remarks
6. Closing Prayer

1. Opening Prayer

The chief asked one of the participants to say the opening prayer.

ITEM	DESCRIPTION AND ACTION	DEADLINE	RESPONSIBLE
2.	**Introduction**		
	The chief introduced himself. He welcomed all to the meeting. The chief asked the client to introduce his team and make his remarks. The team leader from the Ministry of Roads and Bridges introduced the team and the consultant. He said that the meeting was about passing information to the community about tarmacking of the Juba-Torit-Kapoeta-Nadapal Road. The team welcomes to hear views from the community about		

ITEM	DESCRIPTION AND ACTION	DEADLINE	RESPONSIBLE
	the road. He said the road will be financed by World Bank. The road is part of the greater eastern Africa road project. He introduced the consultant and asked him to present the project.		
3.	**Project Presentation**		
	The Consultant said he was from Howard Humphrey Engineers Ltd from Nairobi. Howard Humphrey was contracted by the Ministry of Roads and Bridges to undertake the ESIA study for the Juba-Torit-Kapoeta-Nadapal Road. The planned tarmacking of this road is part of the EARTTFP. It is part of the greater Eastern Africa Project already completed in Kenya and Tanzania and the Juba-Nadapal section is the only one remaining. The purpose of the meeting is to share project information with the community and also obtain feedback form the community that can be used for final road design. The project has an urban roads component for Kapoeta and Torit towns. The community is free to make proposals for any CSR projects that may be considered by the project during construction. The project will bring many benefits to the community in terms of employment, time saving, cheaper transport costs, free and faster flow of goods, open up new business opportunities and link the community to the region. He then asked the community to ask questions, provide views or any recommendations		
4.	**Plenary**		
	The community was given time to make comments for ask questions about the projects. Questions were given responses. 1. Philip Akimi. The road may have accidents so what will be done to reduce them. Response There will be awareness creation on road safety. There will also be road signs to guide the road users. 2. Mary Pauline. People should be informed ahead of time to remove livestock from the road. Also Lofiri Primary School should be fenced off. The community supports the road. Response Comment 3. Ochang Thomas. The Public Health Centre is in bad state. Response Comment.		

ITEM	DESCRIPTION AND ACTION	DEADLINE	RESPONSIBLE
	The community proposed the following CSR projects for consideration by the project. 1. Fence Lofiri Primary School 2. Solar for the existing borehole and have raised water tanks 3. Upgrade the PHC to Health centre level. This to include a room for drug storage 4. Build more classrooms for Lofiri primary school (currently upto class 6 only) but has only 4 classrooms		
5.	**Closing Remarks**		
	The chief said the community was happy with the project. The community supports the project. He said that local people are given employment by the project.		
6.	**Closing Prayer**		
	The chief asked one of the participants to say a closing prayer. After the prayer the meeting ended.		

ATTENDANCE LIST

CONSULTANCY SERVICES FOR THE ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT OF THE JUBA-TORIT-KAPOETA-NADAPAL ROAD UPGRADING TO BITUMEN STANDARDS

Title: ESIA Public Meeting for the Juba-Torit-Kapoeta-Nadapal Road

Venue: LOFIRI HEALTH CENTRE Time: 1:30 PM Date: 5/9/2024

S/No.	Name	Gender (M/F)	Organization	Designation	Phone Number	Email	Signature
1	PHILLIP AKIM	m			0929269711		
2	ROCKO GALDINO	m			0928131414		
3	OCHANG THOMAS	m			—		
4	SOLOMON KALU	m			0921252596		
5	RENSIO OPIRE OLNA	m			0922471182		
6	ARKANGILO KELETO	m			—		
7	SEBIT OLIHA LUIZ	m			0922405176		
8	DOMINIC THOMAS	m			—		
9	JUMA RENSIO	m			0923545675		
10	EMMANUEL ALI	m			0920605266		
11	PAUL OKIL SOLOMON	m			0925438533		
12	Prof Beneah Mukasa M		HHEA	Consultant	0722833012		

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S/No.	Name	Gender (M/F)	Organization	Designation	Phone Number	Email	Signature
12	MARTHA SELBESTRO	f	-		-	-	
13	CHRISTINE SABASTIAN	f	-		-	-	
14	ROSE FRANCIS	f	-		-	-	
15	ICHANG KELETO	f	-		-	-	
16	GUREZ RAPHAEL	f	-		-	-	
17	BACHERECHE OSURU	f	-		-	-	
18	ILAM JUMA	f	-		-	-	
19	SUZAN FRANCIS	f	-		-	-	
20	ANNET MART	f	-		-	-	
21	ANGELINA OSURU	f	-		-	-	
22	MARGURET NIGHT	f	-		-	-	
23	NIGHT MARCHELO	f	-		-	-	
24	SUNDAY ANGELO	f	-		-	-	
25	BIANGKA BASILIO	f	-		-	-	
26	NATALINA BENSIO	f	-		-	-	

Howard Humphreys
Consulting Engineers

ATTENDANCE LIST

CONSULTANCY SERVICES FOR THE ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT OF THE JUBA-TORIT-KAPOETA-NADAPAL ROAD UPGRADING TO BITUMEN STANDARDS

Title: ESIA Public Meeting for the Juba-Torit-Kapoeta-Nadapal Road

Venue: Lafiri Health Centre Time: 1:30pm Date: 5/9/2024

S/No.	Name	Gender (M/F)	Organization	Designation	Phone Number	Email	Signature
27	ALBIRA KAKA HALISTO	f	-		-	-	
28	ANNA KARLO	f	-		-	-	
29	REGINA KALAUDIO	f	-		-	-	
30	NATALINA EDWARD	f	-		-	-	
31	HELLEN LOKOOK	f	-		-	-	
32	APOLONIA LUIZ	f	-		-	-	
33	SABINA TEDERICKO	f	-		-	-	
34	ROSE FATERNO	f	-		-	-	
35	BACHERICHE ZACKARY	f	-		-	-	
36	CHRISTINE CHARLES	f	-		-	-	
37	MARY JOSEPH	f	-		-	-	

S/No.	Name	Gender (M/F)	Organization	Designation	Phone Number	Email	Signature
38	CHRISTINE PHILLIP	f	-		-	-	-
39	REGINA ANGELO	f	-		-	-	-
40	MARY EFREM	f	-		-	-	-
41	JOSPHINE THOMAS	f	-		-	-	-
42	SUNDAY CELEMENT	f	-		-	-	-
43	ROSE SALBATORE	f	-		-	-	-
44	REGINA SIMON	f	-		-	-	-
45	AGELINA MOSES	f	-		-	-	-
46	FILEMENA GABRIEL	f	-		-	-	-
47	REBECCA SATERO	f	-		-	-	-
48	ROSE IHISA	f	-		-	-	-
49	REGINA LAURESIO	f	-		-	-	-
50	IKANGA LUIZ	f	-		-	-	-
51	SAIMA PETER	f	-		-	-	-
52	VEREGINA JOSEPH	f	-		-	-	-

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ATTENDANCE LIST

CONSULTANCY SERVICES FOR THE ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT OF THE JUBA-TORIT-KAPOETA-NADAPAL ROAD UPGRADING TO BITUMEN STANDARDS

Title: ESIA Public Meeting for the Juba-Torit-Kapoeta Nadapal Road

Venue: Lofiri Health Centre Time: 1"30pm Date: 5/9/2024

S/No.	Name	Gender (M/F)	Organization	Designation	Phone Number	Email	Signature
53	PIO ENYASIO	M					
54	JAMES KANI	M					
55	THOMAS TABAN	M					
56	JAMES OKENY	M					
57	JAMES ONGORO	M			0920230406		
58	FRANCIS LODU	M			0925089025		
59	GILBERT OFULL	M			0920201749		
60	OKENY SIMON	M					
61	MARIO LOSENG	M					
62	OTI JOHN	M			0925441745		
63	CHARLES OTUDUHA	M			—	—	

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S/No.	Name	Gender (M/F)	Organization	Designation	Phone Number	Email	Signature
64	MARY JAMES	f	–		–	–	–
65	SAIMA PETER	f	–		–	–	
66	SABINA JACKSON	f	–		–	–	–
67	REGINA SATERO	f	–		–	–	
68	ANNA SATERO	f	–		–	–	
69	CHRISTINE LUIZ	f	–		–		
70	DUDU OBALDO	f	–		–	–	
71	LINA PARISE	f	–		–	–	
72	MADALINA PARISE	f	–		–	–	
73	REBECCA RAPHEAL	f	–		–	–	
74	MONICKA THOMAS	f	–		–	–	

ATTENDANCE LIST

CONSULTANCY SERVICES FOR THE ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT OF THE JUBA-TORIT-KAPOETA-NADAPAL ROAD UPGRADING TO BITUMEN STANDARDS

Title: ESIA Public Meeting for the Juba-Torit-Kapoeta-Nadapal Road

Venue: LOFIRI HEALTH CENTRE Time: 1:30 PM Date: 5/9/2024

S/No.	Name	Gender (M/F)	Organization	Designation	Phone Number	Email	Signature
75	ADELINO OROMO	M			0929923074		
77	BATISTA CHARLES	M			0925170995		
78	JACKSON ABRAHAM	M			—		
79	OFERE PAUL	M			092673 0926731570		
80	WANI JAMES	M			—		
81	PETER JABAR	M			092542070 6		
82	JOHN OROMO	M			—		
83	ABRAHAM PETER	M			—		
84	OLIHA MOSES	M			—		
85	AHMET YOUSIF	M			092026912 9		
86	OHISA LUKA	M			0929278704		

S/No.	Name	Gender (M/F)	Organization	Designation	Phone Number	Email	Signature
87	SUNDAY JAMES	f	-			-	
88	IRIOMO ALBANO	f	-			-	
89	CATARINA GABRIEL	f	-			-	
90	AJELINA LOTI	f	-			-	
91	SANTINA CHELSIO	f	-			-	
92	MARY PETER	f	-			-	
93	DEMETELA LOKWART	f	-			-	
94	PASKA SATERO	f	-			-	
95	BACHERECHE OHIDE	f	-			-	
96	SABINA ALEX	f	-			-	
97	ANNETA ALBERTO	f	-			-	
98	LINA RAPHEAL	f	-			-	
99	PASKA JACKSON	f	-			-	
100	ESTHER OLIHA	f	-			-	
101	TERETA SOLOMON	f	-			-	

Meeting Notes

Project:	Consultancy Services for the Environmental and Social Impact Assessment of the Juba-Torit-Kapoeta-Nadapal Road Upgrading to Bitumen Standards
Subject:	ESIA Public Meeting at Obule Village

Meeting place:	Obule Village	Meeting no	<no>
Date and time:	September 5, 2024, 3:00pm	Minutes by:	B. Mutsotso

Attendees

1. 58No. attendees	Representing:	MRB/PIU HHEA Consultant Community Members

Agenda

1. Opening Prayer
2. Introduction
3. Project Presentation
4. Plenary
5. Closing Remarks
6. Closing Prayer

1. Opening Prayer

The chief asked one of the participants to say the opening prayer.

ITEM	DESCRIPTION AND ACTION	DEADLINE	RESPONSIBLE
2.	**Introduction**		
	The chief welcomed the community members and the team to the meeting. He said the current road was bad but the government was unable to fic it. He encouraged community members to give their opinions. The chief then invited the client to introduce his team and make remarks. The team leader from the Ministry of Roads and Bridges		

ITEM	DESCRIPTION AND ACTION	DEADLINE	RESPONSIBLE
	introduced his team and invited the consultant to make his remarks.		
3.	**Project Presentation**		
	The Consultant said he was from Howard Humphrey Engineers Ltd from Nairobi. Howard Humphrey was contracted by the Ministry of Roads and Bridges to undertake the ESIA study for the Juba-Torit-Kapoeta-Nadapal Road. The planned tarmacking of this road is part of the EARTTFP. It is part of the greater Eastern Africa Project already completed in Kenya and Tanzania and the Juba-Nadapal section is the only one remaining. The purpose of the meeting is to share project information with the community and also obtain feedback form the community that can be used for final road design. The project has an urban roads component for Kapoeta and Torit towns. The community is free to make proposals for any CSR projects that may be considered by the project during construction. The project will bring many benefits to the community in terms of employment, time saving, cheaper transport costs, free and faster flow of goods, open up new business opportunities and link the community to the region. He then asked the community to ask questions, provide views or any recommendations		
4.	**Plenary**		
	. The community members were given a chance to make comments or ask questions. 1. Peter Roborei supports the road project to connect to Kenya because it will open trade. People don't buy charcoal on the current road because there were no vehicles. The road will bring employment, business and improve mobility to many areas. Response Comment 2. Romano Edward. Since 2014 there is no support as schools and health centres remain a challenge. Abduction of children has been serious and because of war many went to Kakuma but now they are coming back. Therefore schools need to be opened. Many people depend on river water. It is good the government has now remembered them. Response Comment 3. Marko Albana. It is the first time to see a government officer consulting the community. That ARC made promises which they did not fulfill. It		

ITEM	DESCRIPTION AND ACTION	DEADLINE	RESPONSIBLE
	used community facilities as a camp but provided nothing. He hoped this project would not be like the ARC which did not compensate some people. He also said the interests of the youth be considered by the project. Response It is a requirement by World Bank to involve the community in projects. This project will follow international standards. All those who will deserve compensation will be compensated. There will be employment opportunities for youth, women and PWDs to be considered. The community proposed the following CSR Project 1. Health Facility 2. Water to the school 3. Water Project 4. Primary School		
5.	**Closing Remarks**		
	The chief/sultan thanked all who attended. He then closed the meeting.		
6.	**Closing Prayer**		
	The prayer was said by one of the participants and thereafter the meeting ended.		

ATTENDANCE LIST

CONSULTANCY SERVICES FOR THE ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT OF THE JUBA-TORIT-KAPOETA-NADAPAL ROAD UPGRADING TO BITUMEN STANDARDS

Title: ESIA Public Meeting for Juba - Torit - Kapoeta - Nadapal Road

Venue: Obule Village Time: 3:30pm Date: 5/9/2024

S/No.	Name	Gender (M/F)	Organization	Designation	Phone Number	Email	Signature
01	Angilo Kume	M	-	Chadol Bume	-	-	
02	Elias Francis	m	-	"	-	-	
03	Roman Edward	m	-	"	-	-	
04	James Atada	m	-	"	-	-	
05	Emmanuel Mario	m	-	"	0922210181	-	
06	Teresio Molong	m	-	"	-	-	
07	Benjamin Atieio	m	-	"	-	-	
08	Biajo Marko	m	-	"	-	-	
09	William Ojore	m	-	"	-	-	
10	Dominic Ochang Beda	m	-	"	-	-	
11	Kamilio MORIS	M	-	"	-	-	
12	PM Bereak Mutsibo	M	HHEA	Consultant	0922833012		

Howard Humphreys
Consulting Engineers

ATTENDANCE LIST

CONSULTANCY SERVICES FOR THE ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT OF THE JUBA-TORIT-KAPOETA-NADAPAL ROAD UPGRADING TO BITUMEN STANDARDS

Title: ESIA Public Meeting for Juba-Torit-Kapoeta-Nadapal Road

Venue: Obule village Time: 3:30pm Date: 5/7/2024

S/No.	Name	Gender (M/F)	Organization	Designation	Phone Number	Email	Signature
12	Luka Severino	M	-	"	-	-	
13	John Kose	M	-	"	-	-	
14	Juma Roberto	M	-	"	-	-	
15	Remijo Okedi	M	-	"	-	-	
16	James Okide	M	-	"	-	-	
17	Masimina Abraham	M f	-	"	-	-	
18	Akulina Night	f	-	"	-	-	
19	Agness Kwahina	f	-	-	-	-	
20	Regina Jacob	f	-	-	-	-	
21	Night Amin	f	-	-	-	-	
22	Rechela Thaya	f	-	-	-	-	

S/No.	Name	Gender (M/F)	Organization	Designation	Phone Number	Email	Signature
23	Christine Imoya	F	—	—	—	—	
24	Mary Ihisa	F	—	—	—	—	
25	Magaret Chongodok	F	—	—	—	—	
26	Susan Imoli	F	—	—	—	—	
27	Betty John	f	—	—	—	—	
28	Mary Patric	f	—	—	—	—	
29	Mary Parife	f	—	—	—	—	
30	Marko Abano	M	—	—	—	—	
31	James Basilio	m	—	—	0923829119	—	
32	Abaha Lawrence	m	—	—	0920532726	—	
33	James Leon	m	—	—	—	—	
34	Cypriano Okilek	m	—	—	—	—	
35	Andrea Agalik	m	—	—	—	—	
36	Claudio Lazaru	m	—	—	0924675323	—	
37	Felix Hanis	m	—	—	—	—	

ATTENDANCE LIST

CONSULTANCY SERVICES FOR THE ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT OF THE JUBA-TORIT-KAPOETA-NADAPAL ROAD UPGRADING TO BITUMEN STANDARDS

Title: ESIA Public Meeting for Juba-Torit-Kapoeta-Nadapal Road

Venue: Obule village Time: 3:30pm Date: 5/9/2024

S/No.	Name	Gender (M/F)	Organization	Designation	Phone Number	Email	Signature
38	James Wani	M	–	–	–	–	
39	Lino Alex	M	–	–	–	–	
40	Kabong Okeke	M	–	–	–	–	
41	Juma Paride	M	–	–	–	–	
42	Gitano James	M	–	–	–	–	
43	Ramadan Idris	M	–	–	–	–	
44	Augustine Ikuniyang	M	–	–	–	–	
45	John Rocko	M	–	–	–	–	
46	Peter Oboro	M	–	–	0926746013	–	
47	Dominic Okeny	M	–	–	0922678901	–	
48	Osfaldo Okori	M	–	–	–	–	

S/No.	Name	Gender (M/F)	Organization	Designation	Phone Number	Email	Signature
49	Mary Simon	f	-	-	-	-	
50	Juliata paride	f	-	-	-	-	
51	Susan Ikong	f	-	-	-	-	
52	Kelementina Ilibo	f	-	-	-	-	
53	Magaret Makario	f	-	-	-	-	
54	Rekela Albino	f	-	-	-	-	
55	Agness Ihisa	f	-	-	-	-	
56	Jokono Luka	f	-	-	-	-	
57	Agness Ibori	f	-	-	-	-	

Meeting Notes

Project:	Consultancy Services for the Environmental and Social Impact Assessment of the Juba-Torit-Kapoeta-Nadapal Road Upgrading to Bitumen Standards
Subject:	ESIA Public Meeting at Kudo Village

Meeting place:	Kudo Village	Meeting no	<no>
Date and time:	September 6, 2024, 10:00am	Minutes by:	B. Mutsotso

Attendees

1. 66No. attendees	Representing:	MRB/PIU HHEA Consultant Community Members

Agenda

1. Opening Prayer
2. Introduction
3. Project Presentation
4. Plenary
5. Closing Remarks
6. Closing Prayer

1. Opening Prayer

The chief asked one of the participants to say the opening prayer.

ITEM	DESCRIPTION AND ACTION	DEADLINE	RESPONSIBLE
2.	**Introduction**		
	The Chief introduced all the community members present. He welcomed the team from Juba. He said that the previous road project was not completed. He then asked the team leader to introduce his team. The team leader introduced the team from the Ministry of Roads and Bridges from Juba and the officer from Torit State government. He said the current road project was funded by World Bank and was part of the larger road in Kenya and Tanzania.		

ITEM	DESCRIPTION AND ACTION	DEADLINE	RESPONSIBLE
	He introduced the consultant and asked him to present the project.		
3.	**Project Presentation**		
	The Consultant said he was from Howard Humphrey Engineers Ltd from Nairobi. Howard Humphrey was contracted by the Ministry of Roads and Bridges to undertake the ESIA study for the Juba-Torit-Kapoeta-Nadapal Road. The planned tarmacking of this road is part of the EARTTFP. It is part of the greater Eastern Africa Project already completed in Kenya and Tanzania and the Juba-Nadapal section is the only one remaining. The purpose of the meeting is to share project information with the community and also obtain feedback form the community that can be used for final road design. The project has an urban roads component for Kapoeta and Torit towns. The community is free to make proposals for any CSR projects that may be considered by the project during construction. The project will bring many benefits to the community in terms of employment, time saving, cheaper transport costs, free and faster flow of goods, open up new business opportunities and link the community to the region. He then asked the community to ask questions, provide views or any recommendations		
4.	**Plenary**		
	. The community members were given opportunity to ask questions or make contributions regarding the proposed road project. 1. Dominic Isaac. He supported the project. He said the community needs the road to be like the one in Kenya. Response Comment 2. John Okwachi. As a youth in the community he supported the project. He said any support to the community be provided concurrent with the road construction. Response Comment 3. Ochong Jackson. He said that he supported the road as it was a mark of development. Response Comment. The community proposed the following CSR projects. 1. A secondary school 2. Improvement of Kudo health center and an ambulance 3. Borehole		

ITEM	DESCRIPTION AND ACTION	DEADLINE	RESPONSIBLE
5.	**Closing Remarks**		
	The Chief explained why the attendance was low because people had gone to celebrate ehuma which is usually done on September 5th each year. The celebration takes place in the mountain away from the village. The celebration marks the beginning of burning fields for preparation to plant for the next season. All people are free to attend and each person comes with his livestock. On this day even those who will be employed by the project must be given permission to attend. He said that the Lokoya community cannot work in Lotuko area and vice versa. For all unskilled tasks. He then asked one participant to say the closing prayer.		
6.	**Closing Prayer**		
	The prayer was said by one of the participants and thereafter the meeting ended.		

Howard Humphreys
Consulting Engineers

ATTENDANCE LIST

CONSULTANCY SERVICES FOR THE ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT OF THE JUBA-TORIT-KAPOETA-NADAPAL ROAD UPGRADING TO BITUMEN STANDARDS

Title: ESIA Public Meeting for the Juba-Torit-Kapoeta-Nadapal Road

Venue: Kudo - Hutiala Village Time: 10 am Date: 6/9/2024

S/No.	Name	Gender (M/F)	Organization	Designation	Phone Number	Email	Signature
01	Khamis Omorio	M	—	farmer	0926924052	—	
02	John Otwahi	M	—	farmer	092227070	—	
03	Joseph Taban	M	—	farmer	0926821042	-	
04	Kamilo Gilesio	M	—	farmer	—	—	
05	Luka Saverino	M	—	farmer	0929341573	—	
06	Albino Kamilo	M	—	farmer	0928136140	—	
07	Phillip Allam	M	—	Land-Lord	—	—	
08	Michael Tartisio	M	—	farmer	—	—	
09	Adelina Kasara	M	—	farmer	—	—	
10	Charles Omoro	M	—	C- leader	0923074795	—	
11	Thomas Alfred	M	—	farmer	—	—	
12	Prof B. Mutsotso	M	HHEA	Consultant	0722833012		

Howard Humphreys
Consulting Engineers

S/No.	Name	Gender (M/F)	Organization	Designation	Phone Number	Email	Signature
12	Cicilia Ateap	f	–	farmer	–	–	
13	Rose Kenedy	f	–	farmer	–	–	

Howard Humphreys
Consulting Engineers

ATTENDANCE LIST

CONSULTANCY SERVICES FOR THE ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT OF THE JUBA-TORIT-KAPOETA-NADAPAL ROAD UPGRADING TO BITUMEN STANDARDS

Title: ESIA Public Meeting for Juba- Torit- Kapoeta- Nadapal Road

Venue: Kudo-Hutiala Village Time: 10 am Date: 6/9/2024

S/No.	Name	Gender (M/F)	Organization	Designation	Phone Number	Email	Signature
01	Alex Ladu	M	–	farmer	–	–	
02	Albino Joseph	M	–	farmer	–	–	
03	Alex Lami	M	–	Boda-boda	0920909950	–	
04	Silbano Khalil	M	–	farmer	0927922968	–	
05	Tertisio John	M	–	farmer	0927496[illegible]5	–	
06	Egidio Tito	M	–	farmer	–	–	
07	Lobulu Hillary	M	–	studen	0921045603	–	
08	Dominic Isaac	M	–	farmer	–	–	
09	Samuel Apuleo	M	–	farmer	092358777	–	
10	Valente Gabriel	M	–	Police	–	–	
11	Thomas Basilio	M	–	farmer	–	–	

REPUBLIC OF SOUTH SUDAN
MINISTRY OF ROADS AND BRIDGES

Howard Humphreys
Consulting Engineers

S/No.	Name	Gender (M/F)	Organization	Designation	Phone Number	Email	Signature
01	Emmanuel Tombe	m	–	Studen	–	–	
02	Aizio Albano	m	–	Gmember	0921557456	–	
03	Silvino Lado	m	–	G. Secretary	0927426455	–	
04	Marino Taban	m	–	Boma-chief	0924481042	–	
05	Angelo oPuno	m	–	Youth-Leade	0925801637	–	
06	Laurence Jamus	m	–	Land-lord	0924696253	–	
07	Lokang Aleelino	m	–	Farmer	–	–	
08	Juma Silvino	m	–	Student	0925020023	Jumajimesilvino@gmail.com	
09	Jackline Antony	F	–	Farmer	–	–	
10	Elizabeth Solomon	f	–	farmer	–	–	
11	Rose Thomas	f	~~Water Manage-ment Committee~~	Water Managemet committee	–	–	
12	Biyanka Ihiju	f	–	farmer	–	–	
13	Sarah Anet	f	–	farmer	–	–	
14	Simon Aleando	m	–	Teacher	–	–	
15	Susan Khamis	f	–	farmer	–	–	

Howard Humphreys
Consulting Engineers

ATTENDANCE LIST

CONSULTANCY SERVICES FOR THE ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT OF THE JUBA-TORIT-KAPOETA-NADAPAL ROAD UPGRADING TO BITUMEN STANDARDS

Title: ESIA Public Meeting for the Juba-Torit-Kapoeta-Nadapal Road

Venue: Kudo Hutiala village Time: 10 am Date: 6/9/2024

S/No.	Name	Gender (M/F)	Organization	Designation	Phone Number	Email	Signature
01	Hillary Charles	M	—	farmer	0923888813	—	
02	Elia Thomas	M	—	farmer	—	—	
03	Joseph Bidal	M	—	Studen	0928741670	—	
04	Nelly Akim	M	—	Taxe-collecta	0926904667	—	
05	Marcelo Imenu	M	—	farmer	—	—	
06	Amato Isaac	M	—	farmer	—	—	
07	Joseph Lokimang	M	—	farmer	—	—	
08	Felix Loboi	M	—	farmer	0927982020	—	
09	Francis Taben	M	—	Engineer	0924045603	—	
10	John Okeny	M	—	Air-condition	0929101884	—	
11	Ochang Angelo	M	—	farmer	—	—	

S/No.	Name	Gender (M/F)	Organization	Designation	Phone Number	Email	Signature
12	Mary Daniel	f	–	farmer	0920834169	–	
13	Sabina Nakel	f	–	farmer	0928482943	–	
14	Alina Alia	f	–	farmer	–	–	
15	christine Alisandreo	f	–	farmer	–	–	
16	Cicilia Peter	f	–	farmer	–	–	
17	Angelina Aluelino	f	–	farmer	–	–	
18	Susan John	f	–	farmer	–	–	
19	Christine Basilio	f	–	farmer	–	–	
20	Ichang Simon	f	–	farmer	0921044390	–	
21	Susana Augustino	f	–	farmer	–	–	
22	Morish Lino	M	–	farmer	0920605265	–	
23	Jackson Ocior	M	–	TrS	0928240562	–	
24	Kamilo Karlo	M	–	Teacher	–	–	
25	Apolonia Basilio	f	–	farmer	–	–	
26	Rose Albino	f	–	farmer	–	–	

Meeting Notes

Project:	Consultancy Services for the Environmental and Social Impact Assessment of the Juba-Torit-Kapoeta-Nadapal Road Upgrading to Bitumen Standards
Subject:	Ibalang Boma Community Meeting-FGD

Meeting place:	Ibalang Boma	Meeting no:	<no>
Date and time:	5/09/2024 2:20pm	Minutes by:	Anne Rita Koki

Attendees

1. Urudi Caesar 2. Anne Rita Koki 3. 11 No attendees	Representing:	MRB/PIU-Social Risk Management Officer HHEA-Sociologist Community Leaders

Agenda

1. Introduction
2. Opening Remarks
3. Project Brief
4. Plenary session
5. Closing Remarks

Introduction

<present>

Item No.	Description and Action	Action Deadline	Responsible
1.0	Opening Remarks		
	MRB/PIU (CLIENT) The Government of the Republic of South Sudan (GRSS) seeks to tarmac the Juba-Torit-Kapoeta Nadapal Road. The road is a regional road that connects South Sudan to neighbouring Kenya and potentially to Ethiopia. The World Bank intends to finance the construction of the road, but as part of the project preparation process, the previous ESIA studies		

Item No.	Description and Action	Action Deadline	Responsible
	undertaken in 2013 needs to be updated. In this regard, the Ministry of Roads and Bridges (MRB) has engaged Howard Humphreys East Africa Ltd - a Kenyan firm (HHEA) to undertake Environmental and Social Impact Assessment (ESIA) Studies. The Ministry has also engaged other two consultants to undertake Design review of the road and the other to prepare the Resettlement Action Plan (RAP). Previous contractor did not involve the community in their activities, but the government has now chosen a different approach. The community has been previously affected by demolitions and destruction of property during the road construction. The team involved in the RAP preparation shall be undertaking an asset inventory for purposes of ensuring the affected persons are compensated.		
2.0	Project Brief		
	HHEA (CONSULTANT) The road project is currently in the planning phase and its upon completion that the construction phase will commence. The ESIA studies are undertaken during the planning phase. It involves assessment of the existing environmental and social conditions before construction with the aim of identifying potential impacts that may arise during the construction and operation phases. All interested and affected stakeholders along the road corridor are also consulted to create awareness about the project and obtain their views, concerns and opinions about the projects. The Consultant seeks to understand the following aspects: ▪ Whether they accept the implementation of the road project. ▪ How Ibalang is likely to be impacted by the road project; positively and negatively. ▪ Where does the local community report their complaints and how are they addressed? ▪ Any existing migration routes for wild animals along the proposed road project. ▪ Any existing cultural heritage within the road corridor and cultural practices that are likely to be affected by the implementation of the road project. ▪ Any existing cases of GBV/SEAH ▪ Any other concern. The feedback will help in foreseeing potential risks and development of the necessary management plans before the construction phase commences.		
3.0	Plenary Session		
	a. Project Acceptance		

Item No.	Description and Action	Action Deadline	Responsible
	The community is in full support of the project. They pledged to even engage with any community member who may be opposing the project to accept the project for the greater good of the community and the country in large. **b. Project Benefits** The road will create employment opportunities to the local community **c. Timelines** The community enquired on how long the road will take to be tarmacked. **Response**: The construction period is currently unknown. The exact timelines will be communicated during the future engagements since the project is currently in the planning phase. **d. Cultural Heritage** The community reported that before the road construction commences, the contractor will have to provide a goat accompanied with water (monetary support) to the elders to perform a sacrifice. **e. Compensation** The community enquired whether there will be compensation for the private farms that are affected by the road alignment. **Response**: Yes, the affected property will be compensated. The Client has engaged another consultant to prepare the RAP report that will consist of the asset inventory and the compensation amount that each affected person should receive. The RAP is meant for budgeting purposes to enable the government plan for compensation funds before construction commences. **f. Borrow Pits** The community is willing to make agreements with the contractor where he sets up facilities within the community in exchange for the construction material that is sourced from the community. **g. Animal Crossing** Wild animals are mainly spotted within Kidepo national park. The common crossing points are at Jabel Maluk, between Lirya and Kudo, and at the stream located at Lakabata. h. **Road Safety** The design team should avoid raising the road level because it has created drainage challenges in areas where it has been raised. Speed bumps should be placed in the critical areas such as near human settlements, near market centres, near schools and hospitals among other public amenities. i. **Location of Contractor's camp sites** Will the contractor utilize the same location for setting up his camp site with the previous contractor. They would wish the contractor's camp site facilities to be handed over to the community after the implementation of the project **j. Grievances**		

Item No.	Description and Action	Action Deadline	Responsible
	The community has a structure for resolving any issues that arise that comprise of: ▪ Local community committee-it comprises of a man, woman and youth representative and the community elders who resolve all matters that are reported. ▪ Boma Chief and local committee- they resolve the issues that are escalated by the local committee ▪ Municipal council-the issues are escalated by the boma chief to the municipal council's office for final resolution. The same structure is utilized by the community when they want to create awareness among the community on any issues. k. **Other concerns** Does the project also entail construction of the railway line that is meant to connect South Sudan to Ethiopia? Response: The project only involves the road component. The government will inform the public when they embark on implementing the road project.		
4.0	Closing Remarks		
	HHEA- Consultant The consultant appreciated the drivers for the feedback and the concerns raised. **MRB-Client** The client thanked the drivers for their insightful information and feedback that will help enhance the project's implementation. **Chairperson- Ibalang Community Committee** They appreciated the client for the engagement and are looking forward to future engagements. They will support the project until it is successfully completed.		
	There being no other business, the meeting ended at 3:30pm.		

Howard Humphreys
Consulting Engineers

ATTENDANCE LIST

CONSULTANCY SERVICES FOR THE ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT OF THE JUBA-TORIT-KAPOETA-NADAPAL ROAD UPGRADING TO BITUMEN STANDARDS

Title: COMMUNITY CONSULTATION AT IBALANG BOMA - FGD.

Venue: IBALANG **Time:** 2:20pm **Date:** 05/09/2024.

S/No.	Name	Gender (M/F)	Organization	Designation	Phone Number	Email	Signature
1	Urudi Caesar	M	MRB/PU	WSRMo	0927565090	Urudicaesar@gmail.com	
2	Anne Rita Koki	F	HHEA	Sociologist			
3	Jackson Nimir	M	Secretary		0924692[illegible]60	jacksonnimir33@gmail.com	5/9/2024
4	Zackria Remo	M	Member		—	—	
5	Dominic Okuye Posq	m	member		0925079216		
6	Lawo Remi ojok	m	member		0922516373		
7	oboi Jacob	m	"		0920147815	—	
8	Tom Mureceto	m	Chairperson		0925287133	—	
9	Omer Michael	m	Administration		0922465979		
10	FRANCISMIR	M			0929777116		
11	Paul Sebit	m			—		

Community Consultation at Ibalang Boma - FGD
5/09/2024.
IBALANG.

Howard Humphreys
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S/No.	Name	Gender (M/F)	Organization	Designation	Phone Number	Email	Signature
12	peter okech		member		0927028285		
13	Chrisphinu Oluoch	M	Member		0925439296		

Meeting Notes

Project:	Consultancy Services for the Environmental and Social Impact Assessment of the Juba-Torit-Kapoeta-Nadapal Road Upgrading to Bitumen Standards
Subject:	ESIA Public Meeting at Nyong Boma-Torit Town

Meeting place:	Nyong Boma-Torit Town	Meeting no	<no>
Date and time:	September 6, 2024, 2:00pm	Minutes by:	B. Mutsotso

Attendees

1. 36No. attendees	Representing:	MRB/PIU HHEA Consultant Community Members

Agenda

1. Opening Prayer
2. Introduction
3. Project Presentation
4. Plenary
5. Closing Remarks
6. Closing Prayer

1. Opening Prayer

The opening prayer was said by one of the community members.

ITEM	DESCRIPTION AND ACTION	DEADLINE	RESPONSIBLE
2.	**Introduction**		
	The Chief welcomed all to the meeting. He said that he was happy that the meeting was about development. They support tarmacking of the road and were happy that sections of Torit Town will be tarmacked as well. He then asked the team leader to introduce his team. The team leader introduced his team and the consultant. He said that the planned tarmacking of the road had delayed for many years. Similar projects were already		

ITEM	DESCRIPTION AND ACTION	DEADLINE	RESPONSIBLE
	completed in Kenya and Tanzania. The project was funded by the World Bank and was keen to involve the community. He then introduced the consultant and requested him to make his presentation.		
3.	**Project Presentation**		
	The Consultant said he was from Howard Humphrey Engineers Ltd from Nairobi. Howard Humphrey was contracted by the Ministry of Roads and Bridges to undertake the ESIA study for the Juba-Torit-Kapoeta-Nadapal Road. The planned tarmacking of this road is part of the EARTTFP. It is part of the greater Eastern Africa Project already completed in Kenya and Tanzania and the Juba-Nadapal section is the only one remaining. The purpose of the meeting is to share project information with the community and also obtain feedback from the community that can be used for final road design. The project has an urban roads component for Kapoeta and Torit towns. The community is free to make proposals for any CSR projects that may be considered by the project during construction. The project will bring many benefits to the community in terms of employment, time saving, cheaper transport costs, free and faster flow of goods, open up new business opportunities and link the community to the region. He then asked the community to ask questions, provide views or any recommendations		
4.	**Plenary**		
	.1. Charles Antor. He said that the community will provide security for the project staff and were willing to provide land for the project camp. Response Comment 2. Paul Agorinto. The road will bring many advantages and development. However, the community still doubts until they see its commencement. Response comment He would like to know the position of the bypass. Response The by-pass was outside town and was done so to avoid displacement. 4. James Amanya. The road should not be too high because it would lead to flooding of houses. Response The road design team will receive the views and design the road appropriately. And how will the GRC be constituted. Response The criteria is that there must be representation from the various stakeholders including state government, men, women, civil society, youth,		

ITEM	DESCRIPTION AND ACTION	DEADLINE	RESPONSIBLE
	religious and other interest groups. Most of the members will be elected by the community. 4. Makarios Bayomi. Was happy that the community was being consulted. He wanted to know who will compensate for the private plots taken by the by-pass. Response The National and state government will pay the compensation. A new team of consultants is taking record of the affected assets. 5. Sande Vicky. The community requires a university in Torit. The area has many school dropouts. Happy the road will improve the safety of women as they go to the farms. Response The proposal has been documented and will be passed on to the relevant authority for consideration. 6. Oromo Philip. Will youth obtain employment in the project. Response There will be employment opportunities for youth, women and PWDs. 7. Taban Batista. Whether their farms will be compensated. Response Those farms that fall in the area designated for the by pass will be compensated. 8. Silvador Jimmy. Who will be employed and will women also be considered. Response All categories of people will be considered including women. When vacancies will be advertised women are encouraged to apply for consideration. The following were the CSR proposals 1. Lorry parking 2. University campus 3. Upgrade Torit Hospital 4. Youth Training Centre / Resource Centre/Vocational Training Centre 5. Library 6. Community Office block 7. Market stalls in the by-pass area 8. Improve roads linking the by-pass to Torit town		
5.	**Closing Remarks**		
	The Chief said that the community supported the project. However, in future the community be reminded at least three days before the day of the meeting for better attendance.		
6.	**Closing Prayer**		

ITEM	DESCRIPTION AND ACTION	DEADLINE	RESPONSIBLE
	A closing prayer was said by one of the community members.		

Howard Humphreys
Consulting Engineers

ATTENDANCE LIST

CONSULTANCY SERVICES FOR THE ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT OF THE JUBA-TORIT-KAPOETA-NADAPAL ROAD UPGRADING TO BITUMEN STANDARDS

Title: BLOCK 1 - NYONG BOMA CONSULTATION ESIA JUBA–TORIT–KAPOETA NADAPAL RD

Venue: NYONG BOMA-TORIT TOWN Time: 2.00 PM Date: 6/9/2024

S/No.	Name	Gender (M/F)	Organization	Designation	Phone Number	Email	Signature
1	Daniel Okitik	m	-	-	0924139649	-	
2	John Oromo	m	-	Count clerk	0922943617	-	
3	MARIO JACKSON	m	-	IC m	0970707861	-	
4	John Pasifico	m	-	-	0926333300	-	
5	Sebastiano Olivio	m	-	m	0923855476	-	
6	Taban Batista	m	-		0922722726	-	
7	Flora Jiham Mike	F	-	AGI Team leader	0922447116		
8	Josephine Ibura	F	Health worker	CNF	0928645596	—	
9.	Rose Edna	F		Member			
10	Leila Hifira	F	Chief	Chief	0922547811		
11	SUNDAY VICKY	F	Health worker		0929949917	—	
12	Prof Benaab Mubi Bah	M	HHCA	Consultant	0722833012		

Howard Humphreys
Consulting Engineers

ATTENDANCE LIST

CONSULTANCY SERVICES FOR THE ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT OF THE JUBA-TORIT-KAPOETA-NADAPAL ROAD UPGRADING TO BITUMEN STANDARDS

Title: BLOCK 1 NYONG BOMA Public ESIA JUBA-TORIT-KAPOETA NADAPAL ROAD

Venue: NYONG BOMA TORIT TOWN Time: 2.00 pm Date: 6/9/2024

S/No.	Name	Gender (M/F)	Organization	Designation	Phone Number	Email	Signature
12	Lino OBELA Kera	M	V	—	0924366905		
13	MaKarios Bapoumi	M			0921216577		
14	Agapito Lolikay	M	Farmer	Community Adviser	0927840281		
15	Adelio Ojina Quinto	M	Nyong Community	C/chairman	0925630891		
16	Santo Oliha Celerino	M	" "	Sub chief	0923987062		
17	James Amanyar Alex	"	" "	Treasurer	0924478445	amanyjames839@Gmail.com	
18	Joseph Milla Gege	M	"	Bissnessmon:	0925214234	—	
19	Susan Night	F	" "		0925214732		
20	Leila SdHS	F	" "		0929900661	—	
21	Nicola Tom.M	M	" "		0922226323	—	
22	OKOMO PHILIP	M	" "	C.member	0928922479		

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S/No.	Name	Gender (M/F)	Organization	Designation	Phone Number	Email	Signature
23	Teresa Mauro	F	—	—	0923752455	—	
24	Babar matheli	F	—	—	0928205469	—	
25	Sabir Ayub	M	—	—	0920692442		
26	Susan Safari	F	—	—	0928646104	—	
27	Emmanuel Jumia	M	—	—	0928043207	—	
28	JACOB AJANA	M	—	—	0927030826	—	
29	CHARLES OLIHA	M	—	—	0923194422	—	
30	YOUSIF OKARA	M	—	—	0927502818	—	
31	JANNITA IHLILung	F	—	—	—		
32	Taban Fermino	M	—	—	0922344067	—	
33	Silvador Dino	M	—	—	0928365410	—	
34	BEN SIMORO	M	—	NYONG BLOCK Chief	0921635712		
35	ESTHER IROMO	F	—	—	0925089950	—	

Meeting Notes

Project:	Consultancy Services for the Environmental and Social Impact Assessment of the Juba-Torit-Kapoeta-Nadapal Road Upgrading to Bitumen Standards
Subject:	ESIA Public Meeting at Nyong Boma-Torit Town

Meeting place:	Nyong Boma-Torit Town	Meeting no	<no>
Date and time:	September 6, 2024, 2:00pm	Minutes by:	B. Mutsotso

Attendees

1. 36No. attendees	Representing:	MRB/PIU HHEA Consultant Community Members

Agenda

1. Opening Prayer
2. Introduction
3. Project Presentation
4. Plenary
5. Closing Remarks
6. Closing Prayer

1. Opening Prayer

The opening prayer was said by one of the community members.

ITEM	DESCRIPTION AND ACTION	DEADLINE	RESPONSIBLE
2.	**Introduction**		
	The Chief welcomed all to the meeting. He said that he was happy that the meeting was about development. They support tarmacking of the road and were happy that sections of Torit Town will be tarmacked as well. He then asked the team leader to introduce his team. The team leader introduced his team and the consultant. He said that the planned tarmacking of the road had delayed for many years. Similar projects were already		

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5.	**Closing Remarks**		
	The Chief said that the community supported the project. However, in future the community be reminded at least three days before the day of the meeting for better attendance.		
6.	**Closing Prayer**		

ITEM	DESCRIPTION AND ACTION	DEADLINE	RESPONSIBLE
	A closing prayer was said by one of the community members.		

Howard Humphreys
Consulting Engineers

ATTENDANCE LIST

CONSULTANCY SERVICES FOR THE ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT OF THE JUBA-TORIT-KAPOETA-NADAPAL ROAD UPGRADING TO BITUMEN STANDARDS

Title: FGD - Bus PARK BODA BODA RIDERS.

Venue: TORIT TOWN. **Time:** 11:00am. **Date:** 5/09/2024

S/No.	Name	Gender (M/F)	Organization	Designation	Phone Number	Email	Signature
01	Mario John	M		BODA	0921253212		
02	Thomas Ongiee	M		BODA	0921253214		
03	James Onino	M		BODA			
04	Bukunus Otitos	M		"			
05	Mustafa Isalle	M		"			
06	Emmanuel Joseph	M		"	0923704878		
07	Kamal osfaldo	M		"	0922821933		
08	Garang Otegier	M		"			
09	Alex peter	M		"	0922412077		
10	marmel peter	M		"	0920210969		
11	Akair Arashie	M		"	0928311354		

FGD - BUS PARK BODA BODA RIDERS
TORIT TOWN
5/09/2024.

Howard Humphreys
Consulting Engineers

S/No.	Name	Gender (M/F)	Organization	Designation	Phone Number	Email	Signature
12	James Okulang	M		"	0922125681		
13	santo Okitos	M		"	0922406102		
14	Emmanuel Onyiee	M		"			
15	Juma Charles	M		"			
16	Henry Alfred	M		"			
17	Junior Okimo	M		"			
18	Samuel Bidal	M		"			
19	Danfas Osfaldo	M		"			
20	James Osman	M		"			
21.	Anne Rita Koki	F	HHEA	Sociologist			
22.	Ben Bob Louis	M		"			
~~23~~	~~Undi Caesar~~	~~M~~		"	~~0927565~~		~~Benit Bob~~
23	Undi Caesar	M	MKB/PIU	NSRMO	0927565950	undicaesar@gmail.com	
				"			
				"			

Howard Humphreys
Consulting Engineers

ATTENDANCE LIST

CONSULTANCY SERVICES FOR THE ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT OF THE JUBA-TORIT-KAPOETA-NADAPAL ROAD UPGRADING TO BITUMEN STANDARDS

Title: CONSULTATION WITH ~~TAXI~~ OPERATORS / DRIVERS.

Venue: TORIT TOWN. **Time:** 11:50 am. **Date:** 5/09/2024.

S/No.	Name	Gender (M/F)	Organization	Designation	Phone Number	Email	Signature
1.	Anne Rita Loki	F	HHEA	Sociologist			
2.	Juma Abaas	M	Driver	Torit	0929688792		
3.	Okoyok Joha	M	Scerit	Torit	0923664080		
4.	Emmanuel Lemi	M	Driver	Torit	0925496630		
5.	Marko Santos	M	Driver	"	0920822699		
6.	Emmanuel Zakaria	M	Driver	"	09 —		
7.	Jore Eliezilo	M	Member	"	09 —		
8.	Emmanuel Bambo	M	Driver	"	0928431983		
9.	ADAM Joseph	M	Driver	Torit	0926735733		
10.	DIVD Loose	—	Driver	Torit	0926735733		
11.	Munzer Sebit	—	Driver	Juba	0925437418		

CONSULTATION WITH DRIVERS
TORIT TOWN
5/09/2024.

Howard Humphreys
Consulting Engineers

S/No.	Name	Gender (M/F)	Organization	Designation	Phone Number	Email	Signature
12.	Joseph Awuia	M	Driver	Torit	0928893586		
13.	James Ohisa	M	-	-	0920909447		
14.	Samuel Boateng	M	-	-	0929917654		
15.	Olima Hassan	M	"	Torit	0922258572		
16.	[illegible]	[illegible]	"	"	[illegible]		
17.	ALEX John	M	"	"	0920917287		
18.	thomas Gilo	M	"	"	0924622[illegible]		
19.	Remijo Okello Mwaka	M	"	"	0923737257		
20.	Urudi Caesar	M	MRB/PIU	NSRMO	0927585090		

Howard Humphreys
Consulting Engineers

ATTENDANCE LIST

CONSULTANCY SERVICES FOR THE ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT OF THE JUBA-TORIT-KAPOETA-NADAPAL ROAD UPGRADING TO BITUMEN STANDARDS

Title: TORIT ~~MARKET~~ TRADERS CONSULTATION MEETING.

Venue: TORIT TOWN Time: 3:00pm Date: 6/09/2024.

S/No.	Name	Gender (M/F)	Organization	Designation	Phone Number	Email	Signature
1.	Anne Rita Koki	F	HHEA	Sociologist			~~ARK~~
2.	Urudi Caesar	M	MRB/PIU	NSRMO	0927565090	urudicaesar@gmail.com	
3	ELsadig	M			092750005D		
4	Augustine Lau	m			0929682084		
5	ELPIDIUS PIRIO	m			092386145I		
6	oS Falla Lipolbo	m			0925598777		
7	sulimon Ebrahim	m			092200259		
8	[illegible]				092766044		
9	PETER AMANYA	M			092217020		
10	WANI PATRICK	M			092563263		
11	APIO HELLEN	~~F~~			~~092501445~~ 092501404S		

Howard Humphreys
Consulting Engineers

(2)

S/No.	Name	Gender (M/F)	Organization	Designation	Phone Number	Email	Signature
12	John mayo	M	Chamber of Commerce	secretary General	0722311191	Johnmayo2012@gmail.com	

Howard Humphreys
Consulting Engineers

ATTENDANCE LIST

CONSULTANCY SERVICES FOR THE ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT OF THE JUBA-TORIT-KAPOETA-NADAPAL ROAD UPGRADING TO BITUMEN STANDARDS

Title: TORIT TRADERS CONSULTATION MEETING FOR ESIA

Venue: TORIT TOWN Time: 3:00pm Date: 6/09/2024

S/No.	Name	Gender (M/F)	Organization	Designation	Phone Number	Email	Signature
12	Dr. Robert	M	"		0925874317	Robson@gmail.com	
13	Syban Halima	F	"		0925116051		
14	christine Kaki	F	"		0920077657		
15	Sulumeyo M, Head		"		925238523	Sedec	
16	[illegible]		"		911-79V50		
18	Ahmad Abdelrag		"		922206245	sedecss	
19	Khalil Hroub		"		0926750097		
20	Alhaj Adam		"		0922224417	AdamEss1111@gmail.com	
21	Martha ngenge	F	"		0927030439		
22	Rose COKO	F	Trader		0924673382	—	
23	SHABELLA H	F	Trad		0924777026		

Meeting Notes

Project:	Consultancy Services for the Environmental and Social Impact Assessment of the Juba-Torit-Kapoeta-Nadapal Road Upgrading to Bitumen Standards
Subject:	Abalwa Boma Community Meeting-FGD

Meeting place:	Abalwa Boma	Meeting no:	<no>
Date and time:	6/09/2024 9:03am	Minutes by:	Anne Rita Koki

Attendees

1. Urudi Caesar 2. Philip Pareng 3. Anne Rita Koki 4. 17 No attendees	Representing:	MRB/PIU-Social Risk Management Officer MRB/PIU-Environmentalist HHEA-Sociologist Community Leaders

Agenda

1. Introduction
2. Opening Remarks
3. Project Brief
4. Plenary session
5. Closing Remarks

Introduction

The Chief called the meeting to order at 9:30am and John Saturlino said a word of prayer. The chief welcomed the members present and reported that the community committee and a few community members are representing the rest of the community who are engaged in planting preparations in their farms. He welcomed the government officials and the consultant and assured them that the committee would share the information with the rest of the community.

Item No.	Description and Action	Action Deadline	Responsible
1.0	Opening Remarks		
	MRB/PIU (CLIENT) The Government of the Republic of South Sudan		

Item No.	Description and Action	Action Deadline	Responsible
	(GRSS) seeks to tarmac the Juba-Torit-Kapoeta Nadapal Road. The road is a regional road that connects South Sudan to neighbouring Kenya and potentially to Ethiopia. The World Bank intends to finance the construction of the road, but as part of the project preparation process, the previous ESIA studies undertaken in 2013 needs to be updated. In this regard, the Ministry of Roads and Bridges (MRB) has engaged Howard Humphreys East Africa Ltd - a Kenyan firm (HHEA) to undertake Environmental and Social Impact Assessment (ESIA) Studies. The Ministry has also engaged other two consultants to undertake Design review of the road and the other to prepare the Resettlement Action Plan (RAP). Previous contractor did not involve the community in their activities, but the government has now chosen a different approach. The community has been previously affected by demolitions and destruction of property during the road construction. The team involved in the RAP preparation shall be undertaking an asset inventory for purposes of ensuring the affected persons are compensated.		
2.0	Project Brief		
	HHEA (CONSULTANT) The road project is currently in the planning phase and its upon completion that the construction phase will commence. The ESIA studies are undertaken during the planning phase. It involves assessment of the existing environmental and social conditions before construction with the aim of identifying potential impacts that may arise during the construction and operation phases. All interested and affected stakeholders along the road corridor are also consulted to create awareness about the project and obtain their views, concerns and opinions about the projects. The Consultant seeks to understand the following aspects: ▪ Whether they accept the implementation of the road project. ▪ How Abalwa is likely to be impacted by the road project; positively and negatively. ▪ Where does the local community report their complaints and how are they addressed? ▪ Any existing migration routes for wild animals along the proposed road project. ▪ Any existing cultural heritage within the road corridor and cultural practices that are likely to be affected by the implementation of the road project. ▪ Any existing cases of GBV/SEAH ▪ Any other concern.		

Item No.	Description and Action	Action Deadline	Responsible
	The feedback will help in foreseeing potential risks and development of the necessary management plans before the construction phase commences.		
3.0	Plenary Session		
	a. Project Acceptance The community appreciated the engagement and indicated that they fully support the construction of the road project because of the many benefits they will get from it. **b. Project Benefits** The road will provide better access to other regions and countries. It will ease the movement of goods and people. It will help enhance peace and security within the area and promote development. Work opportunities during construction will be available but they should prioritize the locals for the casual positions and consider skills transfer programs for the skilled positions. **c. Road Design** The community enquired on the extent of the road corridor to enable them to understand which properties are affected by the road construction. **Response**: MRB has engaged a Design Consultant and a RAP consultant. The Design Consultant comprise of the survey team who are currently in the field placing beacons showing the extent of the road. The RAP team will also be doing an asset inventory of all the affected property within the road including the details of the owner. They will commence the exercise from the week of 9th October 2024 from Rajaf heading towards Nadapal. The design team should ensure they set up proper drainage along the road to avoid floods during the rainy season. The road levels also should not be raised to prevent accidents of cars or motorbikes veering off the road. **d. Cultural Heritage** The community has designated trees where they conduct their meetings and if they are affected by the project, a ritual has to be performed by the traditional elders. However, it must be noted that trees such as mangoes, and tamarind (sources of food, fruits) cannot be cut or uprooted. **e. Compensation** They urged the contractor to consult on any property within the road corridor such as trees as it could have cultural value to the community. During bush clearance, there are people whose property was affected and they were never compensated. Their attempts of following up the finances resulted in their arrest. They know the government is unfair when dealing with affected people and urged the World Bank to be independent during compensation. **f. Borrow Pits**		

Item No.	Description and Action	Action Deadline	Responsible
	The community is willing to make agreements with the contractor where he sets up facilities within the community in exchange for the construction material that is sourced from the community. **g. Animal Crossing Points** Urged the design team to provide a designated area for crossing of livestock. h. **Road Safety** Road signs should be placed near learning, religious, and health institutions. Ensure erection of road bumps to regulate speeds at the relevant areas. Try to enhance clearance on the road sections that are potential blind spots. i. **Location of Contractor's camp sites** Influx of workers during construction has previously affected village life. The camp sites should be located a bit distant from the village to enhance community health by preventing spread of STIs and other related changes in behaviours. **j. Grievances** The community has a committee where grievances are reported and escalated to the boma chiefs if the committee is unable to find a solution. The unresolved issues by the boma chief are then escalated to Torit Municipal Council for resolution through the Mayor's office and state courts if necessary. **k. Corporate Social Responsibility** They requested the contractor to consider giving back to the community by either constructing a school project or a water project for domestic and livestock use.		
4.0	Closing Remarks		
	HHEA- Consultant The consultant appreciated the community for the feedback and the concerns raised. **MRB-Client** The client thanked the drivers for their insightful information and feedback that will help enhance the project's implementation. **Chairperson- Abalwa Community Committee** They appreciated the client for the engagement and are looking forward to future engagements. They will support the project until it is successfully completed.		
	There being no other business, the meeting ended at 11:30am.		

Howard Humphreys
Consulting Engineers

ATTENDANCE LIST

CONSULTANCY SERVICES FOR THE ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT OF THE JUBA-TORIT-KAPOETA-NADAPAL ROAD UPGRADING TO BITUMEN STANDARDS

Title: ABALWA BOMA COMMUNITY CONSULTATION MEETING.

Venue: ABALWA BOMA. **Time:** 9.30 am **Date:** 6/09/2024

S/No.	Name	Gender (M/F)	Organization	Designation	Phone Number	Email	Signature
1.	Anne Rita Koki	F	HHEA	Sociologist			
2.	Umdiawi Caesar	M	MRB/PIU	NSRMO	0927505090	umdiawi@gmail.com	
3.	Parang Philip	M	MRB/PIU	Environmentalist	0924687157	parangkon@gmail.com	
4.	John Saturlino	M	Abalwa Com	Abalwa chairperson	0921566544	ongoromyovelema80@gmail	
5	Afore Morrison	M	Abala	Information	0924692708	aforeromans3@gmail.com	
6	Affatio Jackson	M	Abalwa	C/person for land	0922887722 98	-	
7	Otuo Emmanuel	M	Abalwa	Member	0920000761	-	
8	Michael oyo	M	Abalwa	member	0926249107	—	
9	ROGATO OROMO	M	ABALWA	MEMBER	0922413685	—	
10	JIMAONGODO	M	"	CHIEF	0926600122	-	
11	Mombesa Cyprian	M	Abalwa	Secretary	0925214364	cyprianovo@gmail.com	

Howard Humphreys
Consulting Engineers

ATTENDANCE LIST

CONSULTANCY SERVICES FOR THE ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT OF THE JUBA-TORIT-KAPOETA-NADAPAL ROAD UPGRADING TO BITUMEN STANDARDS

Title: ABALWA BOMA COMMUNITY CONSULTATION MEETING

Venue: ABALWA BOMA. Time: 9:30am Date: 6/09/2024.

S/No.	Name	Gender (M/F)	Organization	Designation	Phone Number	Email	Signature
12	Paul Okilang	m	Abalwa	Member	—	—	
13	Olide Peter	m		member	—	—	
14	Butrus John	m		member	—	—	
15	Awaka sam	m			0928902247		
16	Emmanuel	m	"	"	0929500465		
17	William ofere	m	"	"	—	—	
18	Hellen Romo	F	"	"	—	—	
19	Lily Hidita Nartisio	F	"	"	0929270900	lilyhidita@gmail.com	
20	Alfi Okudo Hosea	m	"	"	0920133130	—	

Meeting Notes

Project:	Consultancy Services for the Environmental and Social Impact Assessment of the Juba-Torit-Kapoeta-Nadapal Road Upgrading to Bitumen Standards
Subject:	Tirangore Boma Community Meeting

Meeting place:	New Kenya	Meeting no:	<no>
Date and time:	7/09/2024 10:00am	Minutes by:	Anne Rita Koki

Attendees

1. Urudi Caesar 2. Philip Pareng 3. Anne Rita Koki 4. Eng. Norman C. Gideon 67 No attendees	Representing:	MRB/PIU-Social Risk Management Officer MRB/PIU-Environmentalist HHEA-Sociologist SMTRB/EEST Community Members

Agenda

1. Introduction
2. Opening Remarks
3. Project Brief
4. Plenary session
5. Closing Remarks

Introduction

The meeting was called to order at 10:00am and Alfred Oliha opened with a word of prayer. The Payam Administrator welcomed the members present and asked the chiefs present to introduce themselves. He indicated that the meeting is being attended by community members from New Kenya, Harforere & Mura Hatiha villages that make up the Tirangore Boma.

The chiefs were pleased to be involved in the meeting, and they reported that previous engagements have only prioritized the New Kenya village. The project team was then welcomed to introduce themselves and proceed with the meeting.

Item No.	Description and Action	Action Deadline	Responsible
1.0	Opening Remarks		

Item No.	Description and Action	Action Deadline	Responsible
	MRB/PIU (CLIENT) The Government of the Republic of South Sudan (GRSS) seeks to tarmac the Juba-Torit-Kapoeta Nadapal Road. The road is a regional road that connects South Sudan to neighbouring Kenya and potentially to Ethiopia. The World Bank intends to finance the construction of the road, but as part of the project preparation process, the previous ESIA studies undertaken in 2013 needs to be updated. In this regard, the Ministry of Roads and Bridges (MRB) has engaged Howard Humphreys East Africa Ltd - a Kenyan firm (HHEA) to undertake Environmental and Social Impact Assessment (ESIA) Studies. The Ministry has also engaged other two consultants to undertake Design review of the road and the other to prepare the Resettlement Action Plan (RAP). Previous contractor did not involve the community in their activities, but the government has now chosen a different approach. The community has been previously affected by demolitions and destruction of property during the road construction. The team involved in the RAP preparation shall be undertaking an asset inventory for purposes of ensuring the affected persons are compensated.		
2.0	Project Brief		
	HHEA (CONSULTANT) The road project is currently in the planning phase and its upon completion that the construction phase will commence. The ESIA studies are undertaken during the planning phase. It involves assessment of the existing environmental and social conditions before construction with the aim of identifying potential impacts that may arise during the construction and operation phases. All interested and affected stakeholders along the road corridor are also consulted to create awareness about the project and obtain their views, concerns and opinions about the projects. The Consultant seeks to understand the following aspects: ▪ Whether they accept the implementation of the road project. ▪ How Abalwa is likely to be impacted by the road project; positively and negatively. ▪ Where does the local community report their complaints and how are they addressed? ▪ Any existing migration routes for wild animals along the proposed road project. ▪ Any existing cultural heritage within the road corridor and cultural practices that are likely to be affected by the implementation of the road project.		

Item No.	Description and Action	Action Deadline	Responsible
	▪ Any existing cases of GBV/SEAH ▪ Any other concern. The feedback will help in foreseeing potential risks and development of the necessary management plans before the construction phase commences.		
3.0	Plenary Session		
	a. Project Acceptance The community welcomed the project and indicated that it will help in promoting development across the EES. They will support the contractor during road construction and ensure insecurity incidences do not interrupt their workflow. They indicated that if land or property within the road corridor is affected, the community will discuss with the landlords to give up the space in exchange for alternative community land to allow the construction of the road. Response: The MRB appreciates the community's support, but World Bank's policy requires compensation of the affected landowners. The RAP Consultant will be undertaking an asset inventory to budget for the compensation funds so that before construction, the affected persons are compensated. **b. Project Benefits** The project will help enhance security in the area and they are working closely with the government to ensure that peace prevails across the communities. They urged the MRB to prioritize tarmacking of the highway and the community will collaborate efforts to improve on the feeder roads. **c. Road Design** The community reported that New Kenya experiences a lot of flooding during the rainy season. The community seeks support through establishment of a good drainage system. The project can even consider setting up a dam for storage of the water for use during the dry season. **d. Cultural Heritage** It is important for the contractor to notify the community before commencing any works within the area so that they can perform their traditional rituals. The previous contractor during bush clearing cut trees which in their cultural practice is considered a bad omen and the community had to perform an animal sacrifice. e. **Road Safety** The design should have a provision for livestock crossing point. Ensure road signs are set up and speed regulated within the required areas especially at the school and the hospital. f. **Community health and safety** The community is aware that the project will result in an influx of workers. The youth within the communities will be vigilant of the foreign workers to ensure they do not		

Item No.	Description and Action	Action Deadline	Responsible
	pry on the young girls. The elderly will also be advising the youth who will get employment opportunities during construction on proper spending of their incomes. **g. Grievances** The grievances that arise within the community are reported to the youth leader and they resolve them together with the boma chief. If they are beyond them, the boma chief escalates them to the Payam administrator who may involve the police or the court if necessary. **h. Corporate Social Responsibility** The Harforere boma has three requests for the contractor to consider as part of its corporate social responsibility. In terms of priority, they include: ▪ 4No. Classrooms for Tirangore primary school ▪ Bush clearance/upgrading of the feeder roads to the respective villages ▪ Construction of a water pan for use during dry season.		
4.0	Closing Remarks		
	HHEA- Consultant The consultant appreciated the community for the feedback and the concerns raised. **MRB-Client** The client thanked the community for their insightful information and feedback that will help enhance the project's implementation. **Payam Administrator-Hiyala Payam** They appreciated the client for the engagement and are looking forward to future engagements. They will support the project until it is successfully completed.		
	There being no other business, the meeting ended at 12:10pm.		

Howard Humphreys
Consulting Engineers

ATTENDANCE LIST

CONSULTANCY SERVICES FOR THE ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT OF THE JUBA-TORIT-KAPOETA-NADAPAL ROAD UPGRADING TO BITUMEN STANDARDS

Title: COMMUNITY CONSULTATION AT TIRANGORE - NEW KENYA, HAR FORERE, MURA - HATIHA

Venue: TIRANGORE Time: 10:00am Date: 7/09/2024

S/No.	Name	Gender (M/F)	Organization	Designation	Phone Number	Email	Signature
1.	Engr/Norman C. Gideon	M	SMTRB/EEST	Civil Engineer	+211928688328	normangideon@yahoo.com	
02.	Anne Rita Koki	F	HHEA	Sociologist			
03	Unudi Caesar	M	SMRB/PIU	NSRMO	0927565090	unudiaw@gmail.com	
04.	Ernest Okide Anthony	M	Snr Inspector	Police	0923543776	Police officer	
05	Alfred oliha	M	chief	Sb. Chief	0923988079	Sub. chief	
06	VICTOR MANU	M	s chief	s/chief	0922391317	S/CHIEF	
07	KARIO Ojingu	m	S. Chief	S/ Chief	0922908448	S/ Chief	
08	THOMAS OTING	M			0920082228		
09	ALBINO ECOK	M			-		
10	ERNESTO OKONO	M			0923817893		
11	SAMTO Ithmoi	M			0920996222		

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S/No.	Name	Gender (M/F)	Organization	Designation	Phone Number	Email	Signature
1	OKIMO JOHN	M			0921346273		
2	ALBINO KAYA	M			0929201105		
3	OTULO BENYAMING	M			0922906O5		
4	JOHNSON OWARI-M	M			0922906051		
5	SOLOMON OCHANG	M			—		
6.	PROFETO LUKA	M			—		
7	APARI BOYCOTT H	M			—		
8	PAUL OFUHO	M			—		
	KABINA OHOTO	M			—		
	APEX DOMINIC	M			0927031458		
	Oromo Jacob	M			0925012818		
	JAMES ONGETUS	M			—		
	John ochang	M			—		
	otongo GEORGE	M			0924652012		
	william ofuho	M			—		

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Consulting Engineers

ATTENDANCE LIST

CONSULTANCY SERVICES FOR THE ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT OF THE JUBA-TORIT-KAPOETA-NADAPAL ROAD UPGRADING TO BITUMEN STANDARDS

Title: COMMUNITY CONSULTATION AT TIRANGORE, NEW KENYA, MURA-HATIHA & HAFORERE

Venue: TIRANGORE Time: 10:00AM Date: 7/09/2024

S/No.	Name	Gender (M/F)	Organization	Designation	Phone Number	Email	Signature
1	JAMES EDIR	m					
2	Louis AKim	m					
3	Charlease oSer	m					
4	Dominic eFuk	m					
5	Jomson omotie	m			0927540361		
06	James koki	m			0922169164		
07	James Okuye	m			—		
08	Jom molong	m			—		
09	JACKSON OTIFO	m			0922943659		
10	LABAN Oduho	m			—		
11	JAMES Jakino	m			—		

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S/No.	Name	Gender (M/F)	Organization	Designation	Phone Number	Email	Signature
01	MARTIN IGGA	m					
02	PIERRE ATAMONOK	M			0927917432		
03	DAVID OBONG	M			0929285729		
04	JAMES KAGALAFAR	m			—		
05	GEORGE OKONG	m			—		
06	BATISTA OJOJO	M			—		
07	BETTY ATATA	f			—		
08	HELLEN INGEJUK	f			—		
09	BRAGHA IKIMO	F			—		
10	DOMINIC OHOKONG	M			092126148 3		
11	JOHNSON OHITAI	M			0927926548		
12	ALBINO OKUJE	M			—		
13	DOMINIC OYOM	m			—		
14	BENSON OMUJE	m			0922548002		
15	HELLEN EYOK	m			0922880024		

REPUBLIC OF SOUTH SUDAN
MINISTRY OF ROADS AND BRIDGES

Howard Humphreys
Consulting Engineers

S/No.	Name	Gender (M/F)	Organization	Designation	Phone Number	Email	Signature
	JOICE MALONJ	m		TIRRANGORE	—		
	JAMES EDIR	m		"	—		
	BOY PARIDE	m		"	—		
	CHARLES WANG	m		"	—		
	ANANIYA OYOO	m		"	—		
	ANGELO ONGODO	M		"	0924570761		
	JAMES OFUHO SIAKEJO	m		"	0928999339		
	GEORGE OHIDE CHARLES	M		"	0926690554		
	Landos Anjoro	M		"	0928149182		
	James Bee	m		"	0924679655		
	SEBIT MANDELA	m		"	—		
	JAMES Abalu	m		"	— —		
	OMOLI John Solimon	m		"	0924576690	—	
	Solomon Ohson	m		"	0920204100	—	

Howard Humphreys
Consulting Engineers

ATTENDANCE LIST

CONSULTANCY SERVICES FOR THE ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT OF THE JUBA-TORIT-KAPOETA-NADAPAL ROAD UPGRADING TO BITUMEN STANDARDS

Title: HARFORERE, MURA - HATILHA, TIRANGORE

Venue: Time: Date:

S/No.	Name	Gender (M/F)	Organization	Designation	Phone Number	Email	Signature
	LONHSON TABAN	M			0922109058		
	David Oliwa	m			—		
	INAYA Reter	m			0927030881		
	Karlos ojom	m			0925611626		
	Solomon - Okimo	m			—		

Meeting Notes

Project:	Consultancy Services for the Environmental and Social Impact Assessment of the Juba-Torit-Kapoeta-Nadapal Road Upgrading to Bitumen Standards
Subject:	ESIA Public Meeting at Hiyala Village

Meeting place:	Hiyala Village	Meeting no	<no>
Date and time:	September 7, 2024, 10:00am	Minutes by:	B. Mutsotso

Attendees

1. 29No. attendees	Representing:	MRB/PIU HHEA Consultant Community Members

Agenda

1. Opening Prayer
2. Introduction
3. Project Presentation
4. Plenary
5. Closing Remarks
6. Closing Prayer

1. Opening Prayer

The opening prayer was said by one of the community members.

ITEM	DESCRIPTION AND ACTION	DEADLINE	RESPONSIBLE
2.	**Introduction**		
	The assistant chief welcomed the team to the village. He said the project should involve the youth. The community also supports the project. He then invited the team leader to make his remarks. The team leader introduced his team. He then invited the consultant to make project presentation.		
3.	**Project Presentation**		
	The Consultant said he was from Howard		

ITEM	DESCRIPTION AND ACTION	DEADLINE	RESPONSIBLE
	Humphrey Engineers Ltd from Nairobi. Howard Humphrey was contracted by the Ministry of Roads and Bridges to undertake the ESIA study for the Juba-Torit-Kapoeta-Nadapal Road. The planned tarmacking of this road is part of the EARTTFP. It is part of the greater Eastern Africa Project already completed in Kenya and Tanzania and the Juba-Nadapal section is the only one remaining. The purpose of the meeting is to share project information with the community and also obtain feedback from the community that can be used for final road design. The project has an urban roads component for Kapoeta and Torit towns. The community is free to make proposals for any CSR projects that may be considered by the project during construction. The project will bring many benefits to the community in terms of employment, time saving, cheaper transport costs, free and faster flow of goods, open up new business opportunities and link the community to the region. He then asked the community to ask questions, provide views or any recommendations		
4.	**Plenary**		
	Oginde Saverio The project should support the community with a water project of a borehole and raised water tanks. Alfred Karam He proposed a hospital for the community and that the hospital should also have medicine. Julie Tito He said the problem in the community was lack of a health center and that Hilaya secondary school should be rebuilt since it was damaged by the wind. Obwaha James He supported the project and remarked on the issue of water scarcity in their area. Juma Oulak He supported the project as a youth. He said the road will improve the problem of food distribution in the area. He also said the project should provide employment to the youth. Corporate Social Responsibility Proposals were: ▪ Re-build Hilaya Secondary School ▪ Health center ▪ Water Project		
5.	**Closing Remarks**		
	The closing remarks were made by the landlord, Aboloni. He said the community should not be deceived as a repeat of what happened before. The aboloni will bless the road before construction		

ITEM	DESCRIPTION AND ACTION	DEADLINE	RESPONSIBLE
	begins. A goat will be required, flour and simsim.		
6.	**Closing Prayer**		
	A closing prayer was said by one of the community members.		

REPUBLIC OF SOUTH SUDAN
MINISTRY OF ROADS AND BRIDGES

Howard Humphreys
Consulting Engineers

ATTENDANCE LIST

CONSULTANCY SERVICES FOR THE ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT OF THE JUBA-TORIT-KAPOETA-NADAPAL ROAD UPGRADING TO BITUMEN STANDARDS

Title: ESIA Public Meeting for the Juba-Torit-Kapoeta-Nadapal Road

Venue: Hiyala Time: 9.00am Date: 7/9/2024

S/No.	Name	Gender (M/F)	Organization	Designation	Phone Number	Email	Signature
01	Obwaha charles	M		Hiyalor	-		
02	Omiyang charles	M		"			
03	Alfred Kiram	M		"	0920833134		
04	David Ohide	M		"	0924692003		
05	Joseph Lule	M		"	0920788448		
06	Moses Abo	M		"	-		
07	Assai Cyprian	M		"	—		
08	Obwaha Jones	M		"	0923270041		
09	Chelerino ohido	M		"	0923595636		
10	Joseph omudok	M		"			
11	Joseph oheny	M		"			
12	Prof Benaiah Mutsaku	M	HHEA	Consultant	0722833012		

Howard Humphreys
Consulting Engineers

2

ATTENDANCE LIST

CONSULTANCY SERVICES FOR THE ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT OF THE JUBA-TORIT-KAPOETA-NADAPAL ROAD UPGRADING TO BITUMEN STANDARDS

Title: ESIA Public Meeting for the Juba-Torit-Kapoeta-Nadapal Road

Venue: Hiyala Time: 9.00 am Date: 7/9/2024

S/No.	Name	Gender (M/F)	Organization	Designation	Phone Number	Email	Signature
12	JUMA OLAK	M		HIYALA	0927995E25		
13	OHISA OHIA	m		11	0920374488		
14	STEPHEN SEBIT	m		H	0920618385		
15	JACOB ORISA A	M		Hiyala	0922405448	jacoborisaausilio@gmail.com	
16	Charles ofur	m		Hiyala	-		
17	MUGO GES	m		Hiyala	-		
18	Charles Meke	m		Hiyala	11		
19	Christine Itiara	F		11	-		
20	Nancy Toto	F		11	-		
21	Julia Tito	F		11	-		
22	Lugina Ohutok	F		11	0928645660		

S/No.	Name	Gender (M/F)	Organization	Designation	Phone Number	Email	Signature
23	Ongoro Mark	M		Hiyala	–	–	
24	Nartisio ORITO	M		Hiyala	–	–	
25	Agnes Kulang	F		"	–	–	
26	Olide Moses	M		"	0924333327	–	-
27	Daniel Obida	M		"	0926732774	–	-
28	James Gladish	M		"	–	–	–

Meeting Notes

Project:	Consultancy Services for the Environmental and Social Impact Assessment of the Juba-Torit-Kapoeta-Nadapal Road Upgrading to Bitumen Standards
Subject:	Illeu Boma Community Meeting

Meeting place:	Illeu Primary School	Meeting no:	<no>
Date and time:	07/09/2024 02:00pm	Minutes by:	Anne Rita Koki

Attendees

1. Urudi Caesar 2. Philip Pareng 3. Anne Rita Koki 4. Eng. Norman C. Gideon 5. 30No attendees	Representing:	MRB/PIU-Social Risk Management Officer MRB/PIU-Environmentalist HHEA-Sociologist SMTRB/EEST Community Members

Agenda

1. Introduction
2. Opening Remarks
3. Project Brief
4. Plenary session
5. Closing Remarks

Introduction

The Chief welcomed the members present to the meeting. He thanked the Consultant for their patience and apologized on behalf of the rest of the community who were currently engaged in the funeral ceremony of one of their own and couldn't attend the meeting. He then welcomed the project team to share with the community about the road project.

Item No.	Description and Action	Action Deadline	Responsible
1.0	Opening Remarks		
	MRB/PIU (CLIENT) The Government of the Republic of South Sudan (GRSS) seeks to tarmac the Juba-Torit-Kapoeta		

Item No.	Description and Action	Action Deadline	Responsible
	Nadapal Road. The road is a regional road that connects South Sudan to neighbouring Kenya and potentially to Ethiopia. The World Bank intends to finance the construction of the road, but as part of the project preparation process, the previous ESIA studies undertaken in 2013 needs to be updated. In this regard, the Ministry of Roads and Bridges (MRB) has engaged Howard Humphreys East Africa Ltd - a Kenyan firm (HHEA) to undertake Environmental and Social Impact Assessment (ESIA) Studies. The Ministry has also engaged other two consultants to undertake Design review of the road and the other to prepare the Resettlement Action Plan (RAP). Previous contractor did not involve the community in their activities, but the government has now chosen a different approach. The community has been previously affected by demolitions and destruction of property during the road construction. The team involved in the RAP preparation shall be undertaking an asset inventory for purposes of ensuring the affected persons are compensated.		
2.0	Project Brief		
	HHEA (CONSULTANT) The road project is currently in the planning phase and its upon completion that the construction phase will commence. The ESIA studies are undertaken during the planning phase. It involves assessment of the existing environmental and social conditions before construction with the aim of identifying potential impacts that may arise during the construction and operation phases. All interested and affected stakeholders along the road corridor are also consulted to create awareness about the project and obtain their views, concerns and opinions about the projects. The Consultant seeks to understand the following aspects: ▪ Whether they accept the implementation of the road project. ▪ How Abalwa is likely to be impacted by the road project; positively and negatively. ▪ Where does the local community report their complaints and how are they addressed? ▪ Any existing migration routes for wild animals along the proposed road project. ▪ Any existing cultural heritage within the road corridor and cultural practices that are likely to be affected by the implementation of the road project. ▪ Any existing cases of GBV/SEAH ▪ Any other concern.		

Item No.	Description and Action	Action Deadline	Responsible
	The feedback will help in foreseeing potential risks and development of the necessary management plans before the construction phase commences.		
3.0	Plenary Session		
	a. Project Acceptance The community appreciates that the government is looking to construct the road as it will help address their many needs. However, there is need for the contractor and the community to collaborate especially to prevent any insecurities. **b. Project Benefits** The road will help in creating employment opportunities for the locals. The road **c. Road Design** The road has already been surveyed and the extent of the road clearly marked. The community does not think additional land will be needed or any property affected. They also understand that the road corridor falls within public land. **d. Security** The community understand that insecurity is a prevalent matter within the area. It arises from challenges such as starvation, limited resources such as water and cattle rustling among communities. Each community has their own boundary and if one trespasses into another community's area, they engage the chief to lead the negotiations. A police post can also be put up as a mechanism for enhancing security in the area. **e. Construction material** The community reported that construction material such as murram is readily available and the contractor should consider sourcing from them. **f. Cultural Heritage** Before construction commences, the "landlords" need to slaughter a bull as they perform other rituals. Trees were cut during the bush clearance exercise and currently the farming zones are the ones likely to be affected by the road construction. **g. Road Safety Measures** Road signs need to be erected as well as a designated crossing point for their livestock. Speeds on the road should be controlled and zebra crossings put for pedestrians to use while crossing. **h. Grievances** They resolve grievances through negotiations. The community selects community representatives to negotiate with the aggrieved party and escalate the matter to the chief if the negotiations proof to be unsuccessful. **i. Project Timelines** The MRB reported that the project is currently in the planning phase to enable the government to source for		

Item No.	Description and Action	Action Deadline	Responsible
	funds for construction. The community engagements will be continuous, and the community will be kept informed as the project progresses. **j. Other Community Needs** The government should also consider addressing the other needs of the community. They highlighted that they are currently in urgent need of water and health services. A health facility is needed as they must travel to Loriyok to access health services.		
4.0	Closing Remarks		
	HHEA- Consultant The consultant appreciated the community for the feedback and the concerns raised. **MRB-Client** The client thanked the community for their insightful information and feedback that will help enhance the project's implementation. He also condoled with the community for the loss of one of their own on behalf of the project team. **Boma Chief** They appreciated the client for the engagement and are looking forward to future engagements. They will support the project until it is successfully completed.		
	There being no other business, the meeting ended at 3:16pm.		

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Consulting Engineers

ATTENDANCE LIST

CONSULTANCY SERVICES FOR THE ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT OF THE JUBA-TORIT-KAPOETA-NADAPAL ROAD UPGRADING TO BITUMEN STANDARDS

Title: COMMUNITY MEETING AT ILLEU BOMA

Venue: ILLEU PRIMARY SCHOOL Time: 2:00pm Date: 7/09/2024

S/No.	Name	Gender (M/F)	Organization	Designation	Phone Number	Email	Signature
1	Urudi Caesar	M	MRB/PIU	NSRMO	0927565090	urudiawi@gmail.com	
2	Engr/Norman C. Gideon	M	SMTRB/EEST	Civil Engineer	0928688328	normangideon@Yahoo.Com	
3	Anne Rita Koki	F	HHEA	Sociologist			
4	FRANCIS OROMO	M	-	-	-		
5	AUGELIO JAMUS	M	-	-	0925214480		
6	ILDO OSURY	M					
7	JOHN OMUNO	M					
8	EMMANUEL ORORE	M			0928688200		
9	OFERE JOE	M			0923228860		
10	APUS EKILE	M			0923486735		
11	JACOB OTORIT	M			-		

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S/No.	Name	Gender (M/F)	Organization	Designation	Phone Number	Email	Signature
12	JOHN AJAFA	M			0921773596		
13	Otto KUOI PAUL	M			0924646483		
14	MARKO OUMA	M			-		
15	LUKA OKER	M			0927568294		
16	MARI NADAI	M			0924864816		
17	WILLIAM INGODO	M			0924199700		
18	REMIJO ONUHA	M			0924623012		
19	LEUTERIO ORUMA	M			-		
20	FRANCIS OMUR	M			0923773298		
21	ALFED ODONGI	M			-		
22	TOM OSFARDO	M			-		
23	BEN PILOT	M			-		
24	IMOLI ENAK	M			-		
25	OSIKE JOHNSON	M			0928833674		
26	MARKO OTIFO	M			-		

ILLEU

3

Howard Humphreys
Consulting Engineers

ATTENDANCE LIST

CONSULTANCY SERVICES FOR THE ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT OF THE JUBA-TORIT-KAPOETA-NADAPAL ROAD UPGRADING TO BITUMEN STANDARDS

Title: COMMUNITY MEETING AT ILLEU BOMA.

Venue: ILLEU PRIMARY SCHOOL Time: 2:00PM Date: 7/09/2024.

S/No.	Name	Gender (M/F)	Organization	Designation	Phone Number	Email	Signature
27	JOSEPH ORISA OLOI	M			0922822103		
28	ONINGA JAMES	M		TUHUBAK	092349862		
29	ONGORIO JOHN	M		"			
30	MICHEAL OTISA	M		"	092488847		
31	JOHN OLORI	M		"	092B023977		
32	SIMON OSURU	M		"	092216362		
33	JIMMY OKER	M		"	0922622722		
34	JAMES OTURE	M		"	0921475445		

Meeting Notes

Project:	Consultancy Services for the Environmental and Social Impact Assessment of the Juba-Torit-Kapoeta-Nadapal Road Upgrading to Bitumen Standards
Subject:	ESIA Public Meeting at Lobira Boma

Meeting place:	Lobira Boma	Meeting no	<no>
Date and time:	September 7, 2024, 2:00pm	Minutes by:	B. Mutsotso

Attendees

1. 34No. attendees	Representing:	MRB/PIU HHEA Consultant Community Members

Agenda

1. Opening Prayer
2. Introduction
3. Project Presentation
4. Plenary
5. Closing Remarks
6. Closing Prayer

1. Opening Prayer

The opening prayer was said by one of the community members.

ITEM	DESCRIPTION AND ACTION	DEADLINE	RESPONSIBLE
2.	**Introduction**		
	The chief opened the meeting. He welcomed the team to the area and said they should feel safe. He then asked the team leader to make his remarks. The team leader introduced the team and another from the state department of roads in Torit. He then introduced the consultant. He asked the consultant to make his remarks.		
3.	**Project Presentation**		

ITEM	DESCRIPTION AND ACTION	DEADLINE	RESPONSIBLE
	The Consultant said he was from Howard Humphrey Engineers Ltd from Nairobi. Howard Humphrey was contracted by the Ministry of Roads and Bridges to undertake the ESIA study for the Juba-Torit-Kapoeta-Nadapal Road. The planned tarmacking of this road is part of the EARTTFP. It is part of the greater Eastern Africa Project already completed in Kenya and Tanzania and the Juba-Nadapal section is the only one remaining. The purpose of the meeting is to share project information with the community and also obtain feedback from the community that can be used for final road design. The project has an urban roads component for Kapoeta and Torit towns. The community is free to make proposals for any CSR projects that may be considered by the project during construction. The project will bring many benefits to the community in terms of employment, time saving, cheaper transport costs, free and faster flow of goods, open up new business opportunities and link the community to the region. He then asked the community to ask questions, provide views or any recommendations		
4.	**Plenary**		
	Johnson Kamilo Odengeriang The community is happy with the message of the trafficking on the road. They had been forgotten for a long time. The PSV operators charged us exorbitant fare. From Torit to Juba, it is SSP 80,000. It takes 11 hours from Lobira to Juba. Our youth will also provide security for the project. The community will believe only when they see the construction begin. Misaile Omuno Happy for this meeting. Since 2022 when bush clearing was done there have been no road ambushes. So, tarmacking the road will improve security. He had prior information about the road from the ministry officials. Peter Obore The area has many problems such as lack of schools, water, health centers. Corporate Social Responsibility Proposals were: ▪ A primary school ▪ Health center ▪ Water Project		
5.	**Closing Remarks**		
	The chief said the area was safe. He supported the CSR proposals. The project will help to reduce		

ITEM	DESCRIPTION AND ACTION	DEADLINE	RESPONSIBLE
	prices. The area is water deficient. In the dry season they move to another area which often leads to conflict with other communities. The borehole in the community broke down and has not been repaired.		
6.	**Closing Prayer**		
	A closing prayer was said by one of the community members.		

ATTENDANCE LIST

CONSULTANCY SERVICES FOR THE ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT OF THE JUBA-TORIT-KAPOETA-NADAPAL ROAD UPGRADING TO BITUMEN STANDARDS

Title: ESIA Public Meeting for the Juba-Torit-Kapoeta-Nadapal Road

Venue: Lobira Time: 1:30 PM Date: 7/9/2024

S/No.	Name	Gender (M/F)	Organization	Designation	Phone Number	Email	Signature
01.	OFERE STEPHEN S.	M	Medical personnel		0924480863	Ofere.steve123@Gmail	
02.	DENG BOI DENG	M.	–	–	0923348675	–	
03	JOHNSON KAMILIO	M	–	–	0926993509	–	
04	JOHN OHIDE.	M	–	–	–	–	–
05.	PAUL OBURA	M	–	–	–	–	–
06	AMATORE ARATURO	"	–	–	–	–	–
07	ONGWEMOI EMMANUEL	"	AGUARD.		0927095828	–	
08	ARNEYO DAUNG	"	–				–
09	JAMES OKITIK	"	–	–	0923776910	–	–
10	COMEON PIAYAR	"	–				
11	ANGELO ORIOK	M	–				

S/No.	Name	Gender (M/F)	Organization	Designation	Phone Number	Email	Signature
12	TABAN ABUNG	m	—		0925956963	—	—
13	AYESE TAIN	f	—		—	—	—
14	KAMLINA KARAMA	F.	—		—	—	—
15	JOSEPH GAMA	m	—		—	—	—
16	ELIZABETH ASIHILI	F	—		—	—	—
17	PIO OSET OSMAN	M	—		0924994994666		—
18	SALISI OBUTHO	m	—				—
19	MISAYILE OMUNO	M	—				—
20	ORUCHA EMMANUEL	M	—		0926975074	—	—
21	OLERI PETER	M.	—	—	—	—	—
22	SIMON KEDIYE	M.	—	—	0923031032	—	—
23	MATHINE BABABA	M.	—	—	—	—	—
24							
25							
26							

ATTENDANCE LIST

CONSULTANCY SERVICES FOR THE ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT OF THE JUBA-TORIT-KAPOETA-NADAPAL ROAD UPGRADING TO BITUMEN STANDARDS

Title: ESIA Public Meeting for the Juba-Torit-Kapoeta-Nadapal Road

Venue: Lobira Time: 1:30pm Date: 7/9/2024

S/No.	Name	Gender (M/F)	Organization	Designation	Phone Number	Email	Signature
27	JAMES OHISA	M	—		—	—	—
28	PAUL LEBALLA	"	—		—	—	—
29	JOSEPH PETER	"	—		—	—	—
30	MARTIN ORIHO	"					
31	SIMON KEDIYE	"					
32	SOMOLO FADIRI	"					
33	Gympilcio OHUCHOLI	"					
34	PAUL OKETU	"					
34	ISAAC SIMAN	"					
35	FELIX OTWARI	"					
36	IMOYA LILY	F					

Meeting Notes

Project:	Consultancy Services for the Environmental and Social Impact Assessment of the Juba-Torit-Kapoeta-Nadapal Road Upgrading to Bitumen Standards
Subject:	ESIA Public Meeting at Loriyok Boma

Meeting place:	Loriyok Boma	Meeting no	<no>
Date and time:	September 9, 2024, 11:00am	Minutes by:	B. Mutsotso

Attendees

1. 116No. attendees	Representing:	MRB/PIU HHEA Consultant Community Members

Agenda

1. Opening Prayer
2. Introduction
3. Project Presentation
4. Plenary
5. Closing Remarks
6. Closing Prayer

1. Opening Prayer

The opening prayer was said by one of the community members.

ITEM	DESCRIPTION AND ACTION	DEADLINE	RESPONSIBLE
2.	**Introduction**		
	The chief shared the agenda of the meeting. He welcomed all to the meeting. He then asked the team leader from Juba to introduce his team members. The team leader introduced the team from Juba, Torit and the consultant. He then said the road project was funded by the World Bank and was a larger road for East Africa. He then requested the consultant to make his remarks.		

ITEM	DESCRIPTION AND ACTION	DEADLINE	RESPONSIBLE
3.	**Project Presentation**		
	The Consultant said he was from Howard Humphrey Engineers Ltd from Nairobi. Howard Humphrey was contracted by the Ministry of Roads and Bridges to undertake the ESIA study for the Juba-Torit-Kapoeta-Nadapal Road. The planned tarmacking of this road is part of the EARTTFP. It is part of the greater Eastern Africa Project already completed in Kenya and Tanzania and the Juba-Nadapal section is the only one remaining. The purpose of the meeting is to share project information with the community and also obtain feedback from the community that can be used for final road design. The project has an urban roads component for Kapoeta and Torit towns. The community is free to make proposals for any CSR projects that may be considered by the project during construction. The project will bring many benefits to the community in terms of employment, time saving, cheaper transport costs, free and faster flow of goods, open up new business opportunities and link the community to the region. He then asked the community to ask questions, provide views or any recommendations		
4.	**Plenary**		
	Peter Lomong (Aperson with disability) The community has a problem with women delivery.Several women have died in the process Father Alfred Lokuti The community requires an ambulance for the health facility. Samson Ebenyo He thanked the South Sudan government for the project. It will speed up development in the area. He said that the community could also be sub-contacted in some areas. Agnes Natabo The road will have benefits. She was happy She allo asked that a bridge be constructed to Loriyok as a CSR. Martin Lomoro Proposed CSR water project. The contractor's camp will be permanent and be handed over to the community after. Youth will provide security to the contractors. He also asked that the members of GRC be responsible people. Sam Gore People are hopeful the road will be constructed.Schools have no children because there are no teachers due to lack of payment. As a		

ITEM	DESCRIPTION AND ACTION	DEADLINE	RESPONSIBLE
	SCR Loriyok primary school should be repaired since the roof was blown off. Another area should be set aside for the youth playground. Loriyok also has no clear roads. Agnes Naremo The project will help people stop to fear. The manpower is in the community and no outside workers. Proposed CSR for a women's centre. Other CSR proposals were for a women's business centre and youth centre Member of Parliament He supported the views of the community members. The project should also consider what the community has said since what was said in the meeting was the voice of the community. The community will also provide security to the contractors. The message from the meeting shall be shared with all the Bomas. The road will bring many benefits. Loriyok will be an important resting place. He said that soldiers should also be considered by the contractors. The community supports all the people that bring good initiatives. Corporate Social Responsibility Proposals were: ▪ Health Facility with a maternal section. ▪ Water project ▪ Repair Loriyok primary school ▪ Women and youth business centres		
5.	**Closing Remarks**		
	The chief thanked all. He said when the project begins it should be completed unlike the past. Those affected by the road should also be compensated.		
6.	**Closing Prayer**		
	A closing prayer was said by one of the community members.		

Howard Humphreys
Consulting Engineers

ATTENDANCE LIST

CONSULTANCY SERVICES FOR THE ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT OF THE JUBA-TORIT-KAPOETA-NADAPAL ROAD UPGRADING TO BITUMEN STANDARDS

Title: ESIA PUBLIC MEETING FOR JUBA-TORIT-KAPOETA-NADAPAL ROAD

Venue: LORIYOK Time: 10 am Date: 9/9/2024

S/No.	Name	Gender (M/F)	Organization	Designation	Phone Number	Email	Signature
1	Stephen Lowupo	m		Laarim	0928158407	–	
2	Benjamin Lobom	m	student	Laarim	0927675867	–	
3	Samuel Lomong	m	Student	Laarim	–	–	
4	Eagle Akin	M	Farmer	Laarim	092127824-20	–	
5	Simon Lemute	M	student	Lokrum	0927676454	–	
6	Jafar mangoj	m	Business	Laarim	0926001906	–	
7	Lojore paul pokiano	m	CNY	Laarim	0922191439	–	
8	Justine mai	m	Farmer	Laarim	0927037352	–	
9	Andrew Lokiriei	M		Laarim	09211117 29		
10					0926358199	–	
11	Malamoi Peter	M	B/B	Laarim	092922170 0	Malamopeter727@gmail.com	
12	Prof Benard Mutsaers M.		HHE	Consultant	07228330 12	bmmutsaers@gmail	

REPUBLIC OF SOUTH SUDAN
MINISTRY OF ROADS AND BRIDGES

Howard Humphreys
Consulting Engineers

LORIYOK

9/9/2024

S/No.	Name	Gender (M/F)	Organization	Designation	Phone Number	Email	Signature
01	RSENYO SAMSON LORIA	M	GCM	PM	0922400269	adiozsam@gmail.com	
02	LOTAO MONIR	M	Larrim	Student	0925014953	—	
03	Mathew Wenger	M	Larrim	student	0926714188	—	
04	LOKOLONG PAUL	M	Larrim	Student	0927976798	—	
05	JOEL KATO SALLA	M.	LARRIM	STUDENT	0929243860	—	
06	ANUR PAUL	M	Laarim	student	0921122151	—	
07	Simon Lokaa	m	Laarim	Student	0923032554	—	
08	Arkole Charles	m	Laarim	Student	0923833483	—	
09	Dominic Lotad	m	Laarim	Student	0929922856	—	
10	Leo Santos	m	Laarim	Student	0928330499	—	
11	Samson Kuchi	m	Laarim	Student	0922809640	—	
12	Alfred Lokulang	m	Laarim	Bussines man	0920983938	Alfredlokulang@gmail	
13	Leketeoi JOSEPH	m	Laarim	student	—	—	
14	ALEX PATRICK LOTUROM	m	Larim	Student	—		
15	David Lotar	m	Laarim	Student	0921014345	—	

LORIYOK

9/9/2024

S/No.	Name	Gender (M/F)	Organization	Designation	Phone Number	Email	Signature
27	Emmanuel Lotao	m	Student	Laarim	0922766555	Emmanuel2022@gm	
28	Luka Lokai	m	Student	Laarim	0929840068	—	
29	Lokuay Lelepe	m	elder	laarim	—	—	
30	Angelo Lojure	m	elder	laarim	—	—	
31	Lomong Lojuolokpe	m	elder	laarim	—	—	
32	Marko Lokewuy	m	Cecal leader	laarim	0920027772	—	
33	Peter Lokujo	m	Chief	laarim	—	—	
34	Lino Lomjarlopeyok	m	elderChief	laarim	—	—	
35	Angelo Lokaie	m	Chief	laarim	—	—	
36	Kadong Nakomakori	m	chief	laarim	—	—	
37	Peter Lokolong	m	chief	laarim		—	
38	Carlo Lolepuo	m	Chief	laarim	—	—	
39	John Lorigo	m	Chief	laarim	—	—	
40	Paul Lowujio	m	Chief	laarim	0926780743	—	
41	Simon Moris	m	Chief	laarim	0922560054	—	

LORIYOK

9/9/2024

S/No.	Name	Gender (M/F)	Organization	Designation	Phone Number	Email	Signature
42	Remso Lopulmor	m	Chief	Laarim	–	–	
43	Joseph Lorika	m	chief	Laarim	–	–	
44	Sallah Lokai	m	Chief	Laarim	–	–	
45	Angelo Lokolong	m	chief	Laarim	–	–	
46	Peter Komolenga	m	chief	laarim	–	–	
47	Peter Lomong	m	Participant	–	–		
48	Lolan John	m			–	–	
49	William Arkangelo	M	Ex-Director		–	–	
50	Osman Logera	m	elder	11	–	–	
51	Musa Armengi	m	elder	11	–	–	
52	Arkangelo Patengole	m	elder	Laarim	–	–	
53	EMMANUEL LOLAR JIMO	M	Youth member	Laarim	0925826H82	–	
54	[illegible]	m	Trader	11	–	–	
55	Sebit Lowuye	m	Youth member	11	–	–	
51	Martin Lokale	m	Youth member	11	–	–	

REPUBLIC OF SOUTH SUDAN
MINISTRY OF ROADS AND BRIDGES

LORYOK

Howard Humphreys
Consulting Engineers

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9/9/2024

S/No.	Name	Gender (M/F)	Organization	Designation	Phone Number	Email	Signature
52	Samuel Lokitoe Lobur	m	youth	Laarim	0929575784		
53	Simon Tom Lotenj	m	youth	Laarim	NIL		
54	JOSEPH Lochoo PIO	m	youth	Laarim	0923029260		
55	Joseph Lopir nyarelmai	m	youth	Laarim	0926909861		
56	Amos Lokitoi pouth	m	youth	Laarim	0923641008		
57	King David Lomana	m	youth	Laarim	0926914835		
58	peter Lokinei Lomana	m	youth	Laarim	0922172247		
59	Nateo paula Namoniy	f	elders	Laarim	NIL		
60	Lucia NOLibaruthoi	f	elder	Laarim	NIL		
61	Namang Nijakarathsiya	f	elders	Laarim	NIL		
62	Mary Anjelo	f	elders	Laarim	NIL		
63	martha Lokabong	f	elders	Laarim	NIL		
64	Napir Nijakarathsiya	f	elders	Laarim	NIL		
65	cicila marko	f	elders	Laarim	NIL		
66	Lucia Kai	f	elder	Laarim	NIL		

Howard Humphreys
Consulting Engineers

Lokurok

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9/9/2024

S/N o.	Name	Gender (M/F)	Organization	Designation	Phone Number	Email	Signature
67	Nikamethera Lopiakou	F	elder	Laarni	Nil		
68	Teresa Joan	F	elder	Laarni	Nil		
69	Lokuru Kaite	M	Youth	Laarni	Nil		
70	MARY JUMA	F	Elder	Larrim	-		
71	ROSE NABALU	F	Youth	Larrim	-		
72	MARY JOHN	F	Youth	Larrim	-		
73	Christine Nakeya	F	Youth	Larrim	-		
74	MARIA PAULO	F	Elder	Larrim	-		
75	Rose Nakailino	F	Elder	Larrim	-		
76	TERASA NAKolons	F	Elder	Larrim	-		
77	Reda Nakino	F	Elder	Larrim	-		
78	Viola James	F	Youth	Larrim	0929725057		
79	Lona Simon	F	Youth	Larrim	-		
80	MARY LOCHEK	F	Elder	Larrim	-		
81	Regina Lomong	F	Elder	Larrim	-		

REPUBLIC OF SOUTH SUDAN
MINISTRY OF ROADS AND BRIDGES

Howard Humphreys
Consulting Engineers

LOKYOK

9/9/2024

S/No.	Name	Gender (M/F)	Organization	Designation	Phone Number	Email	Signature
82	Kado Lokorai Lokeyi	M	Youth	Larrim	0921252405	-	
83	Nyeryong Kenyen	M	Youth	Larrim	0922601349	-	
84	Emmanuel Loko	M	Youth	Larrim	0924920962	-	
85	Peter Lolenge Lwil	M	Youth	Larrim	0927241283	-	
86	Beyonce Narii	F	Youth	Laarim	0928730055		
87	PSALM GORE	M	YOUTH	LARLIM	0920043924	Psalmgor@gmail.com	
88	JAMES LOKKONGAN	M	YOUTH	LARIM	925437404	-	
89	MARTIN LOMORU	M	ELDER	LARIM	0924347505	-	
90	Peter Namalo	M	ELDER	Laarim	-	-	
91	Achen Hellen Jima	F	youth	Larrim	0921120839	-	
92	ELIZABETH NACHICHI LOMAE	F	YOUTH	Larrim	0923022602	-	
93	REBECCA ADHAR	F	Youth	Larrim	092146684		
94	ABIGAEL MIKE	F	Youth	Laarim	0920978590	- -	
95	BEATRICE ACHIENG	F	Youth	LARim	0920128880	-	
96	ABIR DENG	F	Youth	LARim	-		

REPUBLIC OF SOUTH SUDAN
MINISTRY OF ROADS AND BRIDGES

Howard Humphreys
Consulting Engineers

8

LORYOK

9/9/2024

S/N o.	Name	Gender (M/F)	Organization	Designation	Phone Number	Email	Signature
97	Tigeani Zakia	m	Trader	Laarim	0922903922	–	
98	Mohamed Amadekalfa	m	Trader	Laarim	0922800432	–	
99	Longoko Buare	m	elder	laarim	–	–	
100	John Joseph	m	elder	laarim	–	–	
101	Longeri Kadong	m	youth member	laarim	–	–	
102	Loduka Jalob	m	youth member	laarm	–	–	
103	Lokai Iwa	m	youth member	laarm	–	–	
104	David Lomong	m	youth member	laarm	–	–	
105	Lomana Lobadaw	m	elder	laarm	–	–	
106	Angelo Lomonpela	m	elder	laarm	–	–	
107	Lino Lomana	m	elder	laarm	–	–	
108	Thomas Lokai	m	elder	laarm	–	–	
109	Sonia Nakai	F	youth member	laarm	–	–	
110	Jackline Jamis	F	youth member	laarm	–	–	
111	Rebecca Night	F	youth member	laarm	–	–	

Meeting Notes

Project:	Consultancy Services for the Environmental and Social Impact Assessment of the Juba-Torit-Kapoeta-Nadapal Road Upgrading to Bitumen Standards
Subject:	Women FGD at Loriyok Boma

Meeting place:	Loriyok Boma	Meeting no	<no>
Date and time:	September 9, 2024, 1:00pm	Minutes by:	B. Mutsotso

Attendees

1. 27No. attendees	Representing:	MRB/PIU HHEA Consultant Community Members

Agenda

1. Opening Prayer
2. Introduction
3. Project Presentation
4. Plenary
5. Closing Remarks
6. Closing Prayer

1. Opening Prayer

The opening prayer was said by one of the community members.

ITEM	DESCRIPTION AND ACTION	DEADLINE	RESPONSIBLE
2.	**Introduction**		
	The consultant welcomed the participants to the meeting. He introduced himself and asked each to introduce themselves and to include what they do for a living. All of them self-introduced themselves.		
3.	**Project Presentation**		
	The Consultant said he was from Howard Humphrey Engineers Ltd from Nairobi. Howard		

ITEM	DESCRIPTION AND ACTION	DEADLINE	RESPONSIBLE
	Humphrey was contracted by the Ministry of Roads and Bridges to undertake the ESIA study for the Juba-Torit-Kapoeta-Nadapal Road. The planned tarmacking of this road is part of the EARTTFP. It is part of the greater Eastern Africa Project already completed in Kenya and Tanzania and the Juba-Nadapal section is the only one remaining. The purpose of the meeting is to share project information with the community and also obtain feedback from the community that can be used for final road design. The project has an urban roads component for Kapoeta and Torit towns. The community is free to make proposals for any CSR projects that may be considered by the project during construction. The project will bring many benefits to the community in terms of employment, time saving, cheaper transport costs, free and faster flow of goods, open new business opportunities and link the community to the region. He then asked the community to ask questions, provide views or any recommendations		
4.	**Plenary**		
	One participant said she was happy that the government had considered them and that the road project will open up the area. The tarmac road will be like a new baby. Women should benefit from the road project They proposed the following projects to support women in business: (i) Women Business Centre along the road/Rest Stop. (ii) Loans for women in business (iii) Upgrade the existing Loriyok Health facility For all the CSR proposals the community will contribute land. The project will not buy land. Out of the 22 participants 14 were members of local savings group (sanduku) They had attended a 2-day training on business supported by CRS. Out of the 14 a total of 4 had already taken loan from the savings group, others were planning to take in due course. In the area there was no bank, so they keep the cash in the house. The area has a big population but a small health facility. During delivery they travel several days ahead to Kimatong hospital that has inpatient services. The women in business pay rent in the current business premises so they are willing to pay rent in the new business centre if the project constructs for them.		

ITEM	DESCRIPTION AND ACTION	DEADLINE	RESPONSIBLE
	The women do diverse business types, but they are small scale. That support to their loan programme will help families to pay fees and expand business. Women be considered for employment in the project. Women are willing and ready for any type of work. The participants were from different bomas, and they will have the information with others. So, in employment even women from far from the road be considered. Persons with Disability be supported alongside women. several of them have no houses and no business. The PWDs be supported by the project: ▪ Tailoring machine ▪ Business training ▪ Tricycle machines		
5.	**Closing Remarks**		
	The women leader thanked the government of South Suda, the Ministry of Roads and Bridges and hoped the road will be done. And that women requests be considered.		
6.	**Closing Prayer**		
	She then said a closing prayer.		

REPUBLIC OF SOUTH SUDAN
MINISTRY OF ROADS AND BRIDGES

WOMEN FGD LORI YOK BOMA

Howard Humphreys
Consulting Engineers

12:30-1:30pm

9/9/2024

S/N o.	Name		Gender (M/F)	Organization	Designation	Phone Number	Email	Signature
(1)	AGNES	FLOVEMO	f	- -	Farmer	- -	- -	
2	MARTHA	MATPU	f	- -	- -	- -	- -	
(3)	SELEMENO	NOPPIKONO	F	- -	- -	- -	- -	
4	MARY	ATURIO	F	- -	- -	- -	- -	
5	RIA	LOURETT	F	- -	- -	- -	- -	
6	MAKITARI	VERONICA	F	- -	- -	- -	- -	
7	MARTHA	LOKOLONG	F	-	- -	- -	- -	
8	ELIZABETH	NACHICHI	F	-	-	-		
9	TERESA	MAKOLONGO	F	- -	-	- -	- -	
10	REGINO	PAULO	f	- -	- -	- -	- -	
11	MARY	MANGOKUO	f	-	-	- -	- -	
12	MONI	JIMO	F	- -	- -	- -	- -	
13	LORIA	MANYONG	f	-	-	- -	- -	
14	MARY	MACHAK	f	- -	- -	- -	- -	
15	REGINA	NAKONG	f	- -	- -	- -	- -	

WOMEN FGD LORIYOK BOMA

12:30-1:30pm 9/9/2024

3

S/No.	Name	Gender (M/F)	Organization	Designation	Phone Number	Email	Signature
1.	mary Paulo	F	—	farmer	—	—	
2.	Regina Lino	f	—	business lady	—	—	
3.	Makhina Hissan	f	—	farmer	—	—	
4	Margret Ifere	f	—	farmer	—	—	
5	Agnes mataba	F	—	—			
6	Tolco nakal	f	—	—	—	—	
7	Maduko Louma	f	—	—	—	—	
8	Viola Lotalia	f	—	—	—	—	
9	Rose nakal	f	—	—	—	—	
10	Rocha Marino	F	—	—	—	—	
11	Mamma nakarotha	f	—	—	—	—	
12	Cecilia Manko	f	—	—	—	—	
13	Lucia Lochabei	f	—	—	—	—	
14	Lucia Lariso	f	—	—	—	—	
15	Teresa John	f	—	—	—	—	

REPUBLIC OF SOUTH SUDAN
MINISTRY OF ROADS AND BRIDGES

Howard Humphreys
Consulting Engineers

WOMEN FGD LORIYOK BOMA 12.30-1.30pm 9/9/2024

S/N o.	Name	Gender (M/F)	Organization	Designation	Phone Number	Email	Signature
1.	ROSE Lumong	f	—	Business Lady	—	—	
2	Regina Paulo	f	—	—	—	—	
3	Lucia Makai	f	—	—	—	—	
4	Rose Nabolu	f	—	—	—	—	
5	Susan Luce	F	—	—	—	—	
6	Christine Nakai	f	—	—	—	—	
7	Beatrice Achieng	f	—	—	—	—	
10	Nayo James	F	—	—	—	—	
11	Mary Nalemoi	f	—	—	—	—	
12	Abigail Mike	f	—	—	—	—	
	Nadunco Lokwarangyang	f (PWD)		—	—	—	—
13	[illegible] Mutoogo	M	HHEA	Consultant			

Meeting Notes

Project:	Consultancy Services for the Environmental and Social Impact Assessment of the Juba-Torit-Kapoeta-Nadapal Road Upgrading to Bitumen Standards
Subject:	Kapoeta Municipality Community Meeting

Meeting place:	Kapoeta Municipal Council Hall	Meeting no:	<no>
Date and time:	9/09/2024 10:00am	Minutes by:	Anne Rita Koki

Attendees

1. Philip Pareng 2. Eng. Norman C. Gideon 3. Anne Rita Koki 4. Lokudo Elia 5. Juma Bhakari 6. Akileo William 7. 18No attendees	Representing:	MRB/PIU-Environmentalist SMTRB/EEST HHEA-Sociologist KMC- Mayor KMC- CEO KMC-Director Lands Community Representatives

Agenda

1. Introduction
2. Opening Remarks
3. Project Brief
4. Plenary session
5. Closing Remarks

Introduction

The meeting commenced at 10:00am with a word of prayer followed by self-introduction. Juma Bhakari reported that the mayor was currently engaged in a security meeting and will be joining later. He highlighted that Kapoeta Municipality is divided into five blocks and those in attendance are representatives from Palakal, Malakia, Haitarawa, REI A & REI B. He welcomed the project team and urged the community members to pay attention as they will be required to do more awareness amongst their respective communities.

Item No.	Description and Action	Action Deadline	Responsible
1.0	Opening Remarks		
	MRB/PIU (CLIENT) The Government of the Republic of South Sudan (GRSS) seeks to tarmac the Juba-Torit-Kapoeta Nadapal Road. The road is a regional road that connects South Sudan to neighbouring Kenya and potentially to Ethiopia. The World Bank intends to finance the construction of the road, but as part of the project preparation process, the previous ESIA studies undertaken in 2013 needs to be updated. In this regard, the Ministry of Roads and Bridges (MRB) has engaged Howard Humphreys East Africa Ltd - a Kenyan firm (HHEA) to undertake Environmental and Social Impact Assessment (ESIA) Studies. The Ministry has also engaged other two consultants to undertake Design review of the road and the other to prepare the Resettlement Action Plan (RAP). Previous contractor did not involve the community in their activities, but the government has now chosen a different approach. The community has been previously affected by demolitions and destruction of property during the road construction. The team involved in the RAP preparation shall be undertaking an asset inventory for purposes of ensuring the affected persons are compensated.		
2.0	Project Brief		
	HHEA (CONSULTANT) The road project is currently in the planning phase and its upon completion that the construction phase will commence. The ESIA studies are undertaken during the planning phase. It involves assessment of the existing environmental and social conditions before construction with the aim of identifying potential impacts that may arise during the construction and operation phases. All interested and affected stakeholders along the road corridor are also consulted to create awareness about the project and obtain their views, concerns and opinions about the projects. The Consultant seeks to understand the following aspects: ▪ Whether they accept the implementation of the road project. ▪ How Abalwa is likely to be impacted by the road project; positively and negatively. ▪ Where does the local community report their complaints and how are they addressed? ▪ Any existing migration routes for wild animals along the proposed road project. ▪ Any existing cultural heritage within the road corridor and cultural practices that are likely to be affected by		

Item No.	Description and Action	Action Deadline	Responsible
	the implementation of the road project. ▪ Any existing cases of GBV/SEAH ▪ Any other concern. The feedback will help in foreseeing potential risks and development of the necessary management plans before the construction phase commences.		
3.0	Plenary Session		
	a. Project Acceptance The community accepts the road project as they understand its benefit. The road is part of the development that is very much needed in South Sudan. **b. Project Benefits** The road will significantly reduce the high cost of vehicle repair and maintenance. It will boost development especially trade across different countries. It will end the deaths that have occurred along River Singata due to lack of a bridge. Insecurity incidences that happen along the road will decline during the operation phase of the road. **c. Road Design** The designers should ensure there is proper drainage to avoid flooding in homes during rainy season. Consider tarmacking the feeder roads within Kapoeta Town as well. High standard bridges should also be part of the road construction. The community is really suffering during the rainy season. The rivers cut their access to the other side of the road. Parents do not feel safe letting their children attend school because of the uncertainty on the status of the rivers. Patients being referred to Kapoeta Hospital are also stranded and they end up dying when they can't access healthcare services due to the status of the road. **d. Community Safety** Awareness on road safety is needed among the residents and the livestock owners so that they keep their animals away from the road. **e. Construction material** The community reported that construction material such as murram is readily available and the contractor should consider sourcing from them. **f. Compensation** The community reported that they are expecting displacement of property, but the government needs to plan on compensating the affected parties. Also, the extent of the road corridor should be defined in advance so that the affected people can begin moving their property. **g. Employment opportunities**		

Item No.	Description and Action	Action Deadline	Responsible
	The community reported that when the contractor gets to Kapoeta, job opportunities should be offered to the locals. **h. Cultural Heritage** The Toposa community has a cultural tradition that requires the Contractor to provide a bull to the elders for slaughtering before construction commences. When that time comes, the contractor needs to consult with the elders on the specific requirements needed for the sacrifice. **i. Grievances** Toposa prefer resolving issues that arise in a very amicable manner. They embrace negotiations whereby the community elders address the cases reported. If a solution is not found, they escalate it to the boma chief who reports to the executive chief and eventually the judge in their traditional courts. **j. Other Community Needs** The community requested to be notified in advance on the construction period. They will select community representatives to be part of the construction so that they can acquire the technical skills and knowledge. The government should also start planning for the construction of other roads such as Kapoeta-Mogus road that leads to Ethiopia and the Chukudung-Hiyala road that connects to Uganda.		
4.0	Closing Remarks		
	Director Lands-KMC Mr. William Akileo stated that it is important to have the engagement with the community. He emphasized on the need of the government to compensate for the affected property. He also urged the MRB to consider tarmacking the feeder roads within Kapoeta town. The design team also needs to align the sharp corners to prevent accidents that may occur along the black spots. The youths in the municipality should also be involved in empowerment programs. The lands office is ready to offer any necessary support and the MRB should work closely with them. **HHEA- Consultant** The consultant appreciated the community for the feedback and the concerns raised. **MRB-Client** The client thanked the community for their insightful information and feedback that will help enhance the project's implementation. He stated that the flooding and hydrology of the area is being investigated by the design team. **CEO-KMC** They appreciated the client for the engagement and are		

Item No.	Description and Action	Action Deadline	Responsible
	looking forward to future engagements. They will support the project until it is successfully completed.		
	There being no other business, the meeting ended at 12:30pm.		

Howard Humphreys
Consulting Engineers

ATTENDANCE LIST

CONSULTANCY SERVICES FOR THE ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT OF THE JUBA-TORIT-KAPOETA-NADAPAL ROAD UPGRADING TO BITUMEN STANDARDS

Title: COMMUNITY CONSULTATION AT KAPOETA TOWN.

Venue: KAPOETA MUNICIPAL COUNCIL HALL. Time: 10:00am Date: 9/9/2024.

S/No.	Name	Gender (M/F)	Organization	Designation	Phone Number	Email	Signature
1.	Anne Rita Koki	F	HHEA	Sociologist			
2.	Purung Philip	M	DIU/MRB	Environmentalist	092468952	purungkong@gm	
3	Engr/ Norman C. Gideon	M	SMTRB/EE	Civil Engineer	0928688328	normangideon@yahoo.co	
4-	Hellen Shama. P	F	Palakal		0922917626	angasi2019@g-m	
5-	Lewane Angga	M	RETB		0925174493	"	
6-	Cypriano Lokolong	M	Nakia		09—	—	—
7	Lotema Lojelo	M	Nakia		0923543393		
8-	Simon Lokulang	M	HAIT		092767[illegible]011	—	
9-	Marko Losike	M	Palakal		0923544201	—	
10-	Salah Atiliu	M	Palakal		0928422333	—	
11-	Regina Ato	F	REIA		0——	—	—

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S/No.	Name	Gender (M/F)	Organization	Designation	Phone Number	Email	Signature
26	Fosia Ramadan	F	Haitarabala	—	092[illegible]99	—	
27	Losike James	M	K.M.C	—	09253[illegible]2	l.jlochebe@gmail.com	

Community Consultation at Kapoeta Town.
KMC Hall

Howard Humphreys
Consulting Engineers

9/9/2024

(2)

S/No.	Name	Gender (M/F)	Organization	Designation	Phone Number	Email	Signature
12-	Aliardo KOK	M	REI A	—	—	—	—
13-	Fawzia Ramadan	F	HAI T	—	09289799	—	
14-	Lily Kiden	F	HAI T	—	0 " " 5	—	—
15-	Tuna Henry	F	REI B	—	—	—	—
16-	Vironica Lokopir	F	HAI Pal.	—	0928206825		
17-	Elizabeth Cici	f	REI B	—	0924824258	—	—
18-	Margret Akongo	F	Pakakal A	—	0924896380	—	—
19-	Inyasio Loki	M	Malakia	—	—	—	—
20-	Maria Lopore	f	Pakakal B	—	0924142267	—	—
21-	Angelina Losike	f	Malakia	—	0925566249	—	—
22-	Cecilia Nelson	F	" "	—	—	—	—
23	Juma Bukhari	m	K.M.C	C-E-O	092222957		
24-	Akileo Wilcin	m	K.M.C	Director Land	092373650	akileowilcin@gmail	
25	Lokuda Elia	M	K.M.C	Mayor	0922295763		

Meeting Notes

Project:	Consultancy Services for the Environmental and Social Impact Assessment of the Juba-Torit-Kapoeta-Nadapal Road Upgrading to Bitumen Standards
Subject:	FGD with Civil Society Organization (CSOs) Kapoeta

Meeting place:	Kuleu Hotel	Meeting no:	<no>
Date and time:	9/09/2024 10:00am	Minutes by:	Anne Rita Koki

Attendees

1. Philip Pareng	Representing:	MRB/PIU-Environmentalist
2. Eng. Norman C. Gideon		SMTRB/EEST
3. Anne Rita Koki		HHEA-Sociologist
4. JohnBosco Lonok		
5. Lobei Joseph		Nyakiriket Consortium-MD
6. Juma Tikol		IHDO-E.D
7. Faruk Lino		ICPDO-Staff
8. Kevin Lamanat		OPRD-Project Officer
9. Christine Namona		Nyakiriket Consortium-E.D
10. Nachebei Theony		ROG-Paralegal Officer

Agenda

1. Introduction
2. Opening Remarks
3. Project Brief
4. Plenary session
5. Closing Remarks

Introduction

The meeting started at 1:30pm. Eng. Norman welcomed everyone to the meeting followed by a round of self-introduction. He reported that the meeting is aimed at creating awareness about the proposed construction of the Juba-Torit-Kapoeta-Nadapal Road Project. Civil Society Organizations has been identified as a key stakeholder who interacts with communities and will help in enhancing the success of the project. He then welcomed the representative from the National Government to create awareness about the project.

Item No.	Description and Action	Action Deadline	Responsible
1.0	Opening Remarks		
	MRB/PIU (CLIENT) The Government of the Republic of South Sudan (GRSS) seeks to tarmac the Juba-Torit-Kapoeta Nadapal Road. The road is a regional road that connects South Sudan to neighbouring Kenya and potentially to Ethiopia. The World Bank intends to finance the construction of the road, but as part of the project preparation process, the previous ESIA studies undertaken in 2013 needs to be updated. In this regard, the Ministry of Roads and Bridges (MRB) has engaged Howard Humphreys East Africa Ltd - a Kenyan firm (HHEA) to undertake Environmental and Social Impact Assessment (ESIA) Studies. The Ministry has also engaged other two consultants to undertake Design review of the road and the other to prepare the Resettlement Action Plan (RAP). Previous contractor did not involve the community in their activities, but the government has now chosen a different approach. The community has been previously affected by demolitions and destruction of property during the road construction. The team involved in the RAP preparation shall be undertaking an asset inventory for purposes of ensuring the affected persons are compensated.		
2.0	Project Brief		
	HHEA (CONSULTANT) The road project is currently in the planning phase and its upon completion that the construction phase will commence. The ESIA studies are undertaken during the planning phase. It involves assessment of the existing environmental and social conditions before construction with the aim of identifying potential impacts that may arise during the construction and operation phases. All interested and affected stakeholders along the road corridor are also consulted to create awareness about the project and obtain their views, concerns and opinions about the projects. The Consultant seeks to understand the following aspects: ▪ Whether they accept the implementation of the road project. ▪ How Abalwa is likely to be impacted by the road project; positively and negatively. ▪ Where does the local community report their complaints and how are they addressed? ▪ Any existing migration routes for wild animals along the proposed road project. ▪ Any existing cultural heritage within the road corridor and cultural practices that are likely to be affected by		

Item No.	Description and Action	Action Deadline	Responsible
	the implementation of the road project. ▪ Any existing cases of GBV/SEAH ▪ Any other concern. The feedback will help in foreseeing potential risks and development of the necessary management plans before the construction phase commences.		
3.0	Plenary Session		
	Joseph Lobei Where exactly will the road be terminating at in Nadapal considering the history of the border issue in the area between South Sudan and Kenya? Previous experience resulted in the CSOs undertaking a lot of awareness to address the border issue. **Response**: The government understands the border issue and as discussions are ongoing between Kenya and South Sudan counterparts, the greater interest is for the road to join where the Kenyan Counterparts left off. The main goal is to create a corridor that links the Kenya Mombasa port with South Sudan to promote transportation of goods. **Juma Tikol** During the previous road activity of bush clearance, the affected persons were not compensated despite an asset inventory being done. Will there be compensations under this project? **Faruk Lino** The CSOs should be involved in the awareness meetings before and during construction. They also need to have representation in the project committees that will be formulated such as grievance committees, compensation committees. **Kevin Lomanat** Will the road design match that of Kenyan roads? Where will the contractor be sourcing construction materials? Will there be employment opportunities for the locals? **Response:** The road design will be meet the required standards as per the road design manuals. It has been recommended to the contractor that construction materials are readily available and potential location sources will be shared with them. Employment opportunities such as for the casuals will be offered to the local communities.		
4.0	Closing Remarks		
	Juma Tikol He appreciated the consultant for the engagement and indicated that they are looking forward to work with MRB and the Project Implementation Unit. He indicated the CSOs in Kapoeta serve the area between Nadapal		

Item No.	Description and Action	Action Deadline	Responsible
	and Loriyok while the CSO in Torit covers the section from Loriyok to Lirya under the EES. **HHEA- Consultant** The consultant appreciated the CSOs for the feedback, the concerns raised, and for honouring the invitation. **MRB-Client** The client thanked the CSOs for the meeting and stated that the project is also looking into tarmacking of feeder roads in Kapoeta town. **CEO-KMC** They appreciated the client for the engagement and are looking forward to future engagements. They will support the project until it is successfully completed.		
	There being no other business, the meeting ended at 2:30pm.		

Howard Humphreys
Consulting Engineers

ATTENDANCE LIST

CONSULTANCY SERVICES FOR THE ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT OF THE JUBA-TORIT-KAPOETA-NADAPAL ROAD UPGRADING TO BITUMEN STANDARDS

Title: CONSULTATION WITH CSOs - KAPOETA TOWN

Venue: KULEN HOTEL. Time: 1:30pm Date: 9/9/2024

S/No.	Name	Gender (M/F)	Organization	Designation	Phone Number	Email	Signature
1.	Anne Rita Koki	F	HHEA	Sociologist			
2	Pareng Philip	M	PIU/MRB	Environmentalist			
3	Tchubosco Lonak	M				bascolchuam@gmail.com	
4	Lobei Joseph	M	Nyakinket C	Managing Director	0922406709	info@nyakinketconsortium.org	
5.	Juma Tikol	M	IHDO	E.D	0927169999	jumamanzon@gmail.com	
6	Faruk Hilo	M	ICPDO	Staff	0922936000	Linofaruk14@gmail.com	
7	Engr/ Norman C. Gideon	M	DIG	Civil Engineer	0928688328	normangideon@Yahoo.com	
8	Kevin Lomanat	M	OPRD	project officer	0922120654	kjoe42310@gmail.com	
09	Christine Samara	F	Nyakinket Consortium	E.Director	0921724444		
10	Nachebei Theony	F	ROG	Paralegal officer	0929841631	ntheonygeorge@gmail.com	

Meeting Notes

Project:	Consultancy Services for the Environmental and Social Impact Assessment of the Juba-Torit-Kapoeta-Nadapal Road Upgrading to Bitumen Standards
Subject:	FGD with Persons Living with Disability-Kapoeta

Meeting place:	KMC	Meeting no:	<no>
Date and time:	9/09/2024 2:45Pm	Minutes by:	Anne Rita Koki

Attendees

1. Philip Pareng 2. Eng. Norman C. Gideon 3. Anne Rita Koki 4. Lokuda Elia 5. Juma Bukhari 6. Akileo William 7. David Lodapal 8. Anisa Ropail 9. 11No Members	Representing:	MRB/PIU-Environmentalist SMTRB/EEST HHEA-Sociologist KMC-KMC CEO-KMC Director Lands, KMC Chairperson-PLWD Secretary -PLWD PLWD Members

Agenda

1. Introduction
2. Opening Remarks
3. Project Brief
4. Plenary session
5. Closing Remarks

Introduction

Juma Bukhari called the meeting to order at 2:45pm. He thanked the members present for honouring the invitation and welcomed everyone to introduce themselves. Thereafter, he invited the chairperson of the PLWD to give his opening remarks. David Lodapal welcomed the members present and indicated that the association comprises of disabled members within Kapoeta Municipality. They have been previously consulted on the proposed road and are ready to hear what the National government is now planning. The MRB representative then went ahead to provide the project brief.

Item No.	Description and Action	Action Deadline	Responsible
1.0	Opening Remarks		
	MRB/PIU (CLIENT) The Government of the Republic of South Sudan (GRSS) seeks to tarmac the Juba-Torit-Kapoeta Nadapal Road. The road is a regional road that connects South Sudan to neighbouring Kenya and potentially to Ethiopia. The World Bank intends to finance the construction of the road, but as part of the project preparation process, the previous ESIA studies undertaken in 2013 needs to be updated. In this regard, the Ministry of Roads and Bridges (MRB) has engaged Howard Humphreys East Africa Ltd - a Kenyan firm (HHEA) to undertake Environmental and Social Impact Assessment (ESIA) Studies. The Ministry has also engaged other two consultants to undertake Design review of the road and the other to prepare the Resettlement Action Plan (RAP). Previous contractor did not involve the community in their activities, but the government has now chosen a different approach. The community has been previously affected by demolitions and destruction of property during the road construction. The team involved in the RAP preparation shall be undertaking an asset inventory for purposes of ensuring the affected persons are compensated.		
2.0	Project Brief		
	HHEA (CONSULTANT) The road project is currently in the planning phase and its upon completion that the construction phase will commence. The ESIA studies are undertaken during the planning phase. It involves assessment of the existing environmental and social conditions before construction with the aim of identifying potential impacts that may arise during the construction and operation phases. All interested and affected stakeholders along the road corridor are also consulted to create awareness about the project and obtain their views, concerns and opinions about the projects. The Consultant seeks to understand the following aspects: ▪ Whether they accept the implementation of the road project. ▪ How Abalwa is likely to be impacted by the road project; positively and negatively. ▪ Where does the local community report their complaints and how are they addressed? ▪ Any existing migration routes for wild animals along the proposed road project. ▪ Any existing cultural heritage within the road corridor and cultural practices that are likely to be affected by		

Item No.	Description and Action	Action Deadline	Responsible
	the implementation of the road project. ▪ Any existing cases of GBV/SEAH ▪ Any other concern. The feedback will help in foreseeing potential risks and development of the necessary management plans before the construction phase commences.		
3.0	Plenary Session		
	a. Project acceptance The proposed development is good and highly welcome. The road is currently in a very poor condition and it takes the resident at least two days to travel from Kapoeta to Torit. It is also good to see the government consulting all road users because it will help promote development. The road will help enhance unity in Eastern Equatoria State and the country at large. It will also enhance provision of services. The government needs to work jointly with the different stakeholders, NGOs and local community without any form of discrimination. b. Road Design The road corridor should be wide, and proper bridges set up. Road corners need to be aligned to prevent accidents arising at black spot areas. There should be clearing of the road reserve to enhance road visibility among the road users. c. Work opportunities The contractor should put aside specific slots for PLWD when offering employment during the construction phase. They can perform light roles such as cooking, cleaning among others. Also, the work positions should be offered equally across both genders. d. Road safety The design should consider putting up designated crossing points for livestock. Road signs should also be provided to allow pedestrians to cross freely. Consider incorporating footpaths in the design, particularly in the urban/town areas. e. Compensation The project should consider the persons whose property will be affected by the project because of the potential losses they will endure. f. Project timelines The members sought to know the duration of constructing the road from Juba to Nadapal. The Consultant reported that the project construction period is currently unknown. The time will be determined once the design phase of the project is completed.		
4.0	Closing Remarks		
	HHEA- Consultant The consultant appreciated the members for the feedback, the concerns raised, and for honouring the invitation.		

Item No.	Description and Action	Action Deadline	Responsible
	MRB-Client The client thanked the PLWD for the meeting and sharing their feedback and concerns that will be significant in completing the design phase of the project.		
	There being no other business, the meeting ended at 3:40pm.		

Howard Humphreys
Consulting Engineers

ATTENDANCE LIST

CONSULTANCY SERVICES FOR THE ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT OF THE JUBA-TORIT-KAPOETA-NADAPAL ROAD UPGRADING TO BITUMEN STANDARDS

Title: CONSULTATION WITH PERSONS LIVING WITH DISABILITY

Venue: KMC - HALL Time: 2:50pm Date: 9/9/2024

S/No.	Name	Gender (M/F)	Organization	Designation	Phone Number	Email	Signature
1.	Anne Rita Koki	F	HHEA	Sociologist	0		
2.	Parenge Philip	M	PIU/MRB	Environmentalist	0924687757		
3	Lokuda Elia	M	KMC	Mayor	0922205763		
4	Juma Bukhari	m	K.m.c	C-E-O	0922222957		
5	David Lodapal	m	DPO	c/person	0923985584		
6	Gabriel Diing	m	D.P.O	DPO-member	0922521580		
7	Mary Sally Lotubo	M	D.P.O	Information	0925431827		
8	Anisa Rapuri	f	D.P.O	secretary	0920610334		
9	Angelo Lokumu	M	D.P.O	D/Information	0927840771		
10	John Lochebe	m	D.P.O	member			
11	Joseph Nyegie	M	D.P.O	member			

Consultation with PLWD - KAPOETA.
9/9/2024.

Howard Humphreys
Consulting Engineers

S/No.	Name	Gender (M/F)	Organization	Designation	Phone Number	Email	Signature
12	Murino Lokinei	M	D.P.O	Member			
13	Adele Losike	F	D.P.O	tra			
14	Sebit Lomong	M	D.P.O	Member			
15	Mary Lolor	F	D.P.O	Advisor			
16	Angelo Lokidu	M	D.P.O	"			
17	RUFINO Lomoth	M	"				
18.	Akileo William	M	~~SMTRB/EEST~~ K.M.C Engineer	Director Plant	0923752650	akileowilliam@gmail.com	
19.	Engr/ Norman C. Gideon	M	SMTRB/EEST	Civil Engineer	0928688328	normangideon@yahoo.com	

Howard Humphreys
Consulting Engineers

ATTENDANCE LIST

CONSULTANCY SERVICES FOR THE ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT OF THE JUBA-TORIT-KAPOETA-NADAPAL ROAD UPGRADING TO BITUMEN STANDARDS

Title: CONSULTATION WITH BUSINESS COMMUNITY

Venue: KMC HALL. Time: 3·30pm Date: 9/9/2024

S/No.	Name	Gender (M/F)	Organization	Designation	Phone Number	Email	Signature
1.	Anne Rita Koki	F	HHEA	Sociologist			
2.	Parang Philip	M	EPTV/MRP	Environmentalist	0924687137	Parangfrom@gmail.com	
3.	Engr/ Norman C. Gideon	M	SMTDRB/LEA	Civil Engineer	0928688328	normangideon@yahoo.c	
4.	Akileo William	M	K.M.C	Director of land	0928752650	akileowilliam@gmail	
5	Abdi aden	M	IC		0924696499		
6	Musie Tesgay	M			0922615811		
7	DINKA BOKA	M			0920571660		
8	DAVID MACHARIA	M	CHAIRMAN KENYA	Community	0924772826	Davidbunson mosl@gmail.	
9	SAMSOM Tekle	M			0926093354		
10	Mahamoud Ahmed	M	S.G. sudan community		0920000813	ma-aardya811@gmail	
11	Abdulsalam Hassan Shag	M	Sudanese		0923322900		

Consultation with Business Community - Kapoeta
9/9/2024

Howard Humphreys
Consulting Engineers

(2)

S/No.	Name	Gender (M/F)	Organization	Designation	Phone Number	Email	Signature
12	ABRAHAM JUOI	INT.			0924772469 SOUTH SUDAN		
13	Lopariwa Ikadi		Chamber		0925014744.		
14	Juma Bukhair	M	K.M.C		0922222957	C.E.O	

Meeting Notes

Project:	Consultancy Services for the Environmental and Social Impact Assessment of the Juba-Torit-Kapoeta-Nadapal Road Upgrading to Bitumen Standards
Subject:	FGD with Women Representatives-Kapoeta

Meeting place:	KMC	Meeting no:	<no>
Date and time:	11/09/2024 5:00pm	Minutes by:	Anne Rita Koki

Attendees

1. Philip Pareng 2. Eng. Norman C. Gideon 3. Anne Rita Koki 4. Juma Bukhari 5. Hellen Nagolio 6. Christine Paul 7. 11No Members	Representing:	MRB/PIU-Environmentalist SMTRB/EEST HHEA-Sociologist CEO-KMC Chairlady Treasurer Women representatives

Agenda

1. Introduction
2. Opening Remarks
3. Project Brief
4. Plenary session
5. Closing Remarks

Introduction

The meeting commenced at 5:00pm with a word of prayer. The members present introduced themselves including the project team and representative from the Kapoeta Municipal Council. Juma Bukhari indicated that the National Government intends to tarmac the Juba-Nadapal Road and part of the stakeholder consultation, they had requested to meet the women to understand their concerns. The consultant proceeded to create awareness about the project.

Item No.	Description and Action	Action Deadline	Responsible
1.0	Opening Remarks		

Item No.	Description and Action	Action Deadline	Responsible
	MRB/PIU (CLIENT) The Government of the Republic of South Sudan (GRSS) seeks to tarmac the Juba-Torit-Kapoeta Nadapal Road. The road is a regional road that connects South Sudan to neighbouring Kenya and potentially to Ethiopia. The World Bank intends to finance the construction of the road, but as part of the project preparation process, the previous ESIA studies undertaken in 2013 needs to be updated. In this regard, the Ministry of Roads and Bridges (MRB) has engaged Howard Humphreys East Africa Ltd - a Kenyan firm (HHEA) to undertake Environmental and Social Impact Assessment (ESIA) Studies. The Ministry has also engaged other two consultants to undertake Design review of the road and the other to prepare the Resettlement Action Plan (RAP). Previous contractor did not involve the community in their activities, but the government has now chosen a different approach. The community has been previously affected by demolitions and destruction of property during the road construction. The team involved in the RAP preparation shall be undertaking an asset inventory for purposes of ensuring the affected persons are compensated.		
2.0	Project Brief		
	HHEA (CONSULTANT) The road project is currently in the planning phase and its upon completion that the construction phase will commence. The ESIA studies are undertaken during the planning phase. It involves assessment of the existing environmental and social conditions before construction with the aim of identifying potential impacts that may arise during the construction and operation phases. All interested and affected stakeholders along the road corridor are also consulted to create awareness about the project and obtain their views, concerns and opinions about the projects. The Consultant seeks the opinions of women because they face unique challenges when it comes to transport and development. Also, they may have different interests from those expressed by the public because of their crucial role within the society. It is observed that the communities within the road corridor embrace a matriarchal society where women have little or no voice. Therefore, the meeting is to also obtain feedback on how they can be involved in the project to promote development and gender equity. The feedback will help in foreseeing potential risks and development of the necessary management plans before the construction phase commences.		

Item No.	Description and Action	Action Deadline	Responsible
3.0	Plenary Session		
	a. Project Acceptance The women they are ready to support the implementation of the road project. They also appreciate being consulted before the commencement of the project. It is the first time being involved in development activities from the project onset. b. Project Benefits The road will help during public activities such as general elections. It will open the area to more business opportunities, reduce the price of commodities, farm produce will get to the market when fresh, insecurities along the road will decline, fares will be affordable, and patients will easily access health services. c. Bridges The design should ensure they recommend construction of flying bridges. During the rainy season, the rivers flood and leave passengers stranded on one side. Women are at times forced to strip naked as they attempt crossing of the rivers. d. Employment opportunities The job opportunities that will arise should be offered fairly to all the residents. The women are ready to work including the elderly. Locals should be prioritized in employment. e. Community Safety The women indicated that they have witnessed increased drug abuse among the youth. They are ready to be involved in enhancing community safety measures such as campaigns against drug abuse, road safety awareness and transmission of STIs. They are ready to talk to the youth on proper investments and spending of their financial earnings. f. Project scope Will the road project be crossing to Uganda and Ethiopia? Response: No, the road being tarmacked begins at Rajaf and through Nesitu-Torit-Kapoeta to Nadapal. g. Compensation What will happen to property that is within the road corridor that will be displaced by the implementation of the project. Response: The RAP consultant is undertaking an asset inventory of all affected property within the road corridor for compensation before the construction commences.		
4.0	Closing Remarks		
	HHEA- Consultant The consultant appreciated the members for the feedback, the concerns raised, and for honouring the invitation. **MRB-Client** The client thanked the members for the meeting and		

Item No.	Description and Action	Action Deadline	Responsible
	sharing their feedback and concerns that will be significant in completing the design phase of the project. **Kapoeta Women's Group-Chairlady** The Chairlady indicated that she is the point of contact for any future engagements Hellen Nangolio-0922791252 Alternative Contact-Christine Paul (Treasurer)-0922006161. The women are ready to support the project implementation team in whichever way possible. They are hoping that the project will not experience delays and stalling like the previous road improvement activity.		
	There being no other business, the meeting ended at 6:30pm.		

Howard Humphreys
Consulting Engineers

ATTENDANCE LIST

CONSULTANCY SERVICES FOR THE ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT OF THE JUBA-TORIT-KAPOETA-NADAPAL ROAD UPGRADING TO BITUMEN STANDARDS

Title: CONSULTATION MEETING AT KAPOETA - WOMEN GROUP - FGD.

Venue: KULELI HOTEL Time: 5:00pm. Date: 11/9/2024.

S/No.	Name	Gender (M/F)	Organization	Designation	Phone Number	Email	Signature
1-	Hellen Nagolio	F			0922791252		
2-	Lucy Achom	//			0925912696		
3-	Christine Paul	//			0922006161		
4-	Regina Napeta	//			0922793333		
5-	Cecilia Namoi	//			0924825360		
6-	Mariam Juma	//			0924772732		
7-	Rose peter	//			0928406368		
8-	Pamela Jackson	//			0924651919		
9-	Samia Loweto	//			0920916955		
10-	Cecelia Alpio	//			0928954053		
11-	Angelina Losike	//			0925662149		

Howard Humphreys
Consulting Engineers

ATTENDANCE LIST

CONSULTANCY SERVICES FOR THE ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT OF THE JUBA-TORIT-KAPOETA-NADAPAL ROAD UPGRADING TO BITUMEN STANDARDS

Title: CONSULTATION MEETING AT KAPOETA - WOMEN GROUP - FGD.

Venue: KULEN HOTEL Time: 5:00PM. Date: 11/9/2024.

S/No.	Name	Gender (M/F)	Organization	Designation	Phone Number	Email	Signature
12	Mary Nabukui	F			0929501442		
13	Hellen Siama	F	Palpal		0922917626		
14	Anne Rita Koki	F	HHEA	Sociologist	—	—	
15.	Phrang Philip	M	PAU/MKIB	Environmentalist	.		
16	Engr/Norman C. Gideon	M	SMTRB/EEST	Civil Engineer	0928688328	normangideon@Yahoo.com	

Meeting Notes

Project:	Consultancy Services for the Environmental and Social Impact Assessment of the Juba-Torit-Kapoeta-Nadapal Road Upgrading to Bitumen Standards
Subject:	Buno Boma Community Meeting

Meeting place:	Buno shopping Centre	Meeting no:	<no>
Date and time:	10/09/2024 12:00pm	Minutes by:	Anne Rita Koki

Attendees

1. Philip Pareng 2. Eng. Norman C. Gideon 3. Anne Rita Koki 4. 18No attendees	Representing:	MRB/PIU-Environmentalist SMTRB/EEST HHEA-Sociologist Community Members

Agenda

1. Introduction
2. Opening Remarks
3. Project Brief
4. Plenary session
5. Closing Remarks

Introduction

Mike Lolepiet called the meeting to order at 12:00pm. He issued apologies for the boma chief who was not available to attend the meeting. He welcomed the members present followed by self-introduction. Thereafter, he invited the project team to proceed with the meeting.

Item No.	Description and Action	Action Deadline	Responsible
1.0	Opening Remarks		
	MRB/PIU (CLIENT) The Government of the Republic of South Sudan (GRSS) seeks to tarmac the Juba-Torit-Kapoeta Nadapal Road. The road is a regional road that connects South Sudan to neighbouring Kenya and potentially to		

Item No.	Description and Action	Action Deadline	Responsible
	Ethiopia. The World Bank intends to finance the construction of the road, but as part of the project preparation process, the previous ESIA studies undertaken in 2013 needs to be updated. In this regard, the Ministry of Roads and Bridges (MRB) has engaged Howard Humphreys East Africa Ltd - a Kenyan firm (HHEA) to undertake Environmental and Social Impact Assessment (ESIA) Studies. The Ministry has also engaged other two consultants to undertake Design review of the road and the other to prepare the Resettlement Action Plan (RAP). Previous contractor did not involve the community in their activities, but the government has now chosen a different approach. The community has been previously affected by demolitions and destruction of property during the road construction. The team involved in the RAP preparation shall be undertaking an asset inventory for purposes of ensuring the affected persons are compensated.		
2.0	Project Brief		
	HHEA (CONSULTANT) The road project is currently in the planning phase and its upon completion that the construction phase will commence. The ESIA studies are undertaken during the planning phase. It involves assessment of the existing environmental and social conditions before construction with the aim of identifying potential impacts that may arise during the construction and operation phases. All interested and affected stakeholders along the road corridor are also consulted to create awareness about the project and obtain their views, concerns and opinions about the projects. The Consultant seeks to understand the following aspects: ▪ Whether they accept the implementation of the road project. ▪ How the community is likely to be impacted by the road project; positively and negatively. ▪ Where does the local community report their complaints and how are they addressed? ▪ Any existing migration routes for wild animals along the proposed road project. ▪ Any existing cultural heritage within the road corridor and cultural practices that are likely to be affected by the implementation of the road project. ▪ Any existing cases of GBV/SEAH ▪ Any other concern. The feedback will help in foreseeing potential risks and development of the necessary management plans before the construction phase commences.		

Item No.	Description and Action	Action Deadline	Responsible
3.0	Plenary Session		
	a. Project Acceptance The community is happy to hear that the government is planning to tarmac the road. b. Project benefits The road will enhance movement of farm produce to the market. The frequency of accidents from both vehicles and motorbike users will decline because it arises from the poor road condition. c. Bridge The design team should construct a high-flying bridge during the dry season. The bridge is critical to them because the women from Buno community farm on both sides of the river and they need to access their farms. The community also requests for a livestock crossing point along River Buno. d. Employment opportunities The contractor should prioritize offering job opportunities to the community during the construction phase. Buno community has many young youths who are willing and ready to work. e. Grievances Buno community has a local committee that comprises of male, female and youth representatives. The committee is responsible for addressing issues and complaints that arise within the community. The unresolved complaints are escalated to the Boma chief or the police. f. Cultural Heritage At R. Buno, there is a tree near the road that is used by elders to perform sacrifices. If it is to be displaced by the project, the elders will require the contractor to provide a black bull for performance of their rituals then road construction can commence immediately after. g. Wildlife There is human-wildlife conflict between the community and the wild animals that cross along R. Buno. The community has spotted several leopards that hide on the trees along the river as recent as July 2024. The leopards feeds on their goats and theirs one incident when it attacked a community member leaving the victim paralysed on their lower body.		
4.0	Closing Remarks		
	HHEA- Consultant The consultant appreciated the community for the feedback and the concerns raised. **MRB-Client** The client thanked the community for their insightful information and feedback that will help enhance the project's implementation.		

Item No.	Description and Action	Action Deadline	Responsible
	Chief representative They appreciated the client for the engagement and are looking forward to future engagements. They will support the project until it is successfully completed.		
	There being no other business, the meeting ended at 1:30pm.		

ATTENDANCE LIST

CONSULTANCY SERVICES FOR THE ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT OF THE JUBA-TORIT-KAPOETA-NADAPAL ROAD UPGRADING TO BITUMEN STANDARDS

Title: CONSULTATION AT BUNO BOMA.

Venue: BUNO BOMA. Time: 12:00pm. Date: 10/9/2024.

S/No.	Name	Gender (M/F)	Organization	Designation	Phone Number	Email	Signature
1.	Anne Rita Koki	F	HHEA	Sociologist			
2.	Perenj Philip	M	PIU/MRB	Environmentalist			
3.	Engr/ Norman C. Gideon	M	SMTRB	Civil Engineer	0928688328	normangideon@yahoo.co	
4	Mike Kolepiet	m	YOOHAS		-	-	
5	Elia Lokwan	m	11		0929904762	-	
6	Peter Lomanang	m	11		-	-	
7	James Lopyem	m	11		-	-	
8	Elia Nayore	m	11		-	-	
9	John Sebit	m	11		-	-	
10	Abraham	m	11	-	-	-	
11	Marko	m	11	-	-	-	

S/No.	Name	Gender (M/F)	Organization	Designation	Phone Number	Email	Signature
12	Marko Lotuam	M	-	-	~~09~~	-	~~MM~~
13	Elia Nangelio	M	-	-	-	-	
14	Angelo Napeyo	M	-	-	-	-	~~Ang~~
15	Moge Lotor	M	-	-	-	-	~~MR~~
16	James Lotem	M	-	-	-	-	~~JL~~
17	Jacob Lokitoe	M	-	-	-	-	~~JL~~
18	Logre Joseph	M	-	-	-	-	~~JA~~
19	Philip	M	-	-	-	-	~~P~~
20	Nora Lokamus	M	-	-	-	-	~~AP~~
21	Lobei Simon	M	-	-	-	-	

Meeting Notes

Project:	Consultancy Services for the Environmental and Social Impact Assessment of the Juba-Torit-Kapoeta-Nadapal Road Upgrading to Bitumen Standards
Subject:	ESIA Public Meeting at Lowoyakali Boma

Meeting place:	Lowoyakali Boma	Meeting no	<no>
Date and time:	September 10, 2024, 10:00am	Minutes by:	B. Mutsotso

Attendees

1. 84No. attendees	Representing:	MRB/PIU HHEA Consultant Community Members

Agenda

1. Opening Prayer
2. Introduction
3. Project Presentation
4. Plenary
5. Closing Remarks
6. Closing Prayer

1. Opening Prayer

The opening prayer was said by one of the community members.

ITEM	DESCRIPTION AND ACTION	DEADLINE	RESPONSIBLE
2.	**Introduction**		
	The chief welcomed the team and community members to the meeting. He said that the road was in bad state and unusable whenever it rained. That dry river beds were used as hiding places by bandits. Many vehicles break down in the riverbed. From January 2024 six vehicles broke down in the riverbeds during rainy seasons. If the road was tarmacked, then the community will be happy. Other community members live far from the road.		

ITEM	DESCRIPTION AND ACTION	DEADLINE	RESPONSIBLE
	He had mobilised communities the previous day to get them to the meeting. The information will also be shared with other community members that were unable to be there. The team leader introduced his team and the consultant. He then asked the consultant to make his remarks.		
3.	**Project Presentation**		
	The Consultant said he was from Howard Humphrey Engineers Ltd from Nairobi. Howard Humphrey was contracted by the Ministry of Roads and Bridges to undertake the ESIA study for the Juba-Torit-Kapoeta-Nadapal Road. The planned tarmacking of this road is part of the EARTTFP. It is part of the greater Eastern Africa Project already completed in Kenya and Tanzania and the Juba-Nadapal section is the only one remaining. The purpose of the meeting is to share project information with the community and also obtain feedback from the community that can be used for final road design. The project has an urban roads component for Kapoeta and Torit towns. The community is free to make proposals for any CSR projects that may be considered by the project during construction. The project will bring many benefits to the community in terms of employment, time saving, cheaper transport costs, free and faster flow of goods, open up new business opportunities and link the community to the region. He then asked the community to ask questions, provide views or any recommendations		
4.	**Plenary**		
	Mary Nakuma She was very happy for the project. However, some people were doubtful. The community still supports the project. Arkajo Lokora Happy the project is in our community. In the past they were told about the project but only soil work was done. He wondered if this project would be like the previous one. He hoped what has been said will be implemented and that their area will be like Moroto in Uganda. Stephen Lolup Had information that the road would be tarmacked. The road project had been discussed in a meeting at Narus town. The people of the area should be considered for employment. For safety of livestock the keepers will be advised to keep off. Peter Kanyi Proposed the following CSR projects: Improve the school, health centre, water projects and food.		

ITEM	DESCRIPTION AND ACTION	DEADLINE	RESPONSIBLE
	Marko Ilukwan Happy and supports the project. Nakilipa Lokoi Happy with the project. He also added that in the area the sorghum were destroyed by birds and they are very hungry since there's no food. Marjorie Lopir The project will help the community Lokale Atod Supports the project. Many vehicles get stuck in the road. They were ready to provide labour for the road construction. He also added that the health facility was too small for the large community. The area has many diseases eg. Klizar, typhoid, HIV/AIDs. The health facility also has only one staff member.		
5.	**Closing Remarks**		
	The community was happy and supported the project. Women also asked to be considered for employment. The community also promised to monitor the road construction to ensure it is not destroyed. The road will improve security in their area and the area will be safe for the contactors.		
6.	**Closing Prayer**		
	A closing prayer was said by one of the community members.		

Howard Humphreys
Consulting Engineers

(1)

ATTENDANCE LIST

CONSULTANCY SERVICES FOR THE ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT OF THE JUBA-TORIT-KAPOETA-NADAPAL ROAD UPGRADING TO BITUMEN STANDARDS

Title: ESIA PUBLIC MEETING FOR THE JUBA–TORIT–KAPOETA–NADAPAL ROAD

Venue: ~~LOMOYOKALI~~ Lokakale BOMA Time: 10:00 am Date: 10/9/2024

S/No.	Name	Gender (M/F)	Organization	Designation	Phone Number	Email	Signature
1	Joseph Agadid	M			0922173011		
2	David Lomam	M			0929410270		
3	Peter Lokaye	M			0927920988		
4	David Lolee	M			0922217010		
5	Thomas Lowii	M			—		
6	Mariko Lukuai	M			—		
7	Mariko Lomunyes	M			—		
8	Arakanzelo Lokorai	M			0927237168		
9	Stephen Lolup	M			0921383377		
10	Peter Kenyi	M			0922432117		
11	Nabuya Lojoo	F			0920659978		
12	Prof Benaah Mutsotso	M	HHEA		0722833012		

S/No.	Name	Gender (M/F)	Organization	Designation	Phone Number	Email	Signature
13	BENARD LOPYOOI	M			—		
14	LOPUKE LOMOR	F			—		
15	MARY NAKWA	F			—		
16	NAKUL LOKURE	F			—		
17	NALIBI LOMUKU	F			—		
18	Mandalena Josh	F			—		
19	ELIA LOSIKE	M			—		
20	ELIA LOCHOI	M			—		
21	NAKILIPA LOKAI	F			—		
22	ELIA LOWII	M			—		
23	ALBINO NANOK	M			—		
24	MARKO LOKAI	M			—		
25	MOSA LOLIMIO	M			—		
26	LOPUKE LOLEPIO	M			—		
27	LOREM JOSEPH	M			0920978623		

Howard Humphreys
Consulting Engineers

2

ATTENDANCE LIST

CONSULTANCY SERVICES FOR THE ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT OF THE JUBA-TORIT-KAPOETA-NADAPAL ROAD UPGRADING TO BITUMEN STANDARDS

Title: ESIA PUBLIC MEETING FOR THE JUBA-TORIT-KAPOETA-NADAPAL ROAD

Venue: LOWOYAKALI Time: 10 am Date: 10/9/2024

S/No.	Name	Gender (M/F)	Organization	Designation	Phone Number	Email	Signature
28	MARK LOKAI	M			—		
29	NAROT KOKENO	F			—		
30	Abraham. Natale	M			0720973185		
31	James Lokuma	M			—		
32	Paul Sebito	M			—		
33	NAIBUYA LONYIA	F			—		
34	JOYCE LOKUMOKA	F			—		
35	NAKILIPA LOKAI	F			—		
36	LOMUA LOWIRENG	F			—		
37	NAKALE LOKIDOR	F			—		
38	IKO LOKOR	F			—		

S/No.	Name	Gender (M/F)	Organization	Designation	Phone Number	Email	Signature
39	LOKII LOPUKE	F					
40	LUICY NATOBONKA	F					
41	ADUGA LOKAI	F					
42	NAYONA LOKALE	F					
43	NAKUDA LOPUKE	F					
44	REGINA LOPEYOK	F					
45	DANIEL LOKAI	M					
46	EMMANUEL LOPIR	M					
47	MARIHINO LOMUNYENY	M					
48	NATEAM LUICY	F					
49	NATERE LOTOO	F					
50	NALABI LOKURIO	F					
51	LOPIR LOKALE	F					
52	NAKOMONY LOKOPIRIO	F					
53	NAKIDUR LOTELEE	F					

ESIA PUBLIC MEETING FOR THE JUBA–TORIT & KAPOETA NADAPAL ROAD

LOHOYAKALI BOMA 10AM 10/9/2024 3

S/No.	Name	Gender (M/F)	Organization	Designation	Phone Number	Email	Signature
54	NAKELE LOSAM	F					
55	LOLEE LOLEPIO	M					
56	LOKITOE LODAPAL	M					
57	NATABO LOLEE	F					
58	MARKO NANGOLI	M					
59	SIMON LOSIKE	M					
60	NAKAI LOTABO	F					
61	LOMYIA LOMOE	M					
62	LOKAALE ATOD	M					
63	ELARIO LOENE	M					
64	SIMON LORIET	M					
65	LOMOR LOKIAOR	M					
66	EKUDO LOKITELA	M					
67	LOCHIPIO LOCHEBE	M					
68	LOKOR TAKANG	M					

S/No.	Name	Gender (M/F)	Organization	Designation	Phone Number	Email	Signature
69	NAKALE LOMILIA	F					
70	NAKIDOR LOKWAR	F					
71	NATUBU LOKITOE	F					
72	LOTOGTO LODIKIO	F					
73	LONGOLEE NAGARIAN	F					
74	NASIKE LORIKA	F					
75	LOKENO LOKURIO	F					
76	NAWII LOCHEBE	F					
77	NAKOLIMONG LOTERE	F					
78	LONOIMOE LOKORPIRIO	F					
79	NAROPIR MARIE	F					
80	NATUO LOTELEE	F					
81	NAKOR LOKWAR	F					
82	NAKIDOR LOLETA	F					
83	NAPEAM LOKENO	F					

Meeting Notes

Project:	Consultancy Services for the Environmental and Social Impact Assessment of the Juba-Torit-Kapoeta-Nadapal Road Upgrading to Bitumen Standards
Subject:	Napotpot Community Meeting

Meeting place:	Kapoeta East County Offices	Meeting no:	<no>
Date and time:	10/09/2024 10:00am	Minutes by:	Anne Rita Koki

Attendees

1. Philip Pareng 2. Eng. Norman C. Gideon 3. Anne Rita Koki 53No attendees	Representing:	MRB/PIU-Environmentalist SMTRB/EEST HHEA-Sociologist Community Members

Agenda

1. Introduction
2. Opening Remarks
3. Project Brief
4. Plenary session
5. Closing Remarks

Introduction

The Chief called the meeting to order and one of the community members said a word of prayer. He stated that the Ministry of Roads from National Government had requested him to convene the meeting so that they could consult with the community on the Juba-Nadapal road that is set to be tarmacked. He welcomed the project team to share more information and urged the community to listen keenly and accord the team the necessary support.

Item No.	Description and Action	Action Deadline	Responsible
1.0	Opening Remarks		
	MRB/PIU (CLIENT) The Government of the Republic of South Sudan (GRSS) seeks to tarmac the Juba-Torit-Kapoeta Nadapal Road. The road is a regional\ road that connects South Sudan to neighbouring Kenya and potentially to Ethiopia. The World Bank intends to finance the construction of the road, but as part of the project preparation process, the previous ESIA studies undertaken in 2013 needs to be updated. In this regard, the Ministry of Roads and Bridges (MRB) has engaged Howard Humphreys East Africa Ltd - a Kenyan firm (HHEA) to undertake Environmental and Social Impact Assessment (ESIA) Studies. The Ministry has also engaged other two consultants to undertake Design review of the road and the other to prepare the Resettlement Action Plan (RAP). Previous contractor did not involve the community in their activities, but the government has now chosen a different approach. The community has been previously affected by demolitions and destruction of property during the road construction. The team involved in the RAP preparation shall be undertaking an asset inventory for purposes of ensuring the affected persons are compensated.		
2.0	Project Brief		
	HHEA (CONSULTANT) The road project is currently in the planning phase and its upon completion that the construction phase will commence. The ESIA studies are undertaken during the planning phase. It involves assessment of the existing environmental and social conditions before construction with the aim of identifying potential impacts that may arise during the construction and operation phases. All interested and affected stakeholders along the road corridor are also consulted to create awareness about the project and obtain their views, concerns and opinions about the projects. The Consultant seeks to understand the following aspects: ▪ Whether they accept the implementation of the road project. ▪ How the community is likely to be impacted by the road project; positively and negatively. ▪ Where does the local community report their complaints and how are they addressed? ▪ Any existing migration routes for wild animals along the proposed road project. ▪ Any existing cultural heritage within the road corridor and cultural practices that are likely to		

Item No.	Description and Action	Action Deadline	Responsible
	be affected by the implementation of the road project. ▪ Any existing cases of GBV/SEAH ▪ Any other concern. The feedback will help in foreseeing potential risks and development of the necessary management plans before the construction phase commences.		
3.0	Plenary Session		
	a. Project Acceptance The community indicated that it is good that they are being consulted from the planning phase of the project. The road is a public utility being undertaken by the government for its people. They wish the construction would start immediately. **b. Project Benefits** The road will make it easier for the locals to travel to Juba. It will minimize accidents that mostly occur along the bridges. Patients will easily get to hospitals. It will be safer for the motorists using the route as the incidents of robbery will decline. **c. Project Compensation** The community has been engaged previously on the road construction. They were informed that people whose property would be affected by the road would be compensated. Unfortunately, to date the road extent has not been demarcated and the persons affected have not received compensation. The landowners are unable to develop their plots of land because they are not sure if they will be displaced by the road. Requested the demarcation to be done because the previous contractor is unavailable. An advance notice of relocating the displaced property should also be provided. ***Response:*** The RAP consultant will be arriving at Napotpot in a few days where they will be undertaking the asset inventory. The design team has surveyors who are placing beacons showing the extent of the road corridor. The list of asset inventory will indicate how much the government of South Sudan needs to budget for compensation of the affected persons. It also allows World Bank to oversee how the affected persons are affected and mitigated by the planned project activities. **d. Community Requests** The community indicated that they would like the contractor to prioritize them in job opportunities during construction. They urged the contractor to also consider drilling a borehole because water is a major necessity in the area especially for domestic and livestock use. They indicated a borehole located at (36N 600172.876 m E 511328.329 m N) only needs a pump for it to be operational. Also, if it lies within the road corridor, the design team should consider realigning their design. The water from rivers is		

Item No.	Description and Action	Action Deadline	Responsible
	unsafe for drinking and the locals are really suffering from waterborne diseases. Also, the roads leading to schools should be improved. **e. Cultural heritage** The Buno community has a place for conducting sacrifices locally known as *Nanyoknyok* along River Napotpot. If the area is displaced by the road, the project will need to provide the elders with a bull to offer as a sacrifice to relocate. The elders also meet under a tree near the road known as *aperu* that is likely to be affected by the project. Consider building a hall to serve as a meeting place. **f. Grievances** The community members report their complaints to their elders who address the issues with the chief. The unresolved ones are escalated to the police who advance it to the court. The boma chief reports the cases to Narus for hearing at the court. **g. Wildlife** The common animals spotted crossing River Napotpot are Antelopes, leopards, hare, hyena and elephants.		
4.0	Closing Remarks		
	HHEA- Consultant The consultant appreciated the community for the feedback and the concerns raised. **MRB-Client** The client thanked the community for their insightful information and feedback that will help enhance the project's implementation. **Boma Chief** He indicated that they are aware that the road is 60m wide and his meeting place with the local community shall also be affected. They are very supportive of the project, and they will create further awareness among the villagers.		
	There being no other business, the meeting ended at 11:00am.		

Howard Humphreys
Consulting Engineers

ATTENDANCE LIST

CONSULTANCY SERVICES FOR THE ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT OF THE JUBA-TORIT-KAPOETA-NADAPAL ROAD UPGRADING TO BITUMEN STANDARDS

Title: COMMUNITY CONSULTATION AT NAPOTPOT BOMA.

Venue: NAPOTPOT BOMA- MARKET CENTRE. Time: 9:00am Date: 10/9/2024

S/No.	Name	Gender (M/F)	Organization	Designation	Phone Number	Email	Signature
1.	Anne Rita Koki	F	HHEA	Sociologist			~~ARK~~
2.	Daren & Philip	M	PV/MRB	Environmentalist			
3.	Engr/Norman C Gideon	M	SMTRB/EEST	Civil Engineer	0928688328	normangideon@yahoo	~~Norman~~
4.	Samuel Lokeno	M	Youth	—	0923751009	Samuellokeno1ok@gmail.com	
5	Joseph Lotede	M	Youth	Business Man	092220288	—	
6.	Marko Lokorot	m	member	B. Man	09235007	—	DO
7.	Marko Lopem	m	member	B. Man	0929917448	—	
8.	Chipiriano Lochebe	M	Member	Business Man	0928333556	—	
9.	Joseph Lokai	m	Member	Business Man	0926115547	—	~~Joe~~
10.	Elia Losike	m	Member	Business Man	0928477886	—	~~Elf~~
11	Kedeo Loteam	m	Member	B. Man	—	—	Kuedi

REPUBLIC OF SOUTH SUDAN
MINISTRY OF ROADS AND BRIDGES

Howard Humphreys
Consulting Engineers

S/No.	Name	Gender (M/F)	Organization	Designation	Phone Number	Email	Signature
12	J. fanny Wulek	m	Youth member	Business Man	0923 805333	—	
13	Marico Losokan	m	Youth member	Business Man	0923751608	[illegible]	
14	Naten Nakal	F	member	Business Man	—	—	
15	Jackson Nadoket	m	Youth member	Business Man	0923685262	—	
16	Anselo Lokinga	m	Member	Business Man	—	—	
17	GEOFRY LOTARA	M	YOUTH	BUSSINESSMAN	0928144890	—	
18	Simon Lokidor	m	Youth	Drivar	0928138765	—	
19	NACHAPI CHAPI	F	Member	BUSSINESSWOMAN	—	—	
20	RETE LOKODO	F	Member	BUSSINESSWOMAN	—	—	
21	LOPYEM LOMURIA	F	Member	BUSINESS WOMAN			
22	Jex Lochebe	M	Youth	Drivar	0920173997	—	
23	Leo Lomor	M	Member	Bussiness Men	0923685196	—	
24	Nancy Hadiko	F	Member		-		
25	Longolio Lokale	F	Member		-		
26	Anselo Lonica	m	-	Boma Chief	0924772329		

Napotpot - Community Consultation Meeting
10/9/2024.

Howard Humphreys
Consulting Engineers

(3)

S/N o.	Name	Gender (M/F)	Organization	Designation	Phone Number	Email	Signature
27	Joseph Lopeta	m	Member	Community leade	0926600127	–	
28	Ehica Lokeu	m	Member	Civillian	–	–	
29	mark Lorii	m	member	Civillian	0929915568	–	
30	Sabino Lotabo	m	Member	Business man	–	–	
31	Joseph Lokitele Nakas	m	~~Sub chief~~	Sub chief	–	–	
32	David LoLar	m	Member	Business man	0924651888	–	
33	James Lotabo	m		Boma chief	0920173464	–	
34	Ellas mon	m		Chairman			
35	Marko Teni	m		Business man.			
36	Angel John.	m.		Businessman			
37	Peter Lohuel	m		Bussiness man			
38	Kasmiro Joseph Lowi	M	Member	Bussiness man	0921473131		
39	Samuel Lomang	M	Member	Bussiness man			
40	Samuel Lotos Iriama	M	Member	Business man	0923750484		
41	Tayin Ojulo	M	member	" "	09		

S/No.	Name	Gender (M/F)	Organization	Designation	Phone Number	Email	Signature
42	Lokabulei Angelo Iko	M	Business Man	Business man	—	—	Lokaalei
43	Joseph Lokorai	m	~~Business man~~	Business ma	-	—	~~[illegible]~~
44	Lilia Lopeta	m.		Business man	-	-	-
45	Menko Loyonai	m		Business man	-	-	-
46	Joseph Zopir	m		Business man	—	—	
47	Morris Lokorot	m					Lokorot
48	Sammy Lomoria	M		Bussiness man	—	—	[illegible]
49	Lokai Joseph	M		Bussiness man			[illegible]
50	Gabriel Lopeyok	M		Bussiness man	0925178776	〃	
51	James Lokai	M	-				
52	Mariko Palio	M	〃				
53	Sabinio Lowii	M		Police man			
54	Mariko Lotoboka	M	~~Police Man~~	Solcher			
55	Regina Nawir	F		Bussiness woman	0924950569	〃	[illegible]
56	Mariko Lomunto	M		Bussiness	〃		

Meeting Notes

Project:	Consultancy Services for the Environmental and Social Impact Assessment of the Juba-Torit-Kapoeta-Nadapal Road Upgrading to Bitumen Standards
Subject:	Narus Community Meeting

Meeting place:	Kapoeta East County Offices	Meeting no:	<no>
Date and time:	11/09/2024 9:00am	Minutes by:	Anne Rita Koki

Attendees

1. Philip Pareng 2. Eng. Norman C. Gideon 3. Anne Rita Koki 4. Hon. Peter Lobei 5. William Garang 6. Simon Lomuria 7. Oting Gait 39No attendees	Representing:	MRB/PIU-Environmentalist SMTRB/EEST HHEA-Sociologist KEC-Area MP KEC-CDR KEC-Councillor KEC-ED Community Members

Agenda

1. Introduction
2. Opening Remarks
3. Project Brief
4. Plenary session
5. Closing Remarks

Introduction

The meeting was called to order at 11:00am by the Executive Director and then invited Siko Zacharia said a word of prayer. Mr. Oting Gait welcomed everyone to the meeting. He issued

apologies for Hon. Abdallah, the County Commissioner Kapoeta East County who was attending to other official duties. He then welcomed the project team to introduce themselves and proceed with the meeting.

Item No.	Description and Action	Action Deadline	Responsible
1.0	Opening Remarks		
	MRB/PIU (CLIENT) The Government of the Republic of South Sudan (GRSS) seeks to tarmac the Juba-Torit-Kapoeta Nadapal Road. The road is a regional\ road that connects South Sudan to neighbouring Kenya and potentially to Ethiopia. The World Bank intends to finance the construction of the road, but as part of the project preparation process, the previous ESIA studies undertaken in 2013 needs to be updated. In this regard, the Ministry of Roads and Bridges (MRB) has engaged Howard Humphreys East Africa Ltd - a Kenyan firm (HHEA) to undertake Environmental and Social Impact Assessment (ESIA) Studies. The Ministry has also engaged other two consultants to undertake Design review of the road and the other to prepare the Resettlement Action Plan (RAP). Previous contractor did not involve the community in their activities, but the government has now chosen a different approach. The community has been previously affected by demolitions and destruction of property during the road construction. The team involved in the RAP preparation shall be undertaking an asset inventory for purposes of ensuring the affected persons are compensated.		
2.0	Project Brief		
	HHEA (CONSULTANT) The road project is currently in the planning phase and its upon completion that the construction phase will commence. The ESIA studies are undertaken during the planning phase. It involves assessment of the existing environmental and social conditions before construction with the aim of identifying potential impacts that may arise during the construction and operation phases. All interested and affected stakeholders along the road corridor are also consulted to create awareness about the project and obtain their views, concerns and opinions about the projects. The Consultant seeks to understand the following aspects: ▪ Whether they accept the implementation of the road project.		

Item No.	Description and Action	Action Deadline	Responsible
	▪ How the community is likely to be impacted by the road project; positively and negatively. ▪ Where does the local community report their complaints and how are they addressed? ▪ Any existing migration routes for wild animals along the proposed road project. ▪ Any existing cultural heritage within the road corridor and cultural practices that are likely to be affected by the implementation of the road project. ▪ Any existing cases of GBV/SEAH ▪ Any other concern. The feedback will help in foreseeing potential risks and development of the necessary management plans before the construction phase commences.		
3.0	Plenary Session		
	a. Project Acceptance Narus comprises of about 64 tribes, and they all need the road. They are grateful for the consultation and are willing to relocate the affected property to allow room for construction of the road. b. Project benefits It will eradicate the many deaths witnessed at river crossings, reduce travel time, address the issue of insecurity, enhance trade in the region, and enable patients' fast access to hospitals. c. Road design The bridges should be flying bridges to accommodate the floods witnessed along the rivers. Clearly mark the extent of road corridor and stick to the space demarcated by the previous contractor. d. Road and community safety The project implementation team needs to be aware of land mines located near Korjip and Buno. Set aside a budget for road safety awareness particularly among the motorists, drivers and local community. Road signages should be included in the design as well as animal and human crossing points. Erect bumps and regulate speeds along the road to prevent accidents. Ensure the road reserve is cleared and well maintained to enhance visibility. The hijackers causing insecurity issues will be easily spotted. e. Project timeline The government and the contractor should stick to the agreed timelines for the project. In the past, the contractor undertaking the bush clearance did not finish the scope assigned and the community continues to suffer while using the poor road condition. Therefore, allocate the work to people with the right expertise and who will finish the assigned work.		

Item No.	Description and Action	Action Deadline	Responsible
	f. Employment opportunities The youths would like to be offered employment opportunities and any other benefits that will enhance their skills development. g. Grievances The complaints are first handled by community elders and forward it to the boma chief. The boma chief then escalates it to the paramount chief or the police depending on the nature of the grievance. h. Cultural heritage Kapoeta East County does not have any cultural practice.		
4.0	Closing Remarks		
	HHEA- Consultant The consultant appreciated the community for the feedback and the concerns raised. **MRB-Client** The client thanked the community for their insightful information and feedback that will help enhance the project's implementation. **CDR-William Garang** The Juba-Nadapal Road has been discussed for a long time. The team who were undertaking bush clearance have never completed the assignment. There was lack of accountability and its said they ran away with the construction funds. During construction, the road needs to be closely supervised to ensure it meets the standards and completed within the set timelines. He emphasized that community sensitization is needed within the county, the County officials need to think of setting water points for livestock on both sides of the road to minimize the animal crossings. The water points should be at Narus, Nakodok and Nadapal. **MP-Kapoeta East County** He appreciated the project as it will help address the needs of the people. The youth are looking forward to the work opportunities. Security around Narus is okay. Elephants are observed during the rainy season at Nakodok. Sensitization is also needed among the project affected persons who are likely to suffer losses of land and property. Farming is a major source of livelihood within the county and the project should consider offering compensation as a form of assistance for relocation of affected assets. He requested the government to consider tarmacking the feeder roads within Narus town and adopt flying bridges as part of design. Executive Director-Kapoeta East County		

Item No.	Description and Action	Action Deadline	Responsible
	He asked the state government to consider seeks financial assistance from the National Government to tarmac the feeder roads within Narus town. He indicated that the RAP Consultant will also be visiting Narus town within a few days to mark the road extent and undertake the asset inventory for affected property. The interested persons will be notified accordingly.		
	There being no other business, the meeting ended at 1:00pm.		

COMMUNITY CONSULTATION AT NARUS

TIME: 11:00PM.

VENUE: NARUS COUNTY OFFICES.

Howard Humphreys
Consulting Engineers

11/9/2024

S/No.	Name	Gender (M/F)	Organization	Designation	Phone Number	Email	Signature
1.	Anne Rita Koki	F	FHHEA	Sociologist			
2	Parang Philip	M	PIU/MRB	Environmentalist			
3.	Hon. Peter Lobei	M	Area MP	KEC	0929989901	—	
4.	CDR William Carang	M	C-DR	KEC	0920527924		
5	MIKIANGA JOSEPH	M	Education Officer	Kapoeta East	0922408588	—	
6	SIMON LOMURIA	M	Councillor	KEC	0923030918	—	
7	Elijah Lokaale L	M	CRRC	KEC	0928208115	lokaalelijah@mail	
8	John Lokwar	M	Chief	K.E.C	0928149455	—	
9	Mohomed Akuwa	M	Chiefs	KEC	0920834720	—	
10	Roneh Nadai	F	Women	KEC	0926983945	—	
11	DARIO LOWI	M	COUNTY SEC	KEC	0923751157	—	
12	Mercy Night ongweng	F	women Rep	K.E.C	0920917052	—	
13	Lotogo Fred	M	Youth Inform	KEC	0920174783	—	
14	Mary Lokonoi	F	Women Assoc.	KEC	0920774482	—	
15	Etiya Namachi	F	Women	KEC	0929543140	—	

Howard Humphreys
Consulting Engineers

Narus Community Consultation Meeting
11/9/2024.

S/No.	Name	Gender (M/F)	Organization	Designation	Phone Number	Email	Signature
16	Elizebatt Nerabo	F	Women Rep.	KEC	0924475994	—	
17	Joseph Motong	M	CEO	KEC	0923544054	Josephmotog23.gmail.com	
18	Loputtecharles L	M	CEO	KEC	0929278583	Loputeng@gmail.com	
19	Kamiko Santo	M	CEC	KEC	0920866663		
20	Anter Khamis	M	Dir NSS	K.E.C	925555713	—	
21	Mary Lokuda	F	W.A.	KEC	09—	—	
22	Regina Nopuke	F	W.A	KEC	—	—	
23	Hellen Achayo	F	W.A	KEC	—	—	
24	Abura Ayoon	F	W.A	KEC	—	—	
25	Agok Majok	F	W.A	KEC	—	—	
26	Lomoro Richard	M	Power	KEC	—	—	
27	Francis Nayo	M	W.A	KEC	—0928209058		
28.	Silo Zachania	M	Church	KEC	0924824241		
29	Saratina Mudong	F	W.A.	KEC	0922170659	—	
30	Rania Ismail	F	W.A	KEC	00	—	

Howard Humphreys
Consulting Engineers

Narus Community Consultation Meeting
11/9/2024.

S/No.	Name	Gender (M/F)	Organization	Designation	Phone Number	Email	Signature
31	Mary Ikoo	F	W.A	K.E.C	–	–	
32	OKOI JOHNSON AJAK	M	Government	K E C	0922331796	Okoi.johnson@ekg.com	
33	Asisa Kati	F	W.A.G	K.E.C	–	–	
34	Rose Atim	F	W.A.G	K E C	0928444155	–	
35	Agnes Aremo	F	W.A	K E C	0929542887	–	
36	Santina Duku	F	W.A	K E C	0926516076	–	
37	Marcelo Okelo	M	L.D	K E C	0921879255		
38	Moses Lokolong	M	ERC	K.E.C	0925175651	–	
39	David Lokeny	M	Youth	K E C	0922405566	–	
40	James Lotede	M	Youth A	K.E.C	0925912673	–	
41	Gideon Nadapd	m	Youth	K.E.C	0929236044	–	
42	Caroline Nakio	F	W.A	K.E.C	0929247824	–	
43	William Lokwee	M	Youth	K.E.C	0928140641	Lokweewilliams@gmail.com	
44	DAVID LODUKO	M	Youth	K.E.C	0926633220	. . .	
45	Julius Mony	M	Youth	K.E.C	0926982121	–	

(4)

REPUBLIC OF SOUTH SUDAN
MINISTRY OF ROADS AND BRIDGES

Howard Humphreys
Consulting Engineers

S/No.	Name	Gender (M/F)	Organization	Designation	Phone Number	Email	Signature
46	Peter Lokidoe	m	-	Narus	0921160021	-	
47	Elly Docket	M	Youth	Narus	0920834488	-	
48	Flora Achan	F	W	Narus	0928903900	-	
49	Lucy Debra	f	W	Narus	0927674798	—	
50	Jackline Abau	f	W	Narus	0922168208	—	
51	bitinis Abau	f	W - [illegible]	Narus.	0920659928	—	
52	MATTHEW LOTABO	M	P. Admin	K.EL	5928511658	—	
53	Mark Lokidoe	M	Youth [illegible]	K E C	0927675957	—	
54	Angela Titus	M	Community leader	Narus	0924400484	[illegible]	
55	Martin Lolobong	M	Community M	Narus-K.E.C	0929217309	[illegible]	

Meeting Notes

Project:	Consultancy Services for the Environmental and Social Impact Assessment of the Juba-Torit-Kapoeta-Nadapal Road Upgrading to Bitumen Standards
Subject:	ESIA Public Meeting at Nadapal Boma

Meeting place:	Nadapal Boma	Meeting no	<no>
Date and time:	September 11, 2024, 10:00am	Minutes by:	B. Mutsotso

Attendees

1. 86No. attendees	Representing:	MRB/PIU HHEA Consultant Community Members

Agenda

1. Opening Prayer
2. Introduction
3. Project Presentation
4. Plenary
5. Closing Remarks
6. Closing Prayer

1. Opening Prayer

The opening prayer was said by one of the community members.

ITEM	DESCRIPTION AND ACTION	DEADLINE	RESPONSIBLE
2.	**Introduction**		
	The chief welcomed the team and community members to the meeting. The team leader introduced his team and the consultant. He then asked the consultant to make his remarks.		
3.	**Project Presentation**		
	The Consultant said he was from Howard Humphrey Engineers Ltd from Nairobi. Howard Humphrey was contracted by the Ministry of Roads		

ITEM	DESCRIPTION AND ACTION	DEADLINE	RESPONSIBLE
	and Bridges to undertake the ESIA study for the Juba-Torit-Kapoeta-Nadapal Road. The planned tarmacking of this road is part of the EARTTFP. It is part of the greater Eastern Africa Project already completed in Kenya and Tanzania and the Juba-Nadapal section is the only one remaining. The purpose of the meeting is to share project information with the community and also obtain feedback from the community that can be used for final road design. The project has an urban roads component for Kapoeta and Torit towns. The community is free to make proposals for any CSR projects that may be considered by the project during construction. The project will bring many benefits to the community in terms of employment, time saving, cheaper transport costs, free and faster flow of goods, open up new business opportunities and link the community to the region. He then asked the community to ask questions, provide views or any recommendations		
4.	**Plenary**		
5.	**Closing Remarks**		
	The chief thanked the team. Nadapal had received good news and was waiting. Contractor workers will also be protected by the community. Employment should be 100% for the local people. Chiefs know all the local people. They will not accept unskilled people from other areas or outside the community. They are aware that skilled workers could come from outside the community and accept that. That borrow pit used should be made for livestock water. He said local employed people should refrain from alcoholism because they could lose employment.		
6.	**Closing Prayer**		
	A closing prayer was said by one of the community members.		

Howard Humphreys
Consulting Engineers

ATTENDANCE LIST

CONSULTANCY SERVICES FOR THE ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT OF THE JUBA-TORIT-KAPOETA-NADAPAL ROAD UPGRADING TO BITUMEN STANDARDS

Title: ESIA Public Meeting for the Juba-Torit-Kapoeta-Nadapal Road

Venue: Nadapal Time: 12.00 Date: 11/9/2024

S/No.	Name	Gender (M/F)	Organization	Designation	Phone Number	Email	Signature
1	LoToyoK Moses	M			0920243621		
2	Jimmy Loleam	m			0924988038		
3	Wilson Ochan	m			0925817929		
4	Micheal AKech	m			0920834832		
5	John Akut Kuol	m			0925913240		
6	Jimma Lomoe	m					
7	Thomas OTITO	m			0922167211		
8	John Lorika	m			0928219690		
9	Ramsey Lokwar	m			0921012502		
10	John Lopiriko	m					
11	James Alam	m					

S/No.	Name	Gender (M/F)	Organization	Designation	Phone Number	Email	Signature
1	Marko Lopir	M					
2	Karlo Lokubaya	M					
3	Mary Gubang	F					
4	Ababa Siko	M			092083470 1		
5	UmJima Hassen	F					
6	Mary poni	F					
7	Nakaii Lokitoi	F					
8	Rose Lokaii	F					
9	Charles Oger	M			092083452 4		
10	Roman Martin	M			092076348 9		
11	Rebbeca Moini	F					
12	Jarara Bantex	F			092963528		
13	Yom Kuol	F			092083452 0		
14	Kur Nyok	M			092319 0906		
15	Lotoyo Lino	M					

Howard Humphreys
Consulting Engineers

ESIA Public Meeting for the Juba–Torit–Kapoeta–Nadapal Road Nadapal 11/9/24

S/No.	Name	Gender (M/F)	Organization	Designation	Phone Number	Email	Signature
01.	Simon Logie	m					
02.	Grace Amor Kuae	f			0920384853		
03	Rodda Amer	F			0925958091		
04.	Sarah Nyanwut	F			0921058339		
05	Josephine Kinya	F			0923752058		
06	Joseph Lokwam	m			0920761747		
07	Sunday Napeam	F			//		
08.	Mike Kenyi	m					
09.	Elizabeth Lotabo	F					
10	Adir Arun	F			0923335969		
11	Khamis Abunja	m			0922550638		
12	Juliana Ekisa	F					
13	Ruot duer	m			0923335969		
14	Mary Atoo	F					
15	MAJOK JIHIEU MAJOK	M			0921065711		

S/No.	Name	Gender (M/F)	Organization	Designation	Phone Number	Email	Signature
16	Sunday Yanyang	F					
17	Marko Lokom	M					
18	Daborah Agot	F			0927323217		
19	Daniel nyikang	m					
20	Lotuke Wasen	m			09235486 30		
21	Achol Bollong	F			0920834800		
22	Simon Kat	m			0922974290		
23	Kuot Anne	m					
24	Deng nyuon	m			0923847474		
25	Nyaruach gadet	F			0920917699		
26	James Kuon	m					
27	Martha Nakai	F					
28	Pasca Nakiriwo	F					
29	Okeny Victor	m			0921473932		
30	Peter Lokii	m			0928135299		

Howard Humphreys
Consulting Engineers

11/9/24

ESIA Public Meeting for the Juba-Torit-Lopeta-Nadapal Road

S/No.	Name	Gender (M/F)	Organization	Designation	Phone Number	Email	Signature
01	Nakai Lochebe	F					
02	Sylver nyoka	m			0926913076		
03	Lino Lonyia	m					
04	Nyany Palati	F					
05	Namana Lopir	F					
06	Joyce Ikware	F			0921472411		
07	Angelus Lokuru	m					
08	Gladys Lokuru	F					
09	peter Marial	m					
10	Lodapal Michael	m					
11	Albino Lokora	m					
12	Abraham Lokorot	m					
13	Lokom Lochoto	m					
14	Elizabeth nyachol	F					
15	James Lopeyok	m			0928094827		

S/N o.	Name	Gender (M/F)	Organization	Designation	Phone Number	Email	Signature
16	Jackson Iddi	m					
17	Marko Ochala	m					
18	Justine Ladu	m					
19	Augustino Laku	m					
20	Sarah Nyechan	F					
21	Eliza Nyachom	F					
22	Mathew Lokwar	m					
23	Justine Jima	m					
24	John Ladu	m					
25	Josephine Aloyo	F			0929545451		
26	Makalina moyo	F					
27	Simon Loparaa	m					
28	Philip tombe	m					
29	Stephen Lokiro	m					
30	Agaluak tut	m			0925428280		

Appendix C: Selected Site Photographs



Courtesy call at Minister of Youth, Culture & Sports (CES)



Courtesy call to headteacher- Ngulere Primary School



Consultation at Nesitu



Consultation at Ngangala



Ngulere Community FGD



Illiangari Community Meeting



Consultation at Lirya



Community consultation at Lofiri

	
Community Consultation at Obule	Community meeting at Kudo
	
Courtesy Call at Mayor Torit Municipality	Courtesy call at Torit County Commissioner
	
Community meeting at Nyong Payam-Block 1 Torit town	Consultations with Motorbike operators at Torit town
	
Consultation with Torit Business Community	Consultation with PSV/ Truck operators



Consultations at Ibalang Community



Consultations at Abalwa





Consultations at Tirangore



Community meeting at Hiyala



Consultations at Illeu



Community meeting at Lobira



Community meeting at Loriyok

<table>
<tr><td></td><td></td></tr>
<tr><td>Loriyok Women FGD</td><td>Consultations with Kapoeta Community</td></tr>
<tr><td></td><td></td></tr>
<tr><td>Courtesy call at Kapoeta South County Commissioner’s office</td><td>Courtesy call at Mayor’s office-Kapoeta Municipality</td></tr>
<tr><td colspan="2"> </td></tr>
<tr><td colspan="2">Consultation with CSOs at Kapoeta</td></tr>
<tr><td></td><td></td></tr>
<tr><td>Consultation with Business Community at Kapoeta</td><td>Consultations at Buno Community</td></tr>
</table>

	
Women FGD at Kapoeta	Consultation with PLWD at Kapoeta
	
Consultations at Lowoyakali Boma	Consultations with Napotpot Community
	
Consultations at Narus Community	Community Consultation at Nadapal

Appendix D: Baseline Noise Measurement Report

Republic of South Sudan
Ministry of Roads and Bridges

TRANSPORT SECTOR DEVELOPMENT PROJECT

Environmental and Social Impact Assessment (ESIA) for the Upgrading of Juba - Torit - Kapoeta - Nadapal Road to Paved (Asphalt) Standard

APPENDIX D: BASELINE NOISE LEVEL REPORT

Revision	Purpose description	Originated	Checked	Reviewed	Authorized	Date
1.0	Issued to Client	RNN	ARK	LKN	GKM	07/10/2024

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1. Introduction

An ambient noise survey was conducted between 3rd and 12th September 2024 along the Juba-Torit-Kapoeta-Nadapal Road. The purpose of this survey was to establish the baseline noise levels before the commencement of construction activities. The measurements were taken to assess potential noise impacts during both the construction and operational phases of the project.

1.1. Measurement Methodology

1.1.1. Overview

The survey used a Class 1 RION NL-52 Sound Level Meter to measure the baseline noise levels. This device complies with international noise measurement standards and dully calibrated, ensuring high precision.



Plate A - D - 1: NL-52 Sound Level Meter and Acoustic Calibrator. Inset-Annual Calibration Labels

Measurements were taken at 15 different sampling points across the project area, including markets, residential areas, and business centers. These locations were chosen based on their proximity to sensitive receptors, such as schools, hospitals, and residential zones. The sound meter measured the following key parameters:

- Lmax: Maximum noise level
- Lmin: Minimum noise level
- Leq: Equivalent continuous noise level (average over the measurement period)

Each measurement session lasted for 5 minutes, capturing a reliable sample of ambient noise at each location. The meter was positioned at a height of 1.2 to 1.5 meters above ground, away from reflective surfaces to

prevent interference from sound reflections. To ensure validity and reliability the equipment had been calibrated for quality assurance and the calibration certificate attached in Section 4 of this report.

1.1.2. Methodology Adopted

1.1.2.1. Noise Levels Equipment

Class 1 RION NL-52 Sound Level Meter. This is a high-precision device compliant with international noise measurement standards, designed to provide accurate readings for environmental noise monitoring.

1.1.2.2. Site Selection

Noise monitoring sites were selected based on their proximity to sensitive receptors, including Residential areas, Schools, Hospitals, Wildlife habitats etc. Purposeful Sampling was adopted and focused on locations likely to be impacted by construction and road traffic noise, ensuring that areas with high potential for human or ecological disturbance are prioritized.

1.1.2.3. Measurement Conditions

Noise levels was measured during different time of the day to capture ambient noise due to different activity levels. Measurements were conducted in conditions that avoid abnormal influences, such as extreme weather (e.g., high winds or rain), which could distort the readings.

1.1.2.4. Measurement Procedure and Calibration

The RION NL-52 Sound Level Meter was placed at a height of 1.2 to 1.5 meters above ground, representative of the typical human ear level, and at least 3.5 meters away from any reflecting surfaces (e.g., walls, buildings) to avoid sound reflection interference. Each measurement session lasted 5 minutes to obtain a reliable sample.

The sound level meter measured parameters as follows; Leq (Equivalent Continuous Sound Level): Average noise level over the monitoring period, Lmax (Maximum Sound Level): Highest recorded noise level, Lmin (Minimum Sound Level): Lowest recorded noise level. The device was calibrated before and after each measurement session to ensure accuracy.

1.1.2.5. Data Analysis

Data will be compared international noise standards (e.g., World Health Organization guidelines) to assess the potential impact on human health and wildlife. Specific noise sources (e.g., traffic, construction activities, natural sounds) was identified to distinguish between project-related and existing ambient noise levels.

1.2. Baseline Noise Levels

The table below summarizes the noise levels recorded at various points along the road alignment

Ref	Name	Site Description	GPS Coordinate	Lmax dB(A)	Lmin dB(A)	Leq dB(A)
NL-1	Rajaf	Businesses and Vehicles	-319157.8,53105	79.6	54.2	66.5
NL-2	Nesitu	Vehicles and Business	-302885,522849	79.6	54.2	66.5
NL-3	Jebel Moluak	Market Center	-306191,526243	86.5	46.8	63.4
NL-4	Ngalala	Few Shops and Animals Grazing	-251460,523781	80.6	49.4	69.2
NL-5	Ngulele	Shopping Center	-243385,521119	81.0	46.1	64.9
NL-6	Illiangari	Village	-234777,520941	75.7	45.0	61.2
NL-7	Liria	Business / Wind Blowing	-232115,516327	103.7	68.1	88.0
NL-8	Kido	Market	-216230,505944	79.0	46.5	58.9
NL-9	Kineti Bridge	Washing / Motorbikes	-207445,491391	87.9	46.5	66.4
NL-10	Torit Town	Businesses and Vehicle	-205603,490082	83.6	62.6	72.6

Ref	Name	Site Description	GPS Coordinate	Lmax dB(A)	Lmin dB(A)	Leq dB(A)
NL-11	Bonu	Market	214293,522960	98.2	56.6	78.6
NL-12	Napotpot	Market	14628,513199	90.3	56.6	73.2
NL-13	Lolua Sec. School	School	-15233,499888	84.5	54.4	67.6
NL-14	Nadapal	Market	-15605,488634	87.3	48.3	63.4
NL-15	New Kenya	Center	-151333,497242	87.3	48.3	63.4

1.2.1. Noise Standards Comparison

The recorded noise levels were compared with the World Bank Group's Environmental Health and Safety (EHS) guidelines for acceptable noise levels:

Ref	Description	Limits
1	Residential, Institutional, Educational Areas	Daytime (7:00 a.m. – 10:00 p.m.): 55 dBA
		Nighttime (10:00 p.m. – 7:00 a.m.): 45 dBA
2	Industrial and Commercial Areas:	70 dBA for both daytime and nighttime

2. Findings

The identified noise levels ranged from 29.1 dB, with a standard deviation of 7.17 dB, to most measurements exceeding 55 dBA (as per the World Bank General EHS Guidelines for residential, institutional, educational, industrial, and commercial areas).

The proximity of educational institutions like Sherikat SDA Sabbath School (Chainage 1+500), Green Belt Secondary School (Chainage 2+500), and Promised Land Secondary School (Chainage 4+000) means these areas are highly vulnerable to noise pollution. Construction activities such as heavy machinery operation, vehicle movement, and possible blasting will significantly increase noise levels, potentially disrupting learning environments, causing stress, and affecting student concentration. Similarly, healthcare facilities like Illiangari Health Centre (Chainage 56+250) and Tirangore Health Care Unit (Chainage 157+500) are sensitive to noise pollution, as excessive noise can impact patient recovery and the overall functionality of these centers.

The proposed project includes pre-construction and construction phase activities that may impact ambient noise levels, including:

- Movement and operation of heavy vehicles and machinery used to set up temporary construction facilities and prepare the site.
- Operation of borrow pits and quarries (extraction sites).
- Construction of structural works such as bridges, culverts, viaducts, and bypass sections.

Given that noise levels already exceed World Bank EHS criteria for most of the proposed road sections, this can be attributed to the community setup along the road alignment. The Payam and Boma structure clusters social amenities such as marketplaces, schools, churches, and settlements in central locations to ensure the safety of community members and their livestock. These centres share similar characteristics, explaining the consistent noise levels recorded at major centres.

During pre-construction and construction, noise from heavy equipment and machinery will primarily be perceptible in localized areas around the proposed road and extraction sites. As construction progresses, the noise sources will shift, limiting the duration of exposure at any given point. Extraction sites, in particular, will be in full operation during the early construction stages to supply granular materials, then switch to intermittent activity as base layers are completed.

2.1. Proposed Mitigation Measures

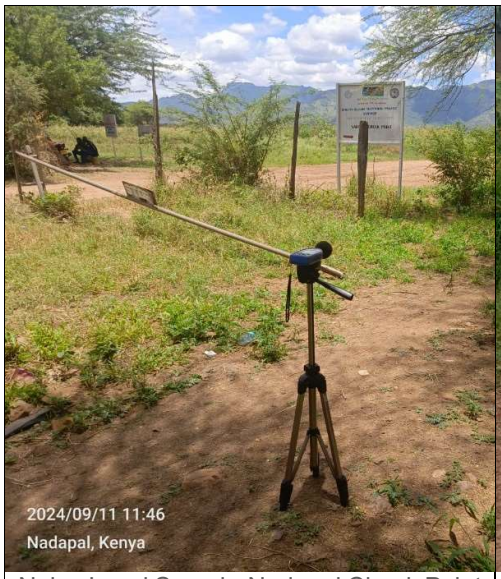
At this stage of the project, accurately estimating noise levels that may not be perceived in the vicinity of the construction sites remains challenging. Variability in construction activities, equipment, and site-specific factors make it difficult to provide precise noise predictions. These levels can vary based on several factors, such as the distance between noisy equipment and sensitive areas, the duration of noise emissions, and the type and quantity of equipment in operation at the same time. Furthermore, the specific construction methods, machinery, and equipment to be used have not yet been determined.

However, monitoring and adaptive management will be crucial throughout the project phases to ensure compliance with acceptable noise levels and mitigate any significant impacts on the surrounding community. Outlined are proposed mitigation measures to avoid, reduce and/or mitigate impacts as a result of noise exposure.

- Maintain equipment and machinery, including brakes, mufflers, catalyzers, and silencers, in good running condition, ensuring they are clean (power washed), free of leaks, excess oil, and grease.
- Prohibit idling of vehicles on-site or near sensitive receptors. Generators and machinery should be shut down when not in use.
- Instruct drivers to limit speed in sensitive areas and minimize noise from the rear panel of dumpster trucks.
- Sensitize drivers on noise reduction measures through an eco-driving attitude program.
- Equip compressors and generators used on-site with an acoustic enclosure, a noise barrier, or place them in a soundproof box. This is particularly important for equipment that requires round-the-clock operation in areas with sensitive receptors.
- If blasting is required at quarry sites, ensure noise and vibration mapping is conducted, limit the load of explosives accordingly, and advise the local population in advance to prevent nuisances.

2.2. Selected Field Photos and Map

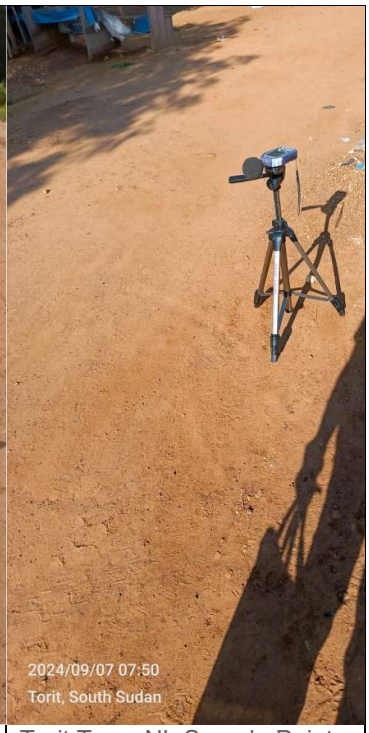
Selected images for field survey measurements are presented below.



Noise Level Sample-Nadapal Check Point

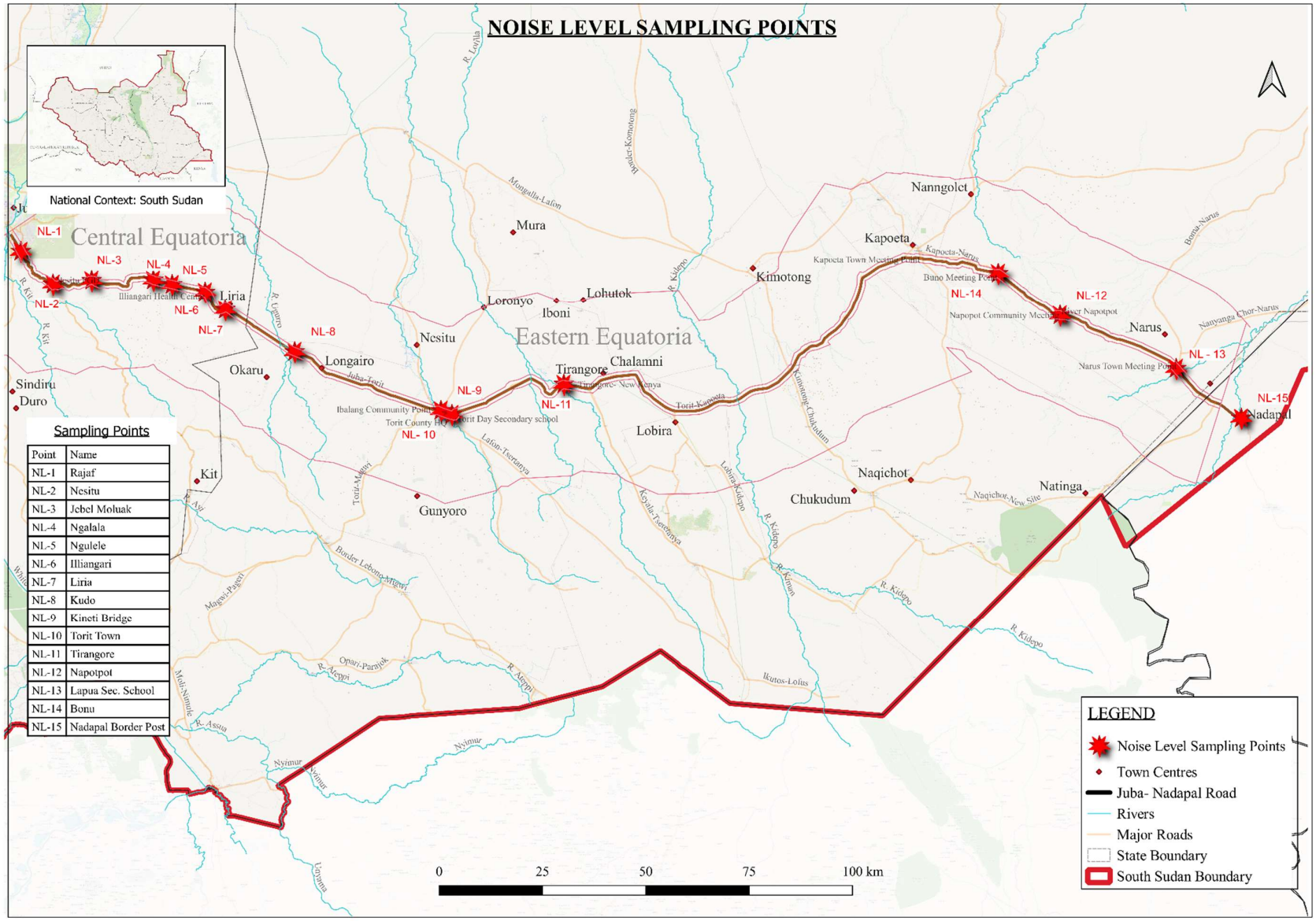


Kudo Noise Level Sample Point

		
Buno Noise Level Sample Point	Ngalangala NL Sample Point	Torit Town NL Sample Point

2.3. Selected Measurement Points

Measurement locations/ points were georeferenced and mapped as presented overleaf.


NOISE LEVEL SAMPLING POINTS
National Context: South Sudan
Central Equatoria
Eastern Equatoria
NL-1
NL-2
NL-3
NL-4
NL-5
NL-6
NL-7
NL-8
NL-9
NL-10
NL-11
NL-12
NL-13
NL-14
NL-15
Liria
Ncsitu
Longairo
Okaru
Sindiru
Duro
Kit
Gunyoro
Mura
Loronyo
Lohutok
Iboni
Tirangore
Chalamni
Lobira
Kimotong
Kapoeta
Nanngolet
Narus
Nadapal
Naqichot
Natinga
Chukudum
Sampling Points
Point | Name
NL-1 | Rajaf
NL-2 | Ncsitu
NL-3 | Jebel Moluak
NL-4 | Ngalala
NL-5 | Ngulele
NL-6 | Illiangari
NL-7 | Liria
NL-8 | Kudo
NL-9 | Kineti Bridge
NL-10 | Torit Town
NL-11 | Tirangore
NL-12 | Napotpot
NL-13 | Lapua Sec. School
NL-14 | Bonu
NL-15 | Nadapal Border Post
LEGEND
Noise Level Sampling Points
Town Centres
Juba- Nadapal Road
Rivers
Major Roads
State Boundary
South Sudan Boundary
0
25
50
75
100 km

3. Conclusion

The baseline ambient noise levels highlight the need for both immediate and long-term mitigation strategies to reduce the impact of noise pollution during the construction and operational phases. Continuous monitoring and enforcement of mitigation measures will be essential to ensure compliance with international noise standards.

4. Annual Calibration Certificate

4.1. Sound Level Meter: NL-52

Kenya Bureau of Standards
P.O. Box 54974–00200
NAIROBI
Tel:(+254 020) 6948000
info.metrology@kebs.org
Website: www.kebs.org

KEBS CALIBRATION MARK

Calibration Certificate

Page...1...of...9...pages

REQUESTED BY:	**HOWARD HUMPHREYS CONSULTING ENGINEERS LTD**
ADDRESS :	**P.O. BOX 30156-00100 NAIROBI**
EQUIPMENT:	**SOUND LEVEL METER**
TYPE/MODEL :	**NL-52**
SERIAL NO. :	**00754120**
MANUFACTURER:	**RION**
MICROPHONE TYPE:	**UC-59**
MICROPHONE SERIAL NO.	**08469**
LABORATORY :	**ACOUSTICS AND VIBRATION - NP 15**
DATE :	**2024-04-30**
CERTIFICATE NO.:	**KEBS/MET/19/15/3/11/58**
STICKER SERIAL NO:	**MET/15/24/04/0003**

1.0. STANDARDS AND REFERENCE EQUIPMENT USED

Pulse 3630 calibration platform consisting of;

- B&K controller module type 3560C S/No. 2736182
- Agilent 34970A Data acquisition switch unit S/No. MYA 44010494
- B& K Inline capacitor WA 0302B 15 pF S/No. 2487479
- Multifunction Acoustic Calibrator Type 4226 S/No. 2532059

2.0. METROLOGICAL TRACEABILITY

This calibration certificate documents traceability to the National measurement standards, and to the units of measurement realized at KEBS, or other recognized national standards laboratories according to the International System of Units (SI). KEBS is a signatory of the CIPM Mutual Recognition Arrangement (CIPM MRA) and where there is no published Calibration and Measurement Capabilities (CMCs), KEBS has documented the traceability of the standard equipment used in 1.0 above.

3.0. CALIBRATION PROCEDURE

The Sound Level Meter was calibrated using Kenya Bureau of Standards Laboratory Procedure MET/15/CP/02: *Sound level meter calibration* and in accordance with the requirements of IEC60651 and IEC 60804.

Prepared By: **Collins Taiti** Date: **2024-05-06**

Checked By: Samuel Gacheru

Signed :.....

DN: cn=Samuel Gacheru, o=KEBS, ou=Manager Electrical Metrology, email=gacherus@kebs.org, c=KE
Date:2024.05.09 16:56:55 +03'00'

For: Director Metrology and Testing

Page...9...of...9...pages
KEBS/MET/19/15/3/11/58

5.0. REMARKS

5.1 Calibration was conducted at a temperature of (**23 ± 1**) **^{0}C**, relative humidity of (**64 ± 10**) **%RH** and pressure of (**838 ± 5**) **mbar.**

5.2 The reference for the dB scale is sound pressure level of 20 µPa at 1 kHz.

5.3 The uncertainty of measurement has been determined in accordance with Publication JCGM 100:2008 *"Evaluation of measurement Data-Guide to the expression of uncertainty in measurement"* and represents the expanded value after multiplying by a coverage factor of 2 for a level of confidence of 95 %.

5.4 This certificate is valid until **April 2025.**

.....**End**.....

4.2. Sound Calibrator: NC-74

Kenya Bureau of Standards
P.O. Box 54974–00200
NAIROBI
Tel (+254 020) 6948000
info.metrology@kebs.org
Website: www.kebs.org

KEBS CALIBRATION MARK

Calibration Certificate

REQUESTED BY:	**HOWARD HUMPHREYS CONSULTING ENGINEERS LTD**
ADDRESS :	**P.O. BOX 30156-00100 NAIROBI**
EQUIPMENT:	**SOUND CALIBRATOR**
TYPE/MODEL :	**NC-74**
SERIAL NO. :	**34857322**
MANUFACTURER:	**RION**
LABORATORY :	**ACOUSTICS AND VIBRATION - NP 15**
DATE :	**2024-05-07**
CERTIFICATE NO.:	**KEBS/MET/19/15/3/11/59**
STICKER SERIAL NO:	**MET/15/24/04/0004**

1.0. STANDARDS AND REFERENCE EQUIPMENT USED

- Brüel & Kjær laboratory standard sound calibrator Type 4231 S/No. 2524771
- PCB microphone type 377A13 S/No. 128533
- ACS-101 Signal Analyser S/No. 20120417-03

2.0. METROLOGICAL TRACEABILITY

This calibration certificate documents traceability to the National measurement standards, and to the units of measurement realized at KEBS, or other recognized national standards laboratories according to the International System of Units (SI). KEBS is a signatory of the CIPM Mutual Recognition Arrangement (CIPM MRA) and where there is no published Calibration and Measurement Capabilities (CMCs), KEBS has documented the traceability of the standard equipment used in 1.0 above.

3.0. CALIBRATION PROCEDURE

The sound calibrator was calibrated using Kenya Bureau of Standards Calibration Procedure MET/15/CP/05: Sound calibrator calibration by comparison.

Prepared By: **Collins Taiti** Date: **2024-05-08**

Checked By:**Samuel Gacheru**

Signed :..... DN: cn=Samuel Gacheru, o=KEBS, ou=Manager Electrical Metrology, email=gacherus@kebs.org, c=KE Date: 2024.05.09 17:04:54 +03'00'

For: Director Metrology and Testing

4.0. CALIBRATION RESULTS

4.1 Sound Pressure Level

Test Level (dB)	DUT level (dB)	Deviation (dB)	Tolerance IEC 60942:2003 Class 2 (±dB)	Expanded Uncertainty (dB)
94.0	94.1	0.1	0.7	0.2

4.2 Frequency (Hz) 1001.7

4.3 THD < 2%

5.0. REMARKS

5.1 Calibration was conducted at a temperature of (**23 ± 1) ^{0}C**, relative humidity of (**62 ± 10) %RH** and pressure of (**838 ± 5) mbar.**

5.2 The reference for the dB scale is sound pressure level of 20 µPa at 1 kHz.

5.3 The uncertainty of measurement has been determined in accordance with Publication JCGM 100:2008 *"Evaluation of measurement Data-Guide to the expression of uncertainty in measurement"* and represents the expanded value after multiplying by a coverage factor of 2 for a level of confidence of 95 %.

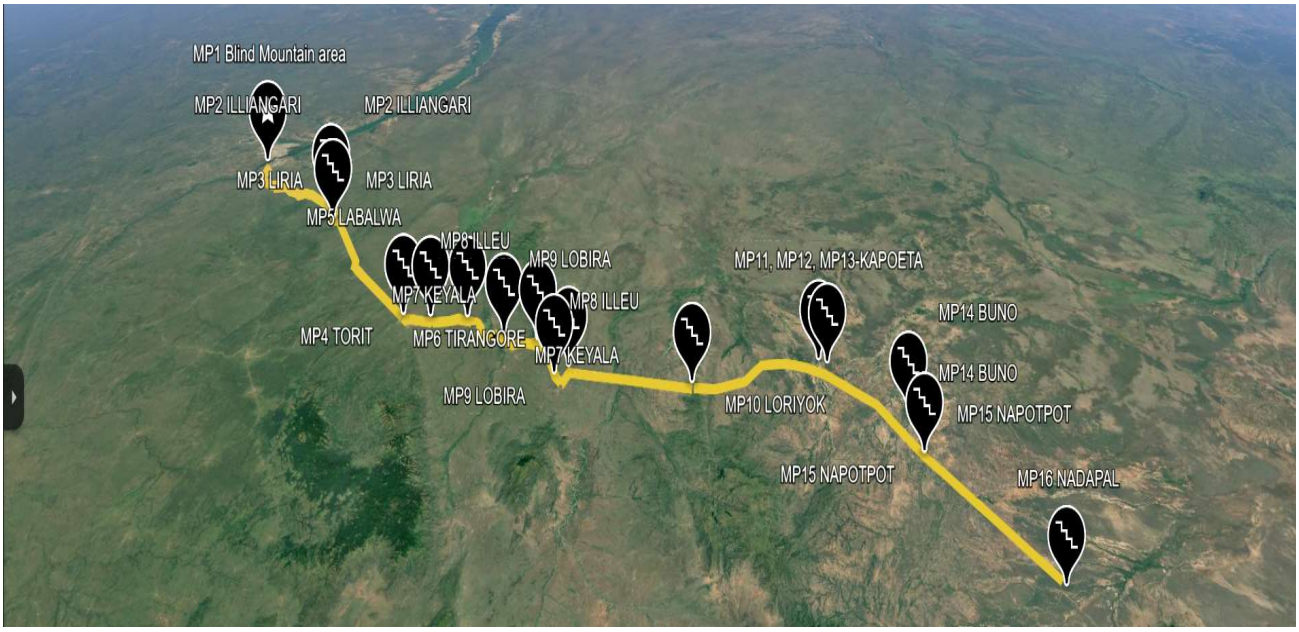
5.4 This certificate is valid until **May 2025.**

.....End.....

Appendix E: Baseline Air Quality Measurement Report

MINISTRY OF ROADS AND BRIDGES

Environmental and Social Impact Assessment (ESIA) for the Upgrading of Juba - Torit - Kapoeta - Nadapal Road to Paved (Asphalt) Standard



Appendix E - BASELINE AMBIENT AIR QUALITY MEASUREMENT REPORT

PREPARED BY:

AIRSENSE ENVIRONMENTAL LAB LTD

Jv

Howard Humphreys (East Africa) Ltd

October 2024

PREPARED BY:	**David Muiruri**
SIGNED:	
REVIEWER/APPROVER:	**Elijah Muigai**
SIGNED:	

Disclaimer:

The information contained hereon reflects Airsense E.L Ltd's findings at the time of its assessment only and within the limits of the contract with the Client. Any unauthorised alteration, forgery or falsification of the content or appearance of this Report is unlawful.

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EXECUTIVE SUMMARY

Howard Humphreys East Africa Ltd contracted Airsense Environmental Lab Limited to carry out a baseline ambient air quality assessment for the Republic of South Sudan Ministry of Roads and Bridges to establish the current environmental conditions before the actualisation of the proposed project for the development of the Juba, Torit, Kapoeta, Nadapal Road. The assessment was carried out from the 4th of September to the 12th of September 2024 and involved measuring the concentration of PM2.5, PM10, SOx, NOx, CO, CO2 and TVOCs.

The air samples for each pollutant were picked from sixteen predetermined points within the project area to identify potential exceedances early so that corrective measures could be implemented to mitigate pollution levels. The standards used to evaluate the measured values are derived from EPA (Air Quality) Regulations, World Bank regulations and the WHO ambient air quality standards.

Particulate Matter (PM_{10})

Based on the analysis results, thirteen PM10 sampling points complied with the Environmental Protection Agency (EPA) Air Quality Regulations of 2018 and WHO guidelines. However, elevated PM10 levels were observed at Blind Mountain, Kapoeta Roundabout, and Kapoeta Market, exceeding WHO limits. Notably, Kapoeta Roundabout also surpassed the EPA's regulatory thresholds.

Particulate Matter ($PM_{2.5}$)

Based on the analysis results, the sixteen sampled for PM2.5 were within the Environmental Protection Agency (Air Quality), Regulations, 2018 and WHO guidelines.

Sulfur Oxides (SO_2) and Nitrogen Oxides (NO_2)

Based on the measurements, sulfur dioxide (SO_2) levels at the sixteen monitoring sites adhered to the Environmental Management and Coordination Act (EMCA) guidelines. Similarly, Nitrogen Dioxide (NO_2) concentrations at all locations remained within the permissible limits outlined by WHO, the World Bank, and the EPA standards.

Volatile Organic Compounds (VOCs)

The total VOC concentrations recorded were consistent with the permissible limits established by the Environmental Protection Agency (EPA) Air Quality Regulations (2018) and the World Health Organization's air quality guidelines.

Carbon Dioxide (CO_2) and Carbon Monoxide (CO)

Concentrations of both carbon dioxide (CO_2) and carbon monoxide (CO) across all assessment points remined within the acceptable thresholds as per the EPA Air Quality Regulations (2018).

Notes:

The variability in pollutant levels across different locations can largely be attributed to weather fluctuations, particularly the high weed, which influenced site-specific conditions. Additional factors impacting the pollutant concentrations included local vegetation, ongoing economic activities, soil types, population density, the size of commercial centers, and the presence of social infrastructure. Moreover, vehicular emissions and the movement of vehicles further contributed to the levels of pollutants observed.

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ACRONYMS

EPA	Environmental Protection Agency
VOCs	Volatile Organic Compounds
SO_2	Sulphur Dioxide
CO	Carbon Monoxide
CO_2	Carbon Dioxide
PM_{10}	Particulate Matter Less than 10 Micrometers in Diameter
$PM_{2.5}$	Particulate Matter Less than 2.5 Micrometer in Diameter
TSP	Total Suspended Particulate
IFC	International Finance Corporation
WHO	World Health Organization
NO_2	Nitrogen Dioxide
M^3	Cubic Meter
Mg^3	Milligrams per cubic meter
PPB	Parts per billion
AVG	Average
LOR	Limit of Reporting
BDL	Below Detection Limit
TWA	Total Weighted Average
Max	Maximum
Min	Minimum

1.0 INTRODUCTION

Howard Humphreys East Africa Ltd engaged Airsense Environmental Lab Limited to conduct a comprehensive baseline ambient air quality assessment before the development of the Juba, Torit, Kapoeta, and Nadapal road. The assessment, carried out between September 4th and September 12th, 2024, involved analyzing concentrations of various pollutants, including Total Suspended Particles (TSP), $PM_{2.5}$, PM_{10}, nitrogen oxides (NOx), sulfur oxides (SOx), carbon monoxide (CO), carbon dioxide (CO2), and volatile organic compounds (VOCs).

Air samples were collected at Sixteen strategically selected points across the project area. These locations were identified following a site inspection conducted by representatives from a government agency and Howard Humphreys East Africa Ltd. The assessment's findings were evaluated by regulatory benchmarks set by the Environmental Protection Agency (EPA), World Bank, and World Health Organization (WHO) ambient air quality standards.

2.0 LEGISLATION AND GUIDELINES

The Agency has established an environmental policy and action plan aimed at ensuring full compliance. The results of the air quality assessment were benchmarked against the ambient air quality standards set by the Environmental Protection Agency (EPA), the World Bank, and the World Health Organization (WHO) with relevant national legislation, environmental and social safeguard policies, as well as health and safety guidelines.

2.1 ENVIRONMENTAL PROTECTION AGENCY REGULATORY FRAMEWORK

The client shall adhere to and ensure that the emission of the priority air pollutants prescribed in the National Ambient Air Quality Standards (NAAQS): The EPA sets standards for key air pollutants under the Clean Air Act (CAA) to protect public health and the environment. The regulations have an objective to provide for the prevention, control and abatement of air pollution to ensure clean and healthy ambient air. These standards and regulations help ensure that projects are conducted in an environmentally sustainable and socially responsible manner.

Pictorial presentation below provides a comprehensive summary of the environmental parameters and associated socioeconomic activities observed in the study area. A detailed visual representation of the surrounding region is available in Appendix II, which offers an in-depth pictorial overview of the site for further context and reference.















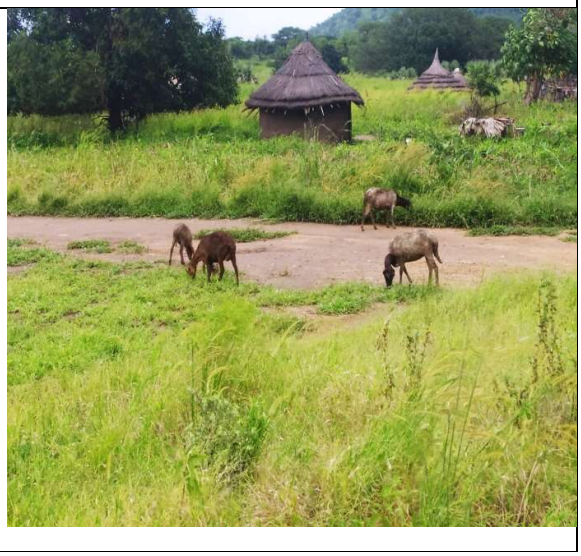














Table 1: EPA Air Quality Limits

EPA Ambient Air Quality Tolerance Limits		
Pollutant	**TWA**	**Residential Rural & other Areas (μg/m³)**
PM_{10}	24 hours**	150 μg/m³
$PM_{2.5}$	24 hours	35 μg/m³
Sulfur Dioxide (SO_2)	24 hours**	75 ppb
Nitrogen Dioxide (NO_2)	24 hours	100 ppb
Volatile organic carbon (VOC)	24 hours	600 ppb
Carbon Monoxide CO	24 hours**	9 ppm
Carbon Dioxide CO_2	24 hours	5 ppb

2.2 World Health Organization, Air Quality Guidelines

The World Health Organization (WHO) Air Quality Guidelines (AQG) are intended for worldwide use but have been developed to support actions to achieve air quality that protects public health in different contexts. The International Finance Corporation (IFC), The World Bank, Environmental, Health and Safety Guidelines also refer to WHO standards for ambient air quality. The guidelines are in the table below.

Table 2: WHO Air Quality Guidelines

Pollutant	Time Weighted Average	Air Quality Guideline
Sulphur Oxides, SOx	24-Hr Mean	20μg/m³
Nitrogen Dioxide, NOx	Annual Mean	40μg/m³
Respirable Particulate Matter (<10μm)	24-Hr Mean	50 μg/m³
$PM_{2.5}$	24-Hr Mean	25 μg/m³

In addition to guideline values, interim targets are given for each pollutant. These are proposed as incremental steps in a progressive reduction of air pollution and are intended for use in high-pollution areas. These targets aim to promote a shift from high air pollutant concentrations, which have acute and serious health consequences, to lower air pollutant concentrations. If these targets were to be achieved, one could expect significant reductions in risks for acute and chronic health effects from air pollution. Progress towards the guideline values should, however, be the ultimate objective of air quality management and health risk reduction in all areas.

3.0 AIR QUALITY MEASUREMENTS METHODOLOGY

3.1 Particulate Matter Sampling



The AQM-09 Air Quality Monitoring Station can measure both outdoor and indoor air pollutants in real time, measuring data quickly and accurately. It can be customized for different applications demands, the measurement parameter can be chosen from the following: the gas type Ozone(O3), Nitrogen Dioxide (NO2), Sulphur Dioxide (SO2), Carbon Monoxide (CO), TVOCs, Particulate matter PM2.5 and PM10, also the Noise, Meteorological parameters (including of Temperature, Humidity, Wind speed, Wind direction, Barometric pressure), etc.

Installed with the famous brand sensor, with quick response, good linearity, stable performance and high resolution, the minimum unit is up to ppb;

Designed with the all-in-one type and easy installation;

The modular design makes the later maintenance very convenient;

The function of remote parameter correction can save costs;

With the built-in pump, responds quickly more than the normal diffusion sampling type;

With the Double-layer protection box, preventing it from external environment influence;

It's with the Wireless network adapter, transmitting the data by GPRS, also with an optional RS232 connection to display the data on the LED display screen;

Table 3: Description of the site -Juba-Torit-Kapoeta-Nadapal Road corridor

Monitoring Point	Description of the sampling point	GPS Coordinates
MP1	Blind Mountain area	4° 45' 55" N, 31° 38' 0" E
MP2	Illiangari	4° 40' 35" N, 32° 2' 8" E
MP3	Liria	4° 38' 30" N, 32° 4' 38" E
MP4	Torit	4° 24' 27" N, 32° 34' 11" E
MP5	Abalwa	4° 25' 54" N, 32° 38' 26" E

MP6	Tirangore	4° 28' 27" N, 32° 49' 4" E
MP7	Hiyala	4° 27' 59" N, 32° 51' 58" E
MP8	Illeu	4° 29' 46" N, 32° 58' 26" E
MP9	Lobira	4° 25' 0" N, 33° 3' 31 " E
MP10	Loriyok	4° 31' 9" N, 33° 19' 18" E
MP11	Kapoeta roundabout area	4° 46' 8" N, 33° 35' 30" E
MP12	Kapoeta Market area	4° 46' 0" N, 33° 35' 36" E
MP13	Kapoeta Junction area	4° 45' 23" N, 33° 35' 56" E
MP14	Buno	4° 43' 5" N, 33° 45' 52" E
MP15	Napotpot	4° 37' 32" N, 33° 53' 58" E
MP16	Nadapal	4° 24' 17" N, 33° 45' 46" E

4.0 RESULTS

Table 4: PM10 Analysis Results

Location	Time (hrs)	Concentration µg/m³			WHO Air Quality Guidelines PM_{10}	EPA (Air Quality) Reg. 2018
		AVG	**MAX**	**MIN**		
MP1	24hrs	**56.175**	1000	2		
MP2	24hrs	**9.79**	64	3		
MP3	24hrs	**4.03**	15	2		
MP4	24hrs	**28.90**	81	6		
MP5	24hrs	**13.38**	177	5		
MP6	24hrs	**2.11**	4	1		
MP7	24hrs	**7.96**	35	4		
MP8	24hrs	**4.66**	9	2		
MP9	24hrs	**17.23**	27	12		
MP10	24hrs	**25.44**	50	12		
MP11	24hrs	**152.33**	1000	28		
MP12	24hrs	**135.11**	436	19		
MP13	24hrs	**5.71**	16	1		
MP14	24hrs	**3.23**	33	1		
MP15	24hrs	**6.12**	35	3		
MP16	24hrs	**14.25**	114	4		

- 50 µg/m³ 24hrs
- 150 µg/m³ (24-hour mean)

Based on the analysis of Table 4, thirteen PM10 sampling points complied with the Environmental Protection Agency (EPA) Air Quality Regulations of 2018 and WHO guidelines. However, elevated PM10 levels were observed at Blind Mountain, Kapoeta Roundabout, and Kapoeta Market, exceeding WHO limits. Notably, Kapoeta Roundabout also surpassed the EPA's regulatory thresholds.

Table 5: $PM_{2.5}$ Analysis Results

Location	Time (hrs)	Concentration µg/m³			WHO Air Quality Guidelines PM_{10}	EPA (Air Quality) Reg. 2018
		AVG	**MAX**	**MIN**		
MP1	24hrs	**12.35**	148	1		
MP2	24hrs	**2.62**	12	1		
MP3	24hrs	**3.07**	16	1		
MP4	24hrs	**4.54**	21	1		
MP5	24hrs	**2.21**	6	2		
MP6	24hrs	**1.99**	2	1		
MP7	24hrs	**2.05**	3	2		
MP8	24hrs	**4.25**	9	2		
MP9	24hrs	**5.89**	14	1		
MP10	24hrs	**15.41**	37	9		
MP11	24hrs	**23.58**	200	5		
MP12	24hrs	**22.38**	131	2		
MP13	24hrs	**1.12**	6	1		
MP14	24hrs	**1**	7	1		
MP15	24hrs	**1.45**	3	1		
MP16	24hrs	**1.1**	4	0		

- 12 µg/m³ (annual mean), 35 µg/m³ (24-hour mean)
- PM2.5: 25 µg/m³ (24-hour mean)

From the results analyzed in Tables 5 above, the sixteen sampled for PM2.5 were within the Environmental Protection Agency (Air Quality), Regulations, 2018 and WHO guidelines.

Table 6: NO2 & SO2 Analysis Results

Location	Time (hrs)	NOx Concentration µg/m³	SO_2 Concentration µg/m³	EPA (Air Quality) Reg. 2018	EPA (Air Quality) Reg. 2018	WHO Air Quality Guidelines
MP1	24hrs	**50.09**	**2.7**	**NO2: 53 ppb (annual mean), 100 ppb (1-hour mean)**	**SO2: 20 µg/m³ (24-hour mean) NO2: 40 µg/m³ (annual mean**	**NO_2- 40 µg/m³ SO_2-20 µg/m³**
MP2	24hrs	**.37**	**2.06**			
MP3	24hrs	**31.08**	**2**			
MP4	24hrs	**35.35**	**5.88**			
MP5	24hrs	**53.33**	**3.51**			
MP6	24hrs	**5.75**	**4.62**			
MP7	24hrs	**29.02**	**7.93**			
MP8	24hrs	**3.91**	**1.82**			

MP9	24hrs	**41.14**	**1.07**	**SO2: 75 ppb (1-hour mean)**		
MP10	24hrs	**1.14**	**0.78**			
MP11	24hrs	**21.15**	**7.49**			
MP12	24hrs	**5.53**	**2.52**			
MP13	24hrs	**0.95**	**3.41**			
MP14	24hrs	**16.31**	**1.55**			
MP15	24hrs	**2**	**1.18**			
MP16	24hrs	**12.27**	**0.73**			

Table 7: VOC Analysis Results

Location	Time (hrs)	TOTAL VOC	EPA (Air Quality) Reg. 2018
MP1	24hrs	**45.69**	**VOC – 600 µg/m³**
MP2	24hrs	**7.34**	
MP3	24hrs	**7.68**	
MP4	24hrs	**25.45**	
MP5	24hrs	**8.96**	
MP6	24hrs	**11.02**	
MP7	24hrs	**6.78**	
MP8	24hrs	**10.80**	
MP9	24hrs	**5.98**	
MP10	24hrs	**7.89**	
MP11	24hrs	**41.31**	
MP12	24hrs	**33.45**	
MP13	24hrs	**28.12**	
MP14	24hrs	**5.78**	
MP15	24hrs	**7.21**	
MP16	24hrs	**29.23**	

Table 8: CO & CO_2 Analysis Results

Location	Time (hrs.)	CO Concentration mg/m^3	CO_2 Concentration mg/m^3	EPA (Air Quality) Reg. 2018

		AVG	AVG	
MP1	**24hrs**	**1.23**	**1.4**	**5 mg/m³**
MP2	**24hrs**	**0.1**	**1.41**	
MP3	**24hrs**	**0.1**	**1.37**	
MP4	**24hrs**	**0.97**	**1.2**	
MP5	**24hrs**	**0.1**	**1.46**	
MP6	**24hrs**	**0.1**	**1.42**	
MP7	**24hrs**	**0.1**	**1.25**	
MP8	**24hrs**	**0.1**	**1.31**	
MP9	**24hrs**	**0.1**	**1.39**	
MP10	**24hrs**	**0.1**	**1.45**	
MP11	**24hrs**	**1.89**	**1.21**	
MP12	**24hrs**	**0.87**	**1.67**	
MP13	**24hrs**	**0.63**	**1.98**	
MP14	**24hrs**	**0.55**	**1.12**	
MP15	**24hrs**	**0.1**	**1.34**	
MP16	**24hrs**	**0.1**	**1.17**	

5.0 CONCLUSION AND RECOMMENDATIONS

Particulate Matter (PM_{10})

Based on the analysis results, thirteen PM10 sampling points complied with the Environmental Protection Agency (EPA) Air Quality Regulations of 2018 and WHO guidelines. However, elevated PM10 levels were observed at Blind Mountain, Kapoeta Roundabout, and Kapoeta Market, exceeding WHO limits. Notably, Kapoeta Roundabout also surpassed the EPA's regulatory thresholds.

Particulate Matter ($PM_{2.5}$)

Based on the analysis results, the sixteen sampled for PM2.5 were within the Environmental Protection Agency (Air Quality), Regulations, 2018 and WHO guidelines.

Sulfur Oxides (SO_2) and Nitrogen Oxides (NO_2)

The sulfur dioxide (SO_2) concentrations measured at all sixteen sampling points conformed to both EPA and World Health Organization (WHO) regulatory standards. Similarly, nitrogen dioxide (NO_2) levels across the sixteen sites adhered to the EPA Air Quality Regulations (2018).

Volatile Organic Compounds (VOCs)

The total VOC concentrations at all sampling points were within the acceptable limits defined by the EPA Air Quality Regulations (2018) and the WHO air quality guidelines.

Carbon Dioxide (CO_2) and Carbon Monoxide (CO)

Measured concentrations of carbon dioxide (CO_2) and carbon monoxide (CO) across all assessment sites remained within the regulatory thresholds established by the EPA Air Quality Regulations (2018).

APPENDIX I: GRAPHICAL PRESENTATIONS

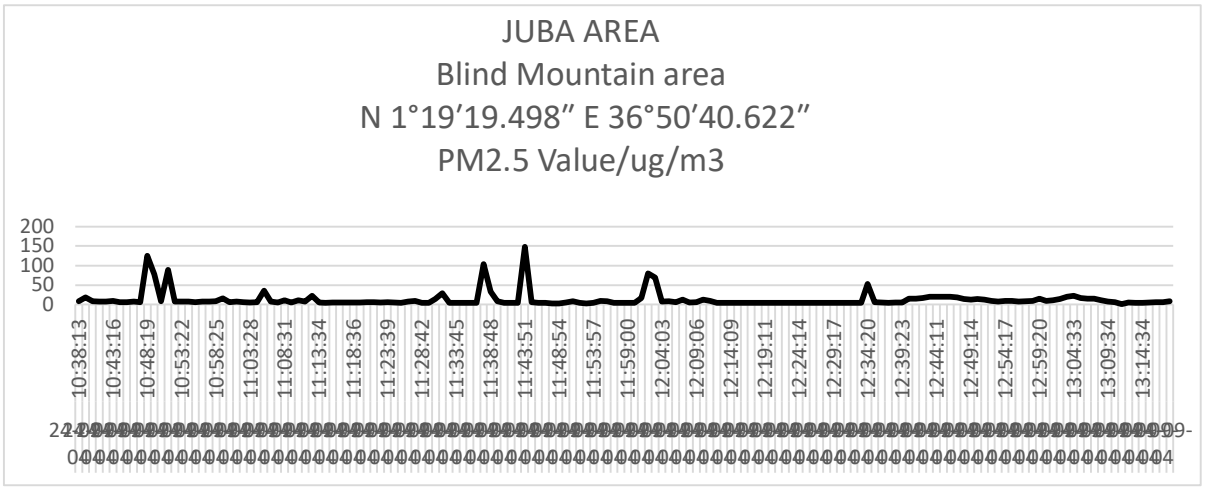


Figure 1 MP1 $PM_{2.5}$

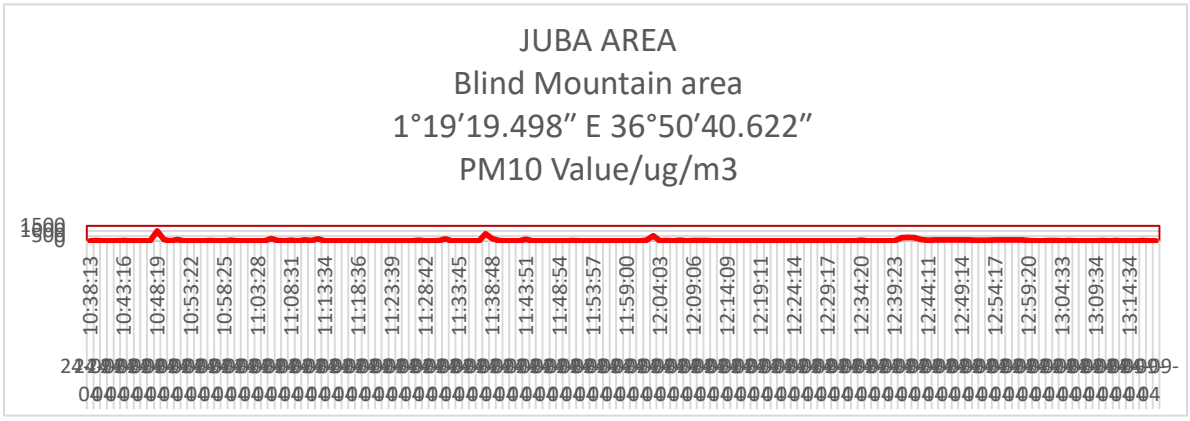


Figure 2 MP1 PM_{10}

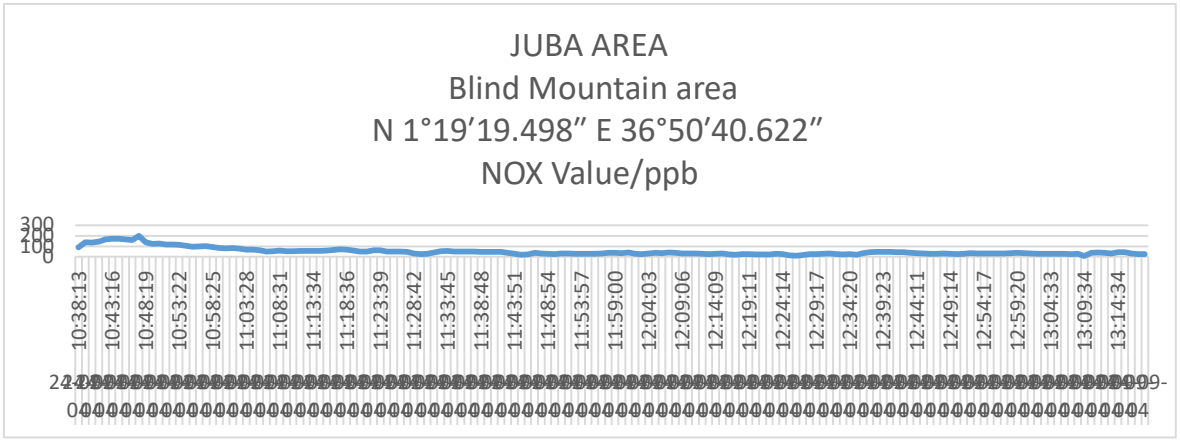


Figure 3 MP1 NOx

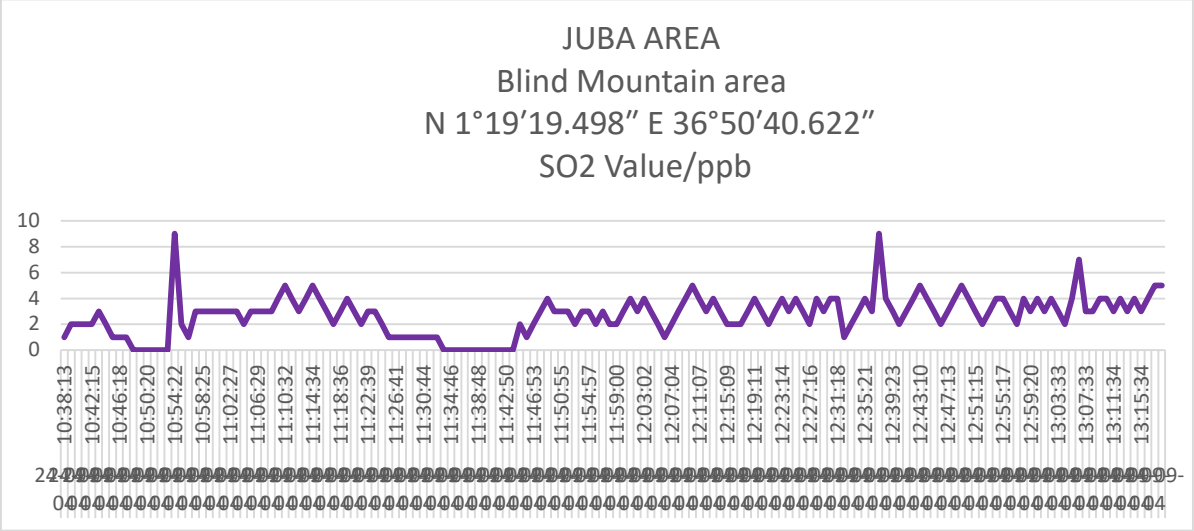


Figure 4 MP1 SO2

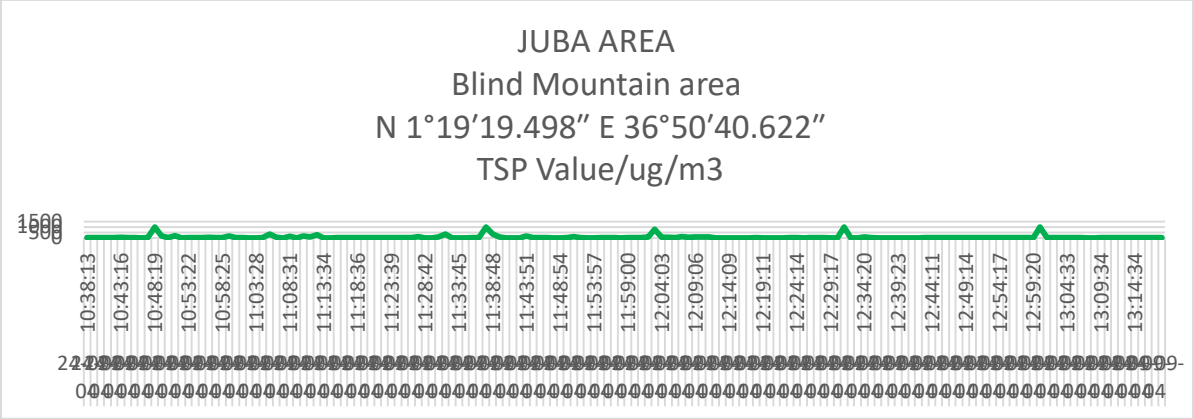


Figure 5 MP1 TSP



Figure 6 Colour representation of pollutants

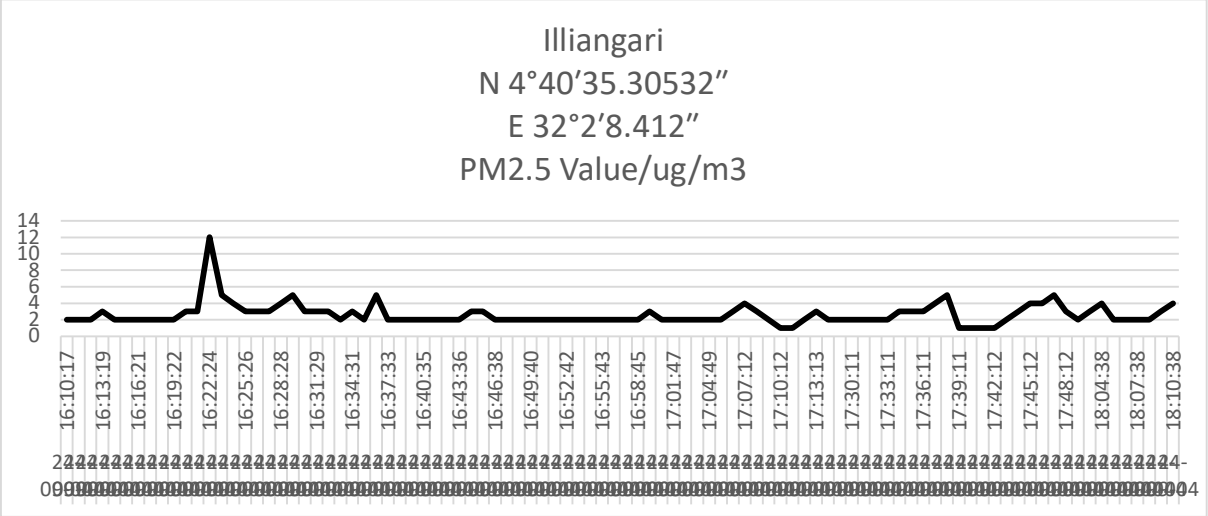


Figure 7 MP2 $PM_{2.5}$

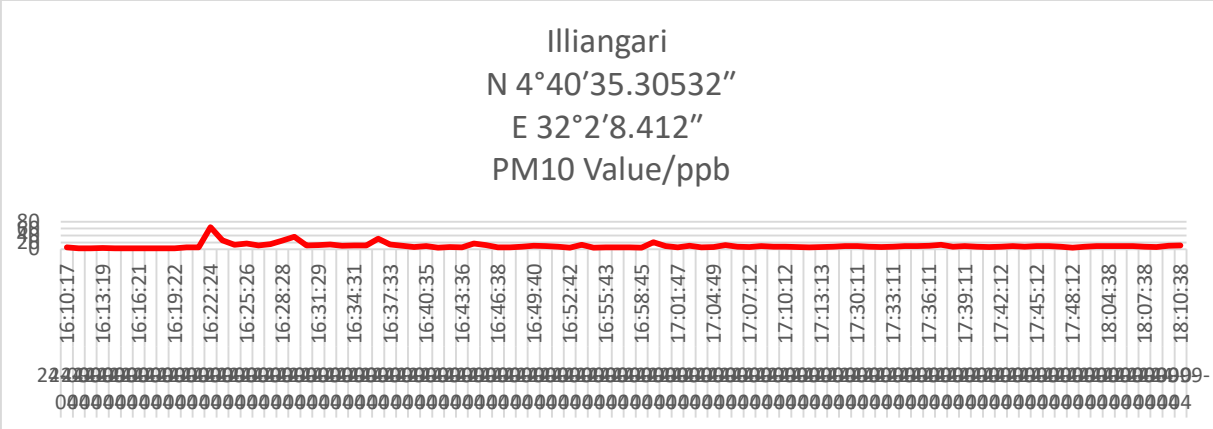


Figure 8 MP2 PM_{10}

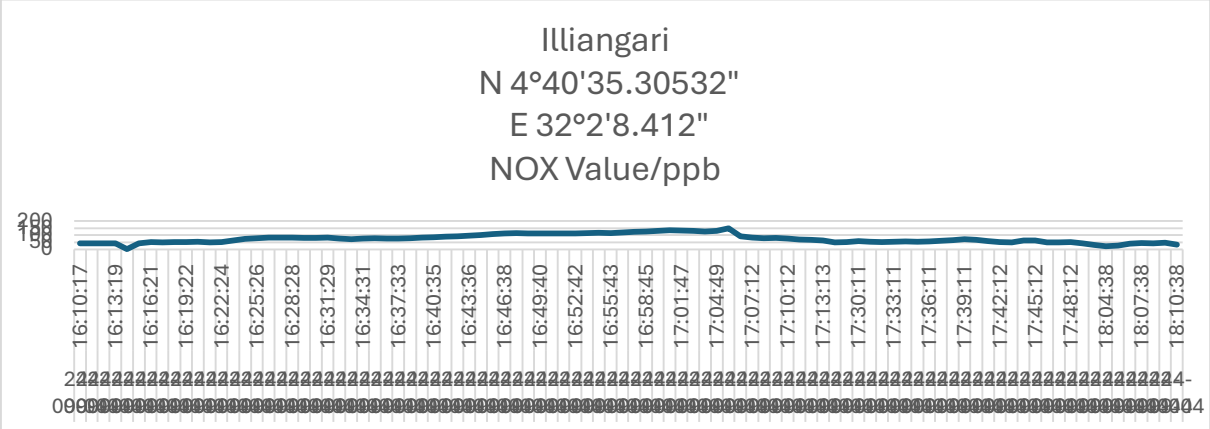


Figure 9 MP2 NOx

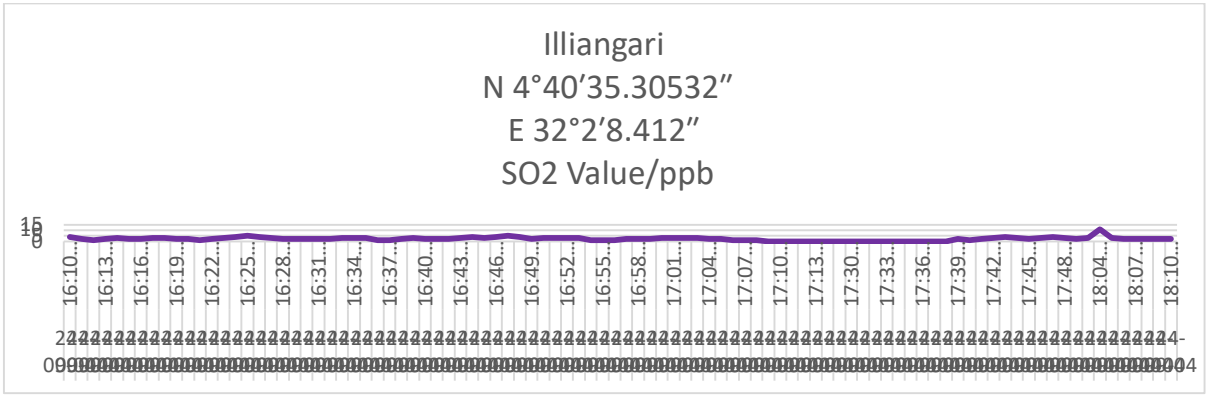


Figure 10 MP2 SO2

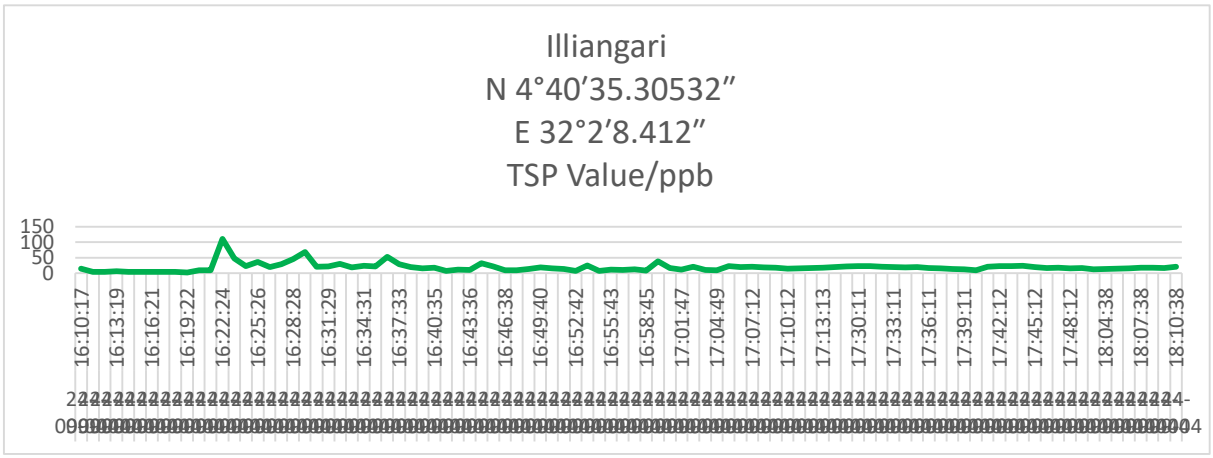


Figure 11 MP2 TSP



Figure 12 Colour Representation of pollutants

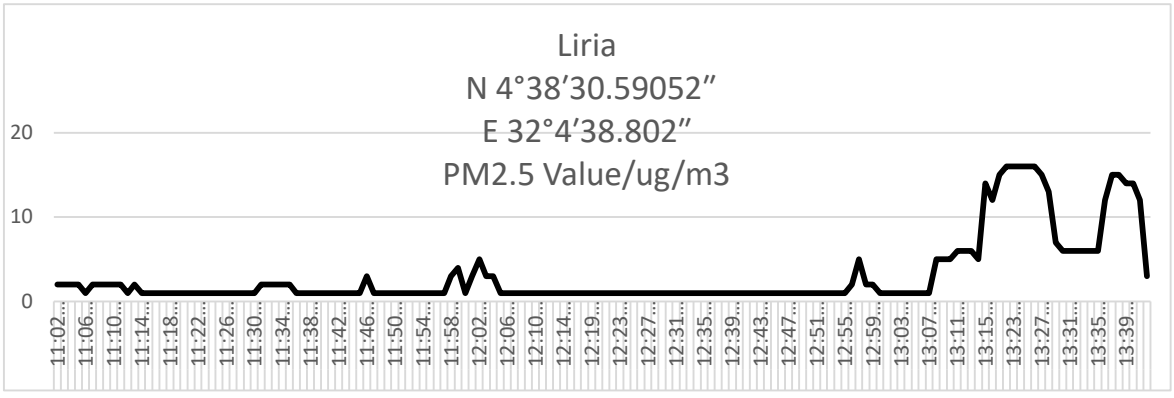
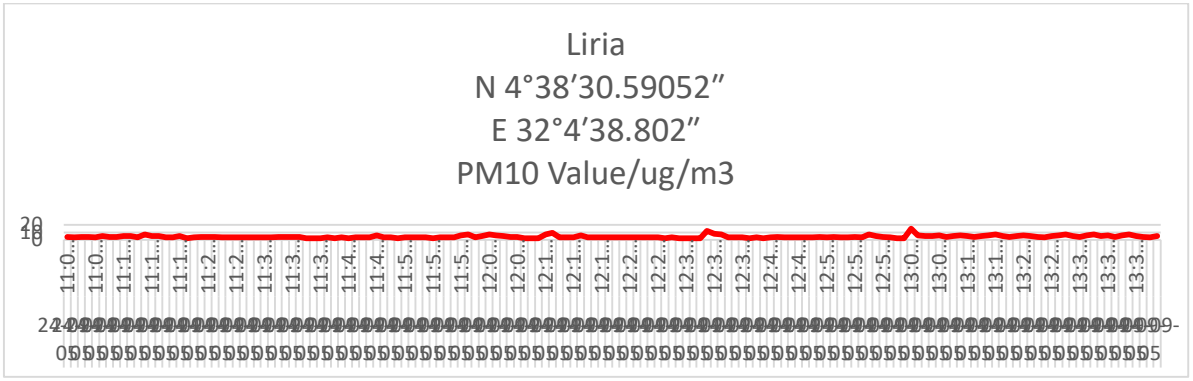


Figure 13 MP4 $PM_{2.5}$



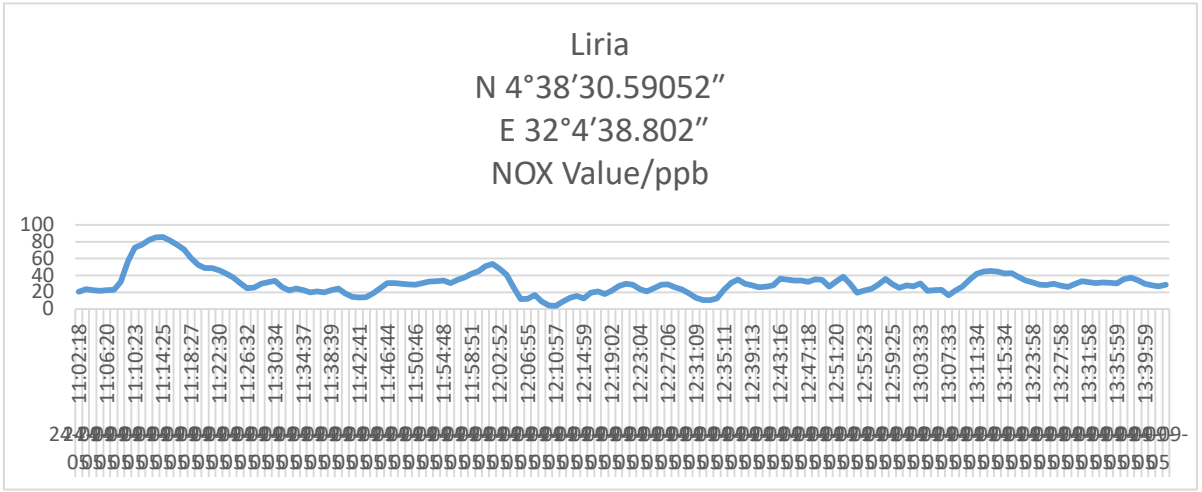


Figure 14 MP3 NOx

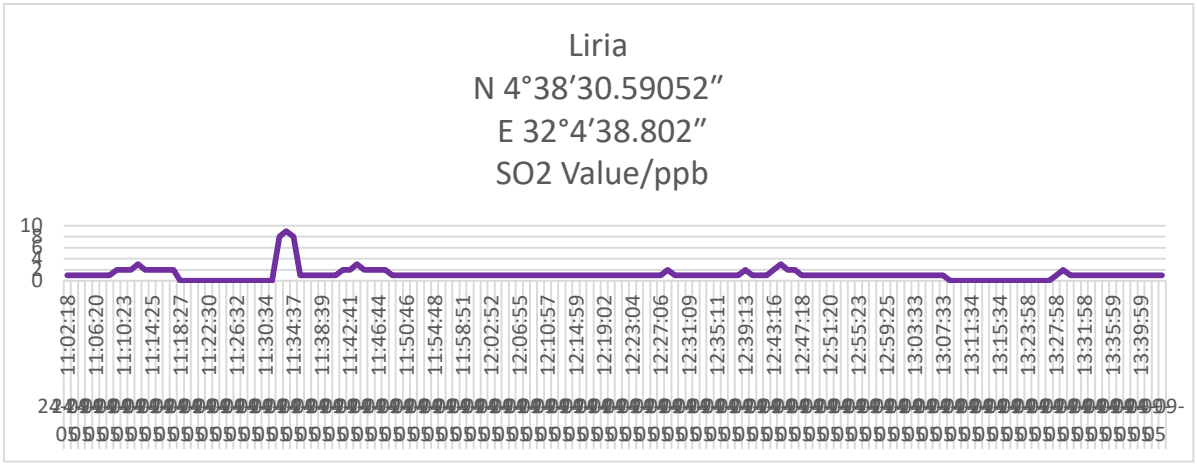


Figure 15 MP3 SO2

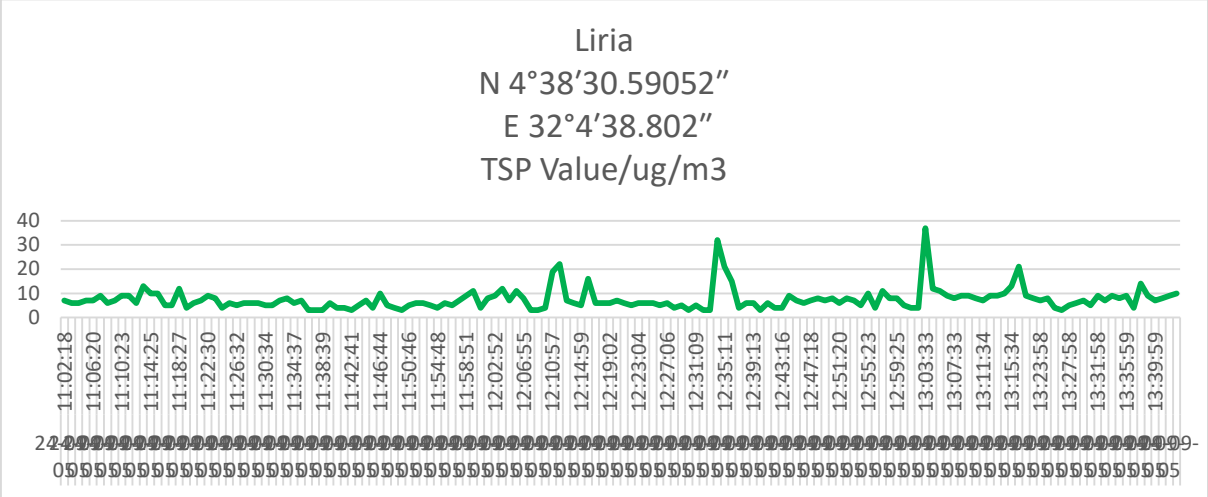


Figure 16 MP3 TSP



Figure 17 Colour representation of pollutants

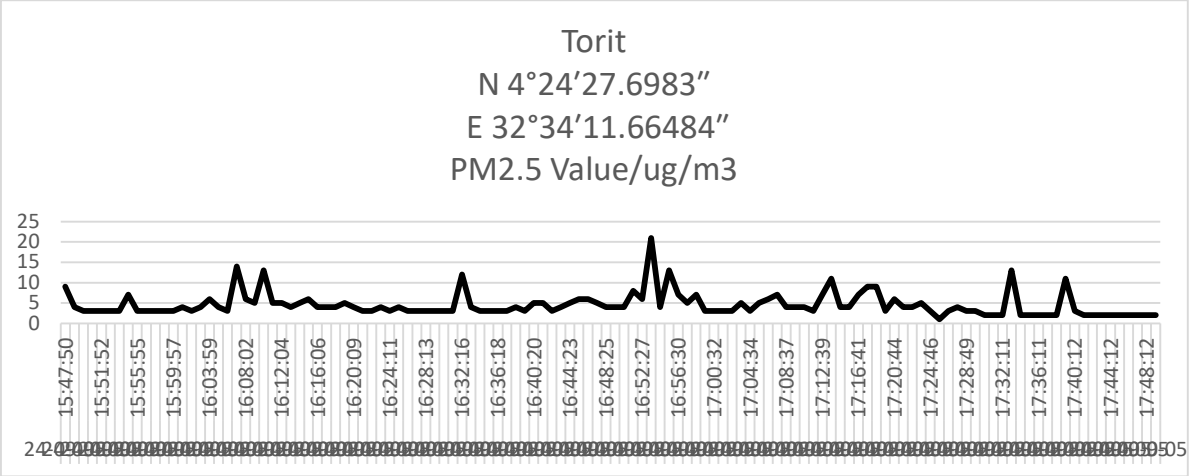


Figure 18 MP4 Pm2.5

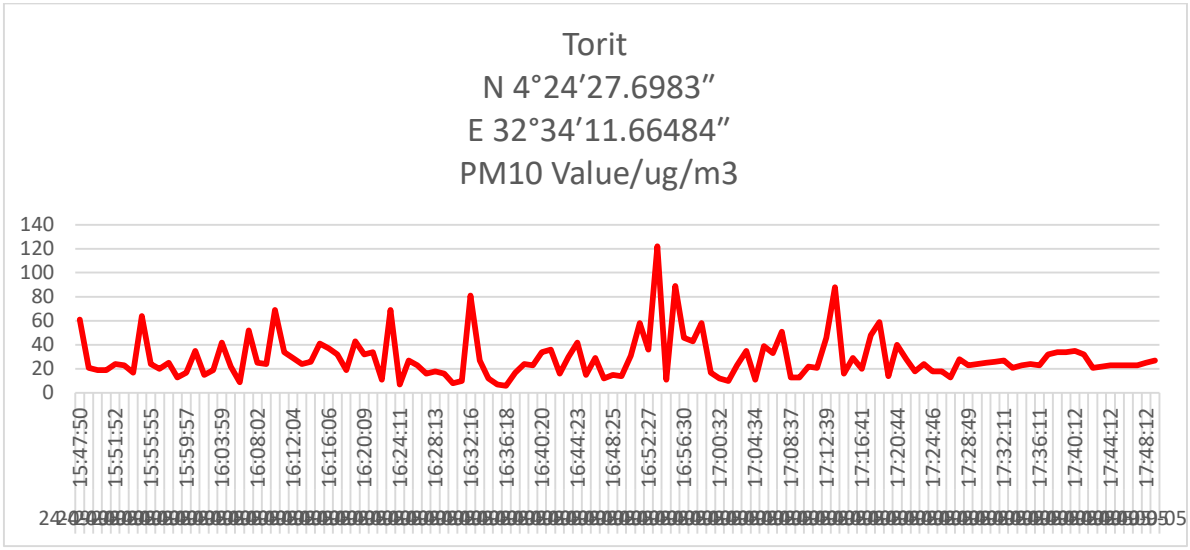


Figure 19 PM 10 MP4

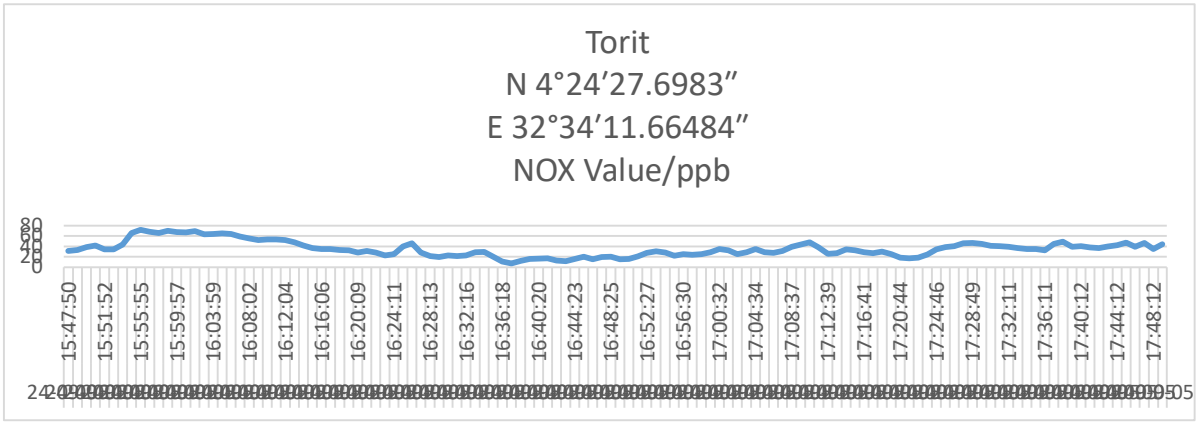


Figure 20 NOx MP4

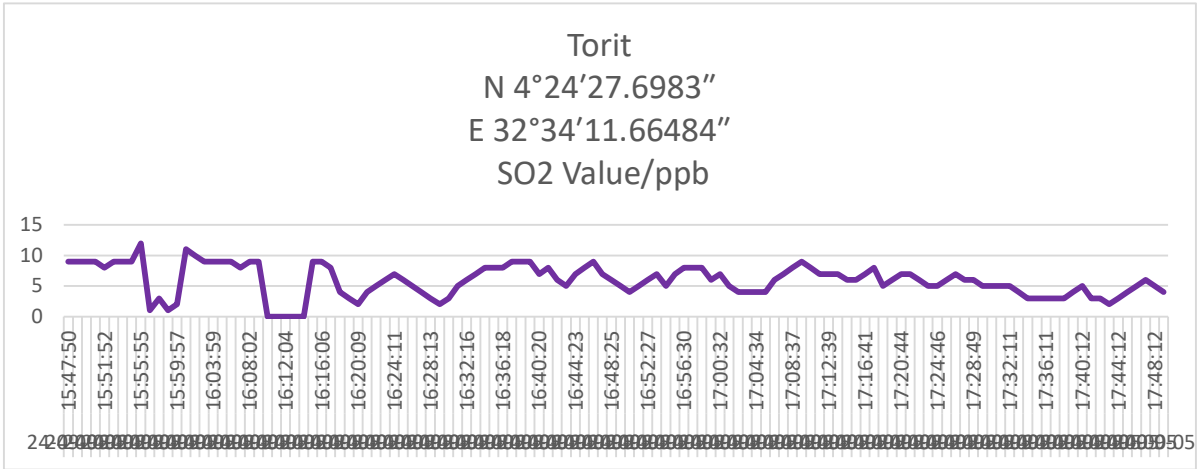


Figure 21 SO2 MP4

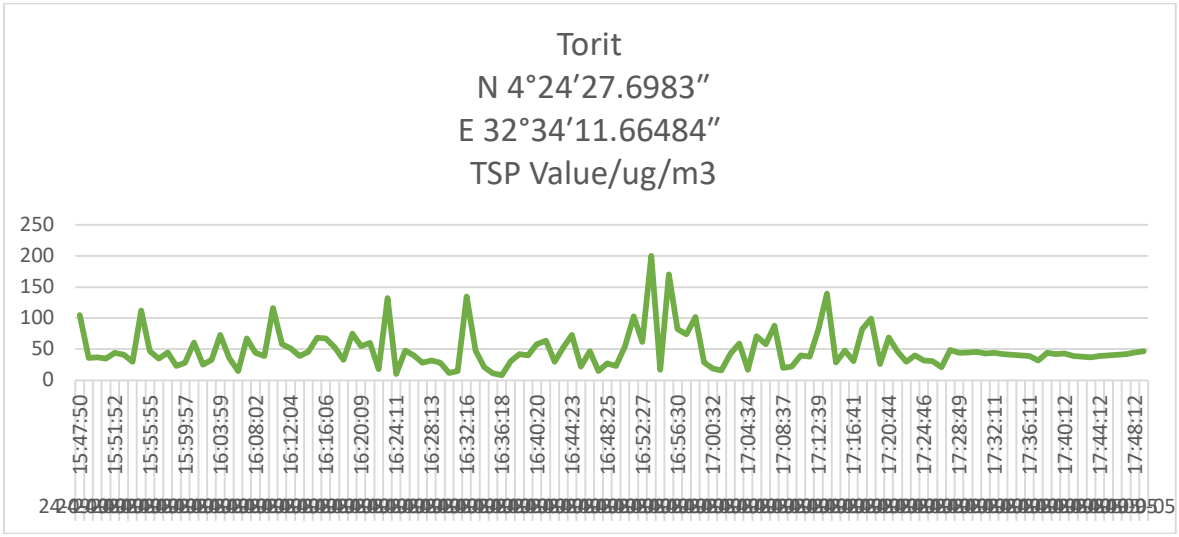
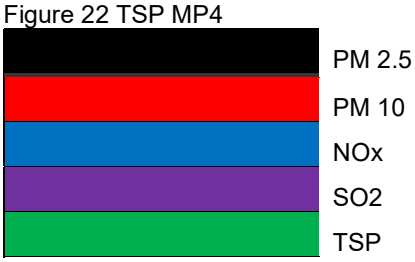


Figure 22 TSP MP4



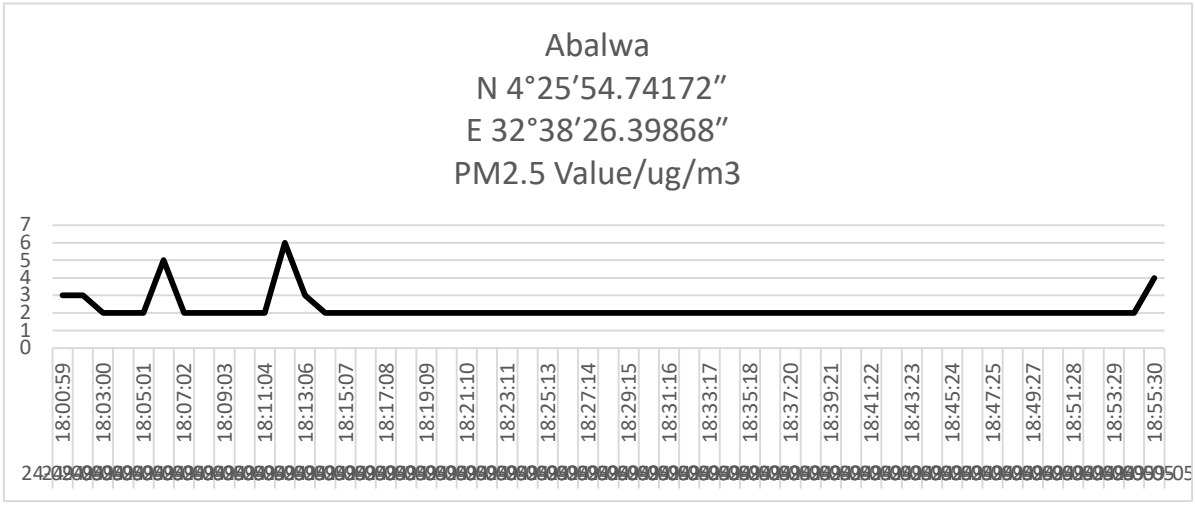


Figure 23 PM2.5 MP5

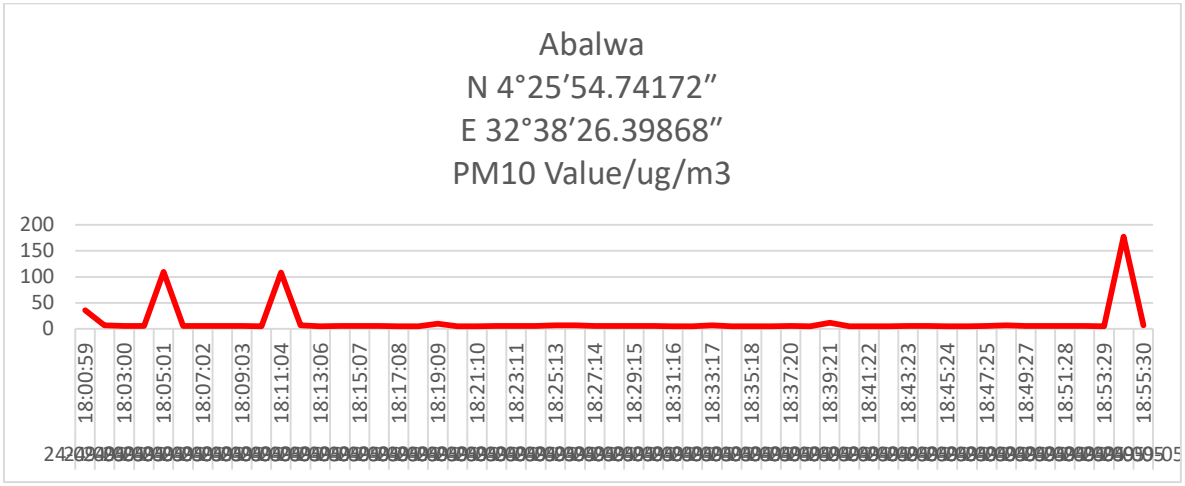


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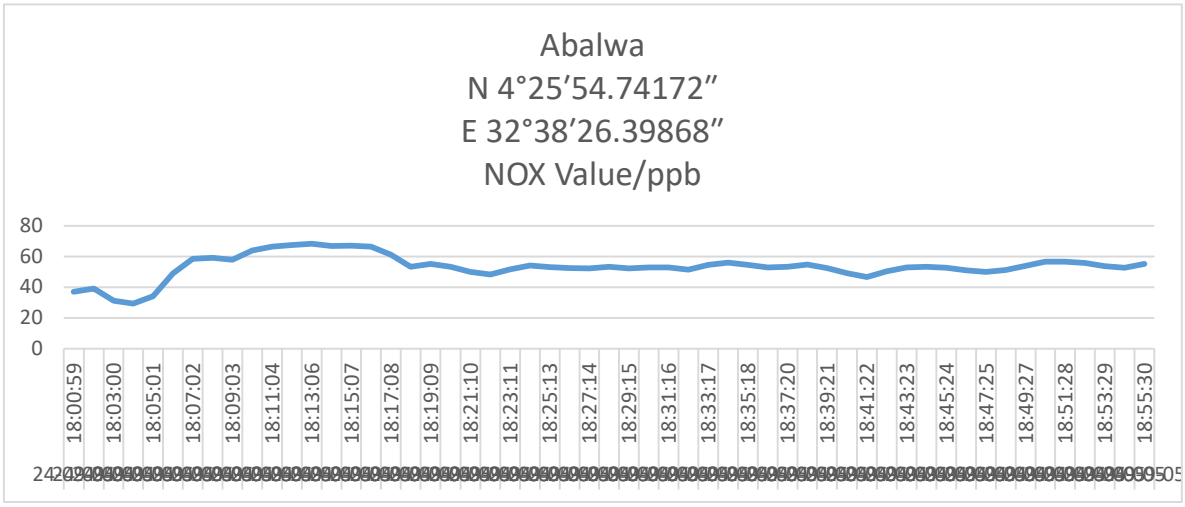


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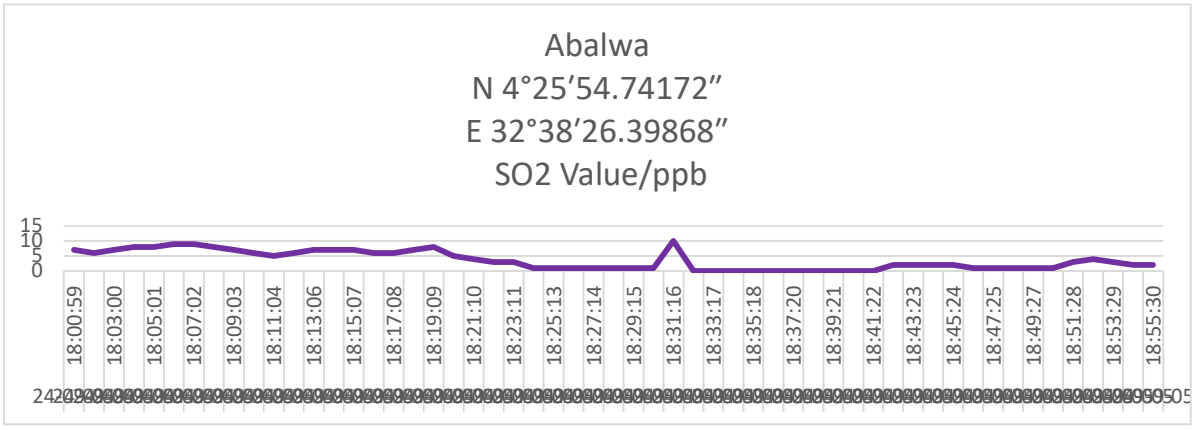


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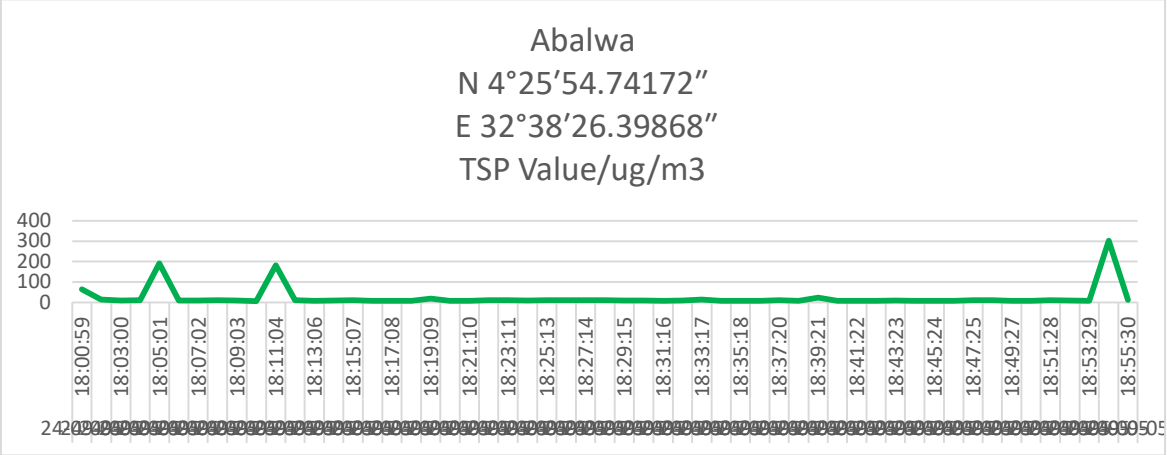


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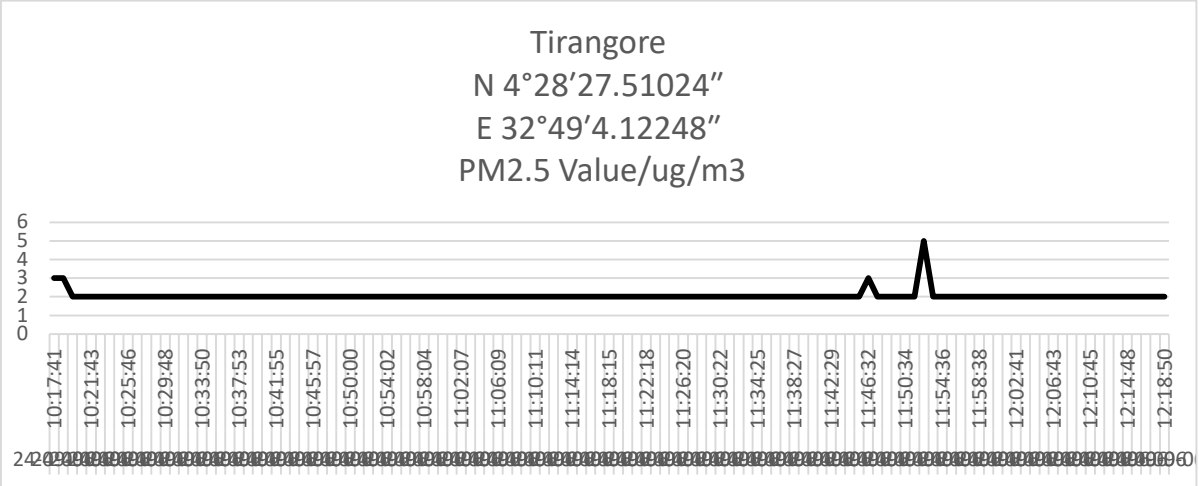


Figure 28 PM2.5 MP6

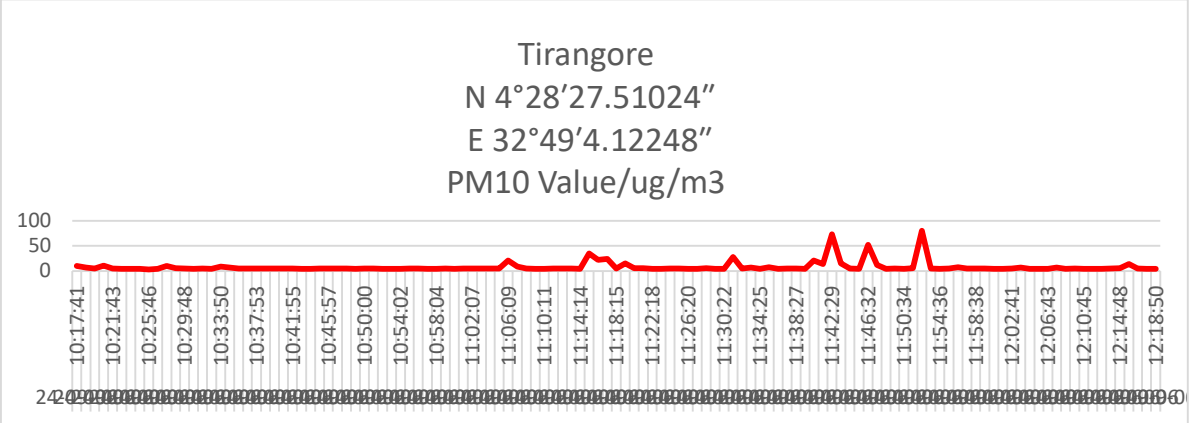


Figure 29 PM10 MP6

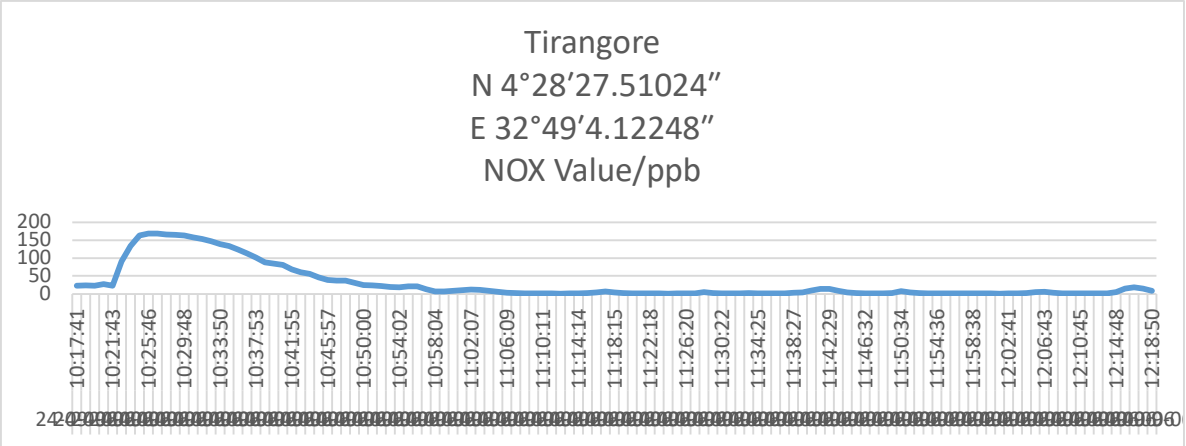


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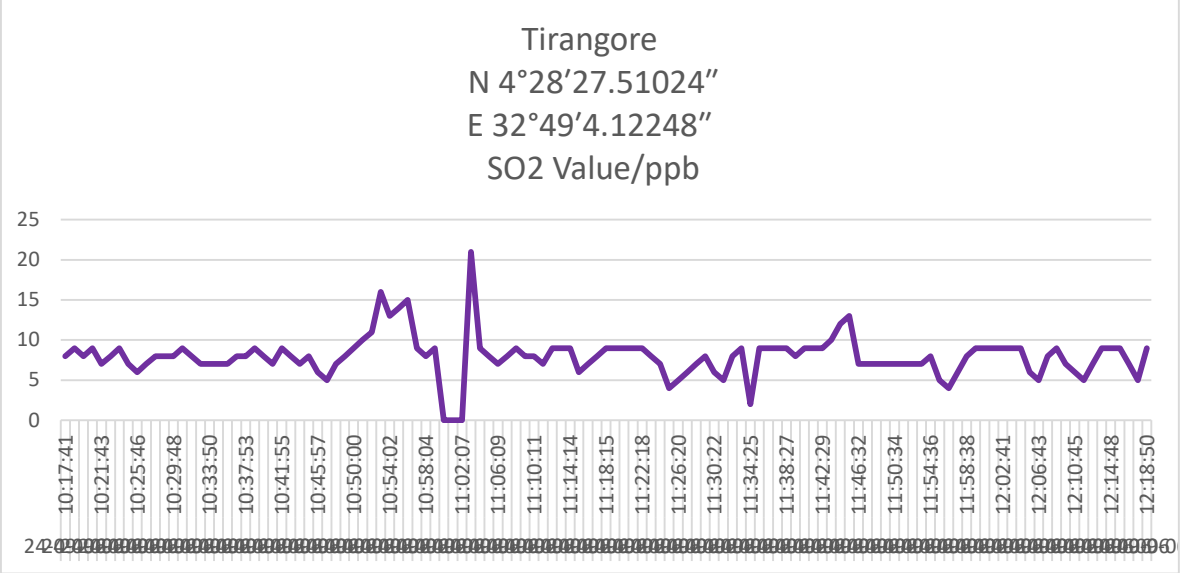


Figure 31 SO2 MP6

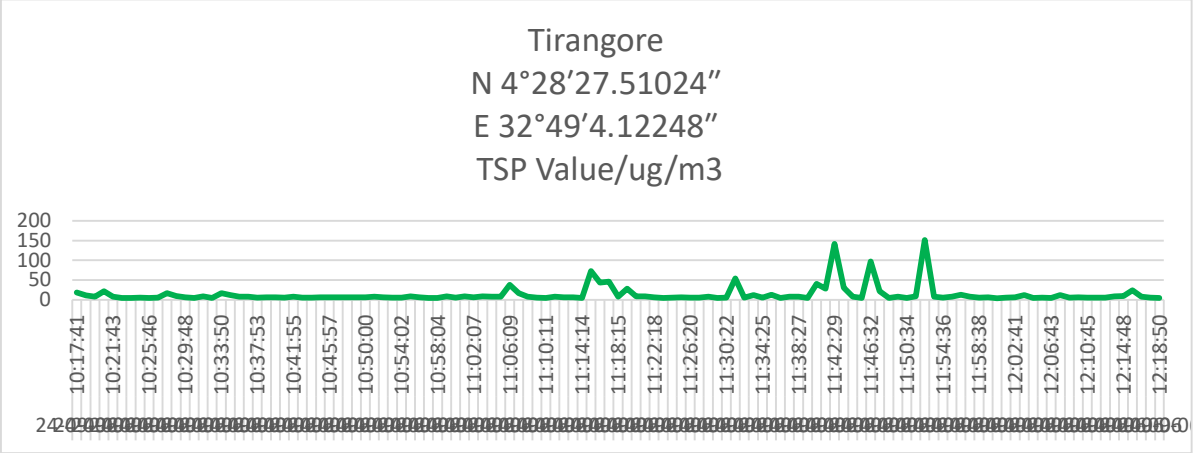


Figure 32 TSP MP6



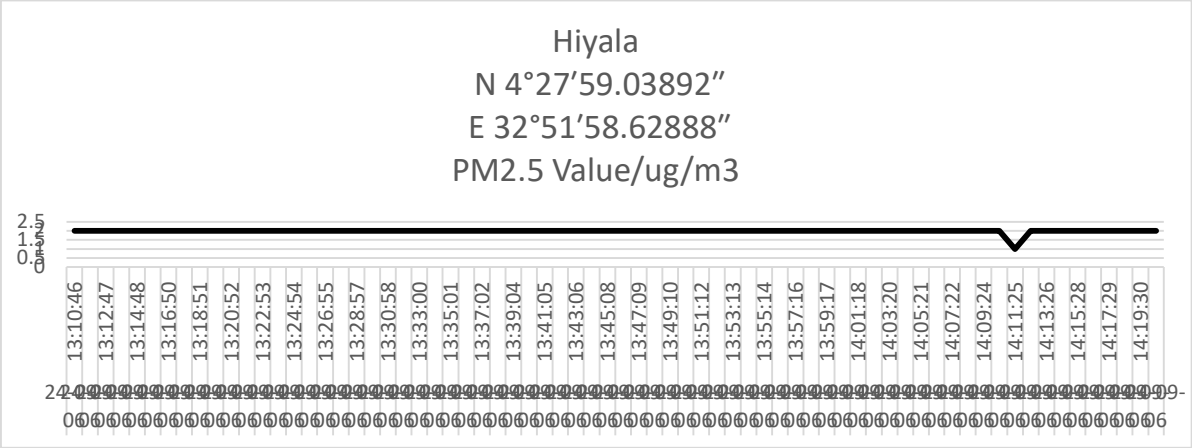


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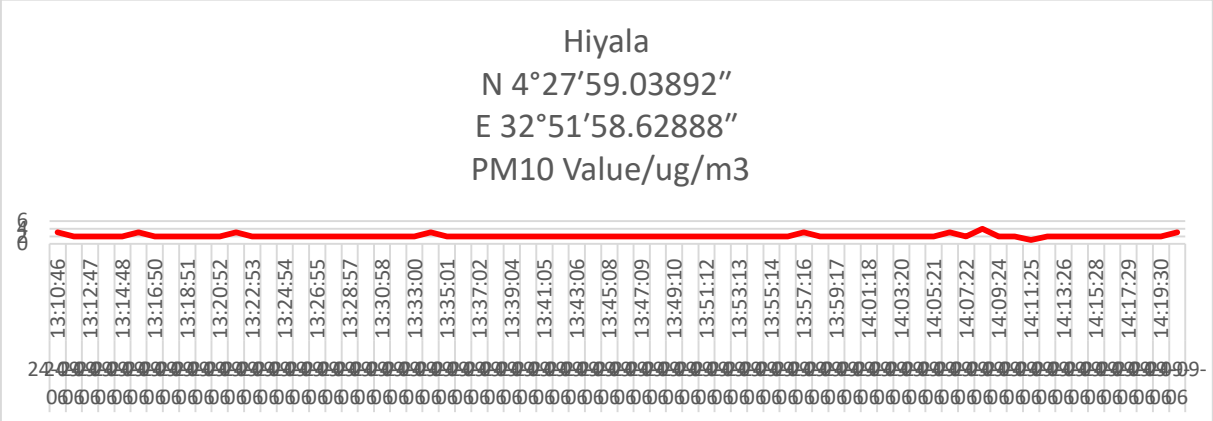


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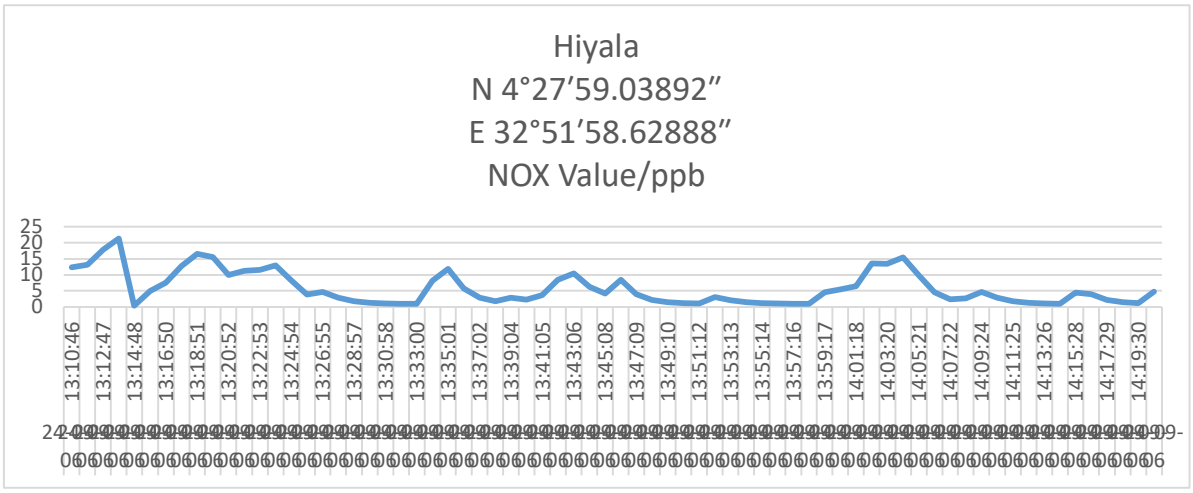


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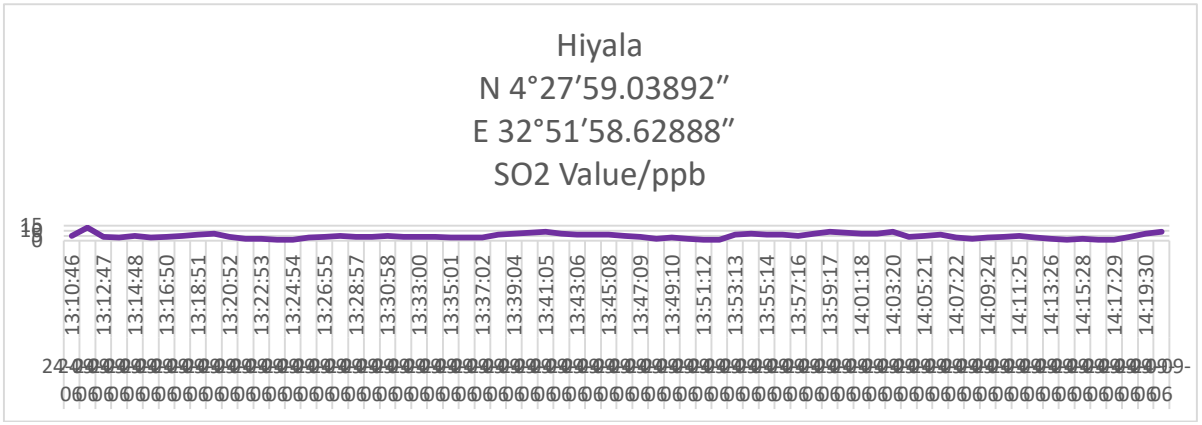


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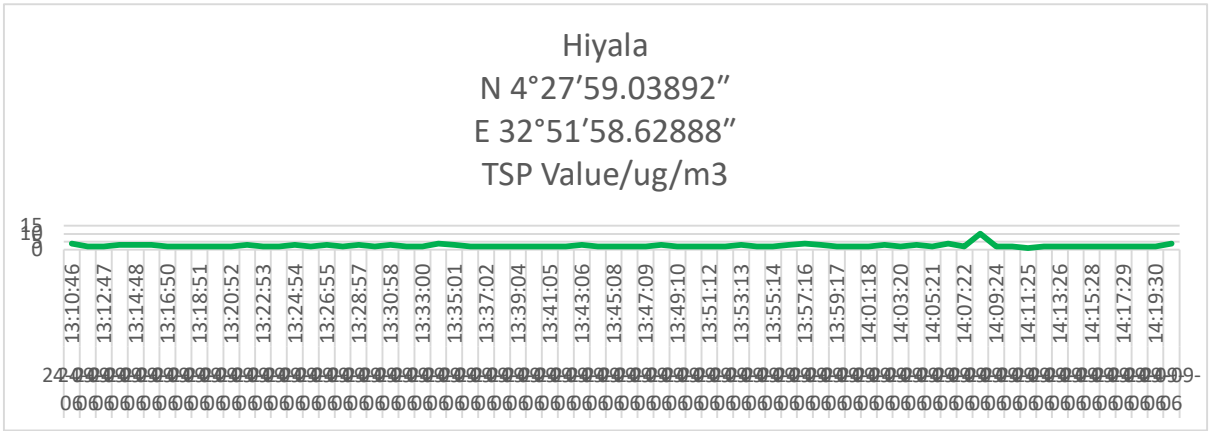


Figure 37 TSP MP7



TSP

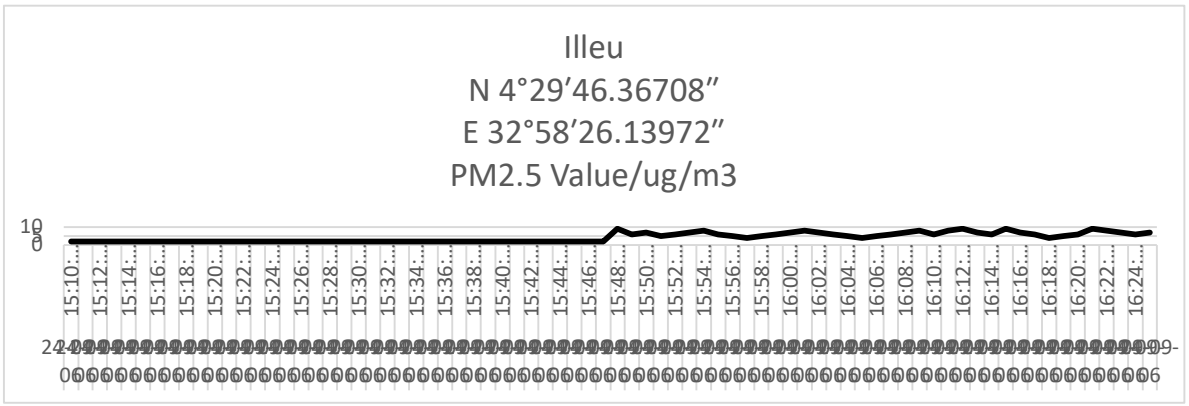


Figure 38 PM2.5 MP8

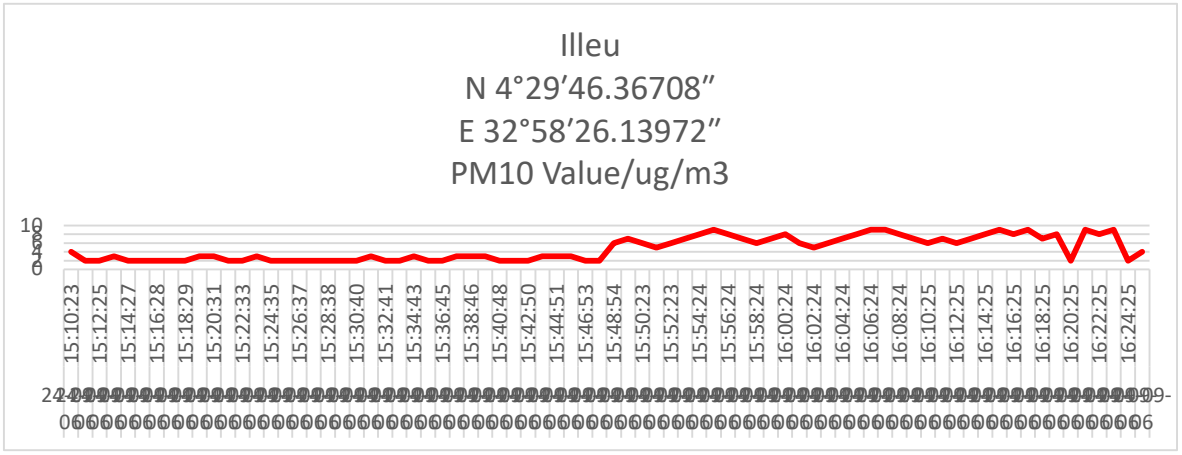


Figure 39 PM10 MP8

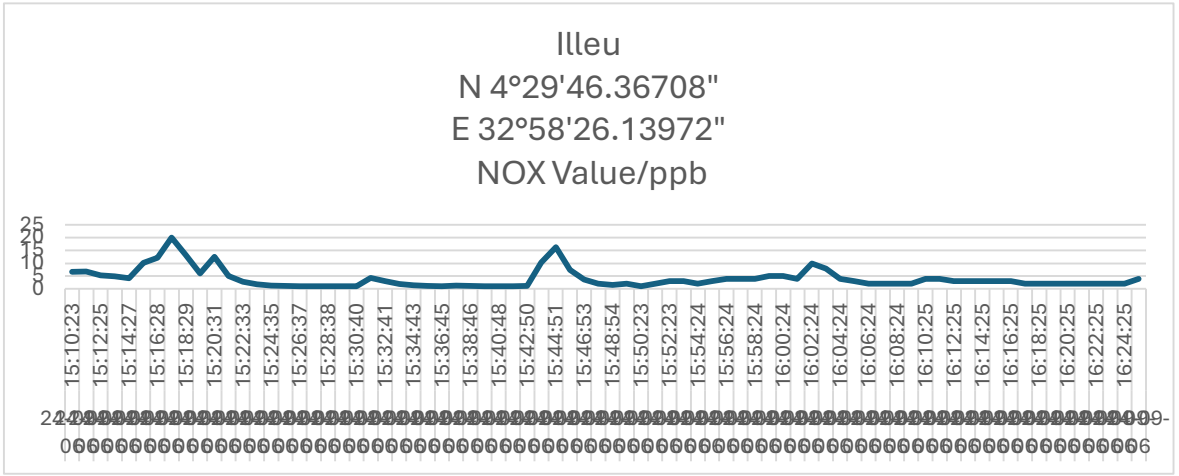


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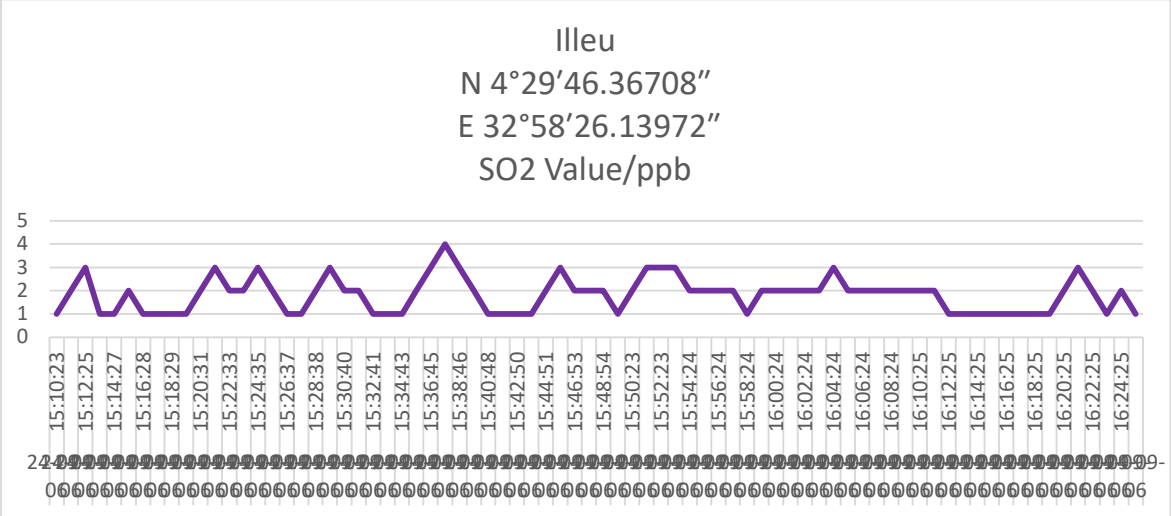


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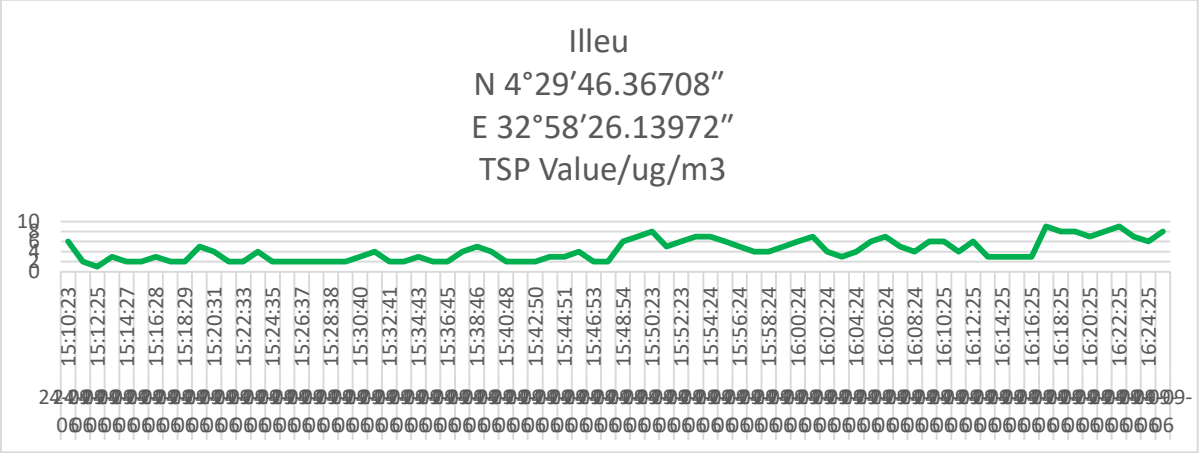
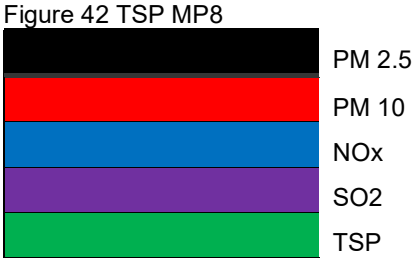


Figure 42 TSP MP8



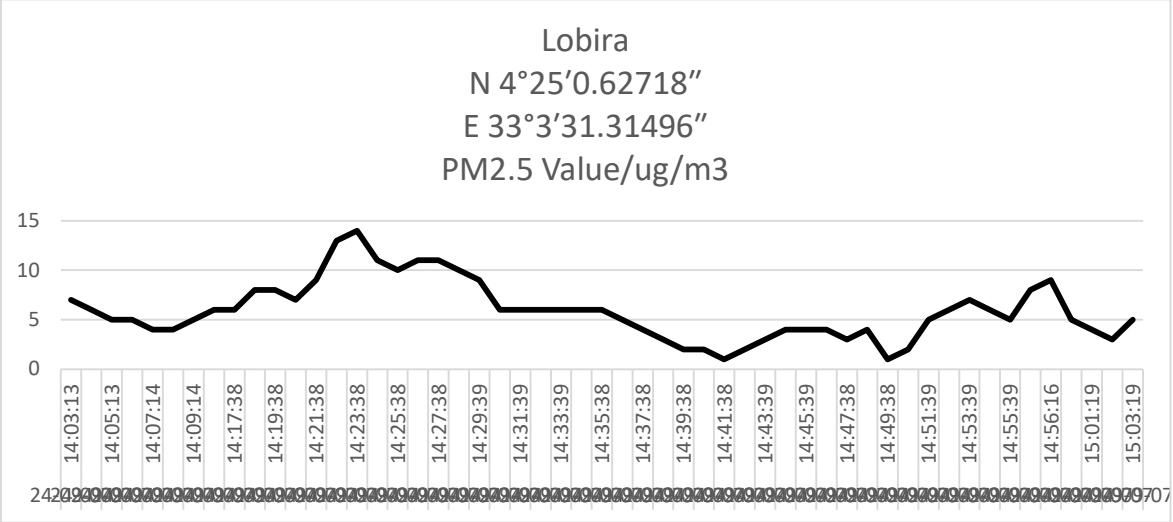


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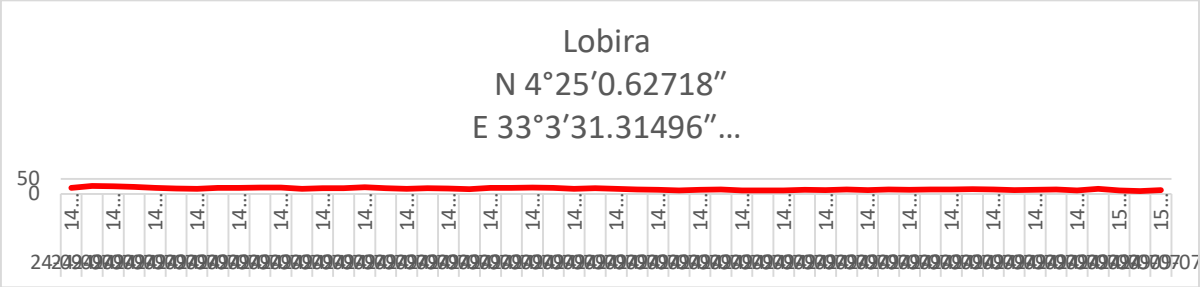


Figure 44 PM10

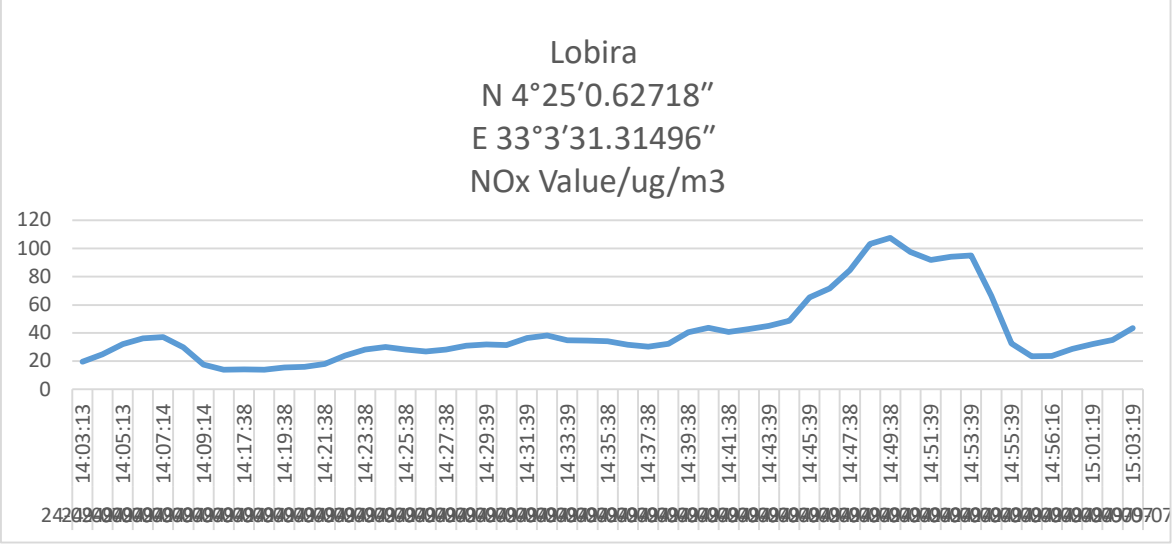


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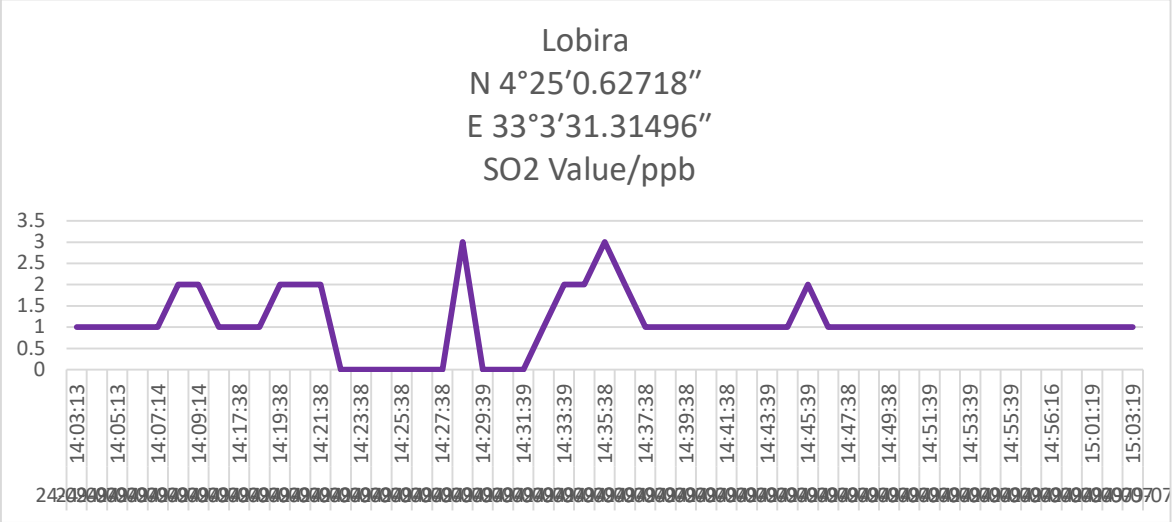


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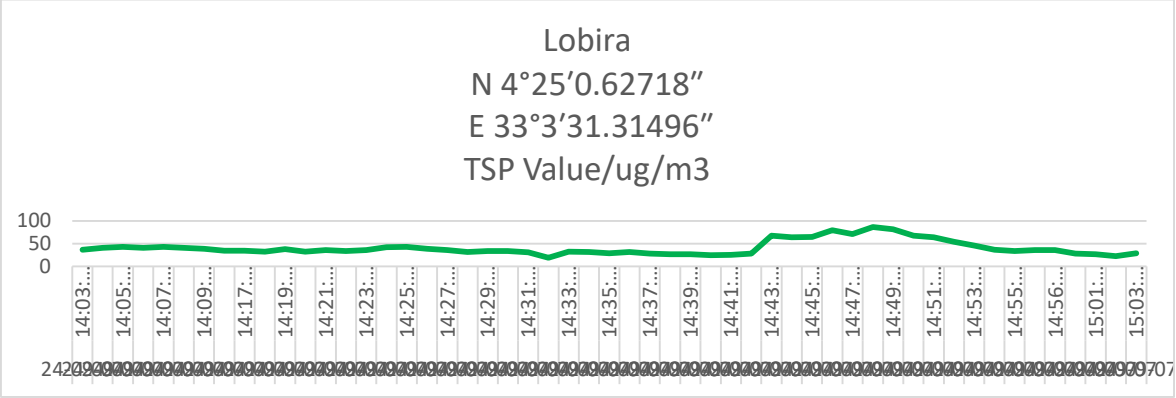
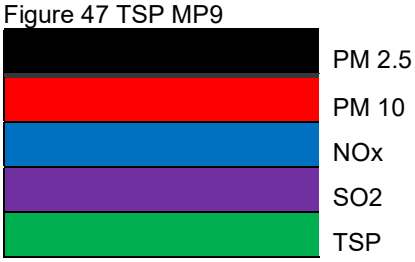


Figure 47 TSP MP9



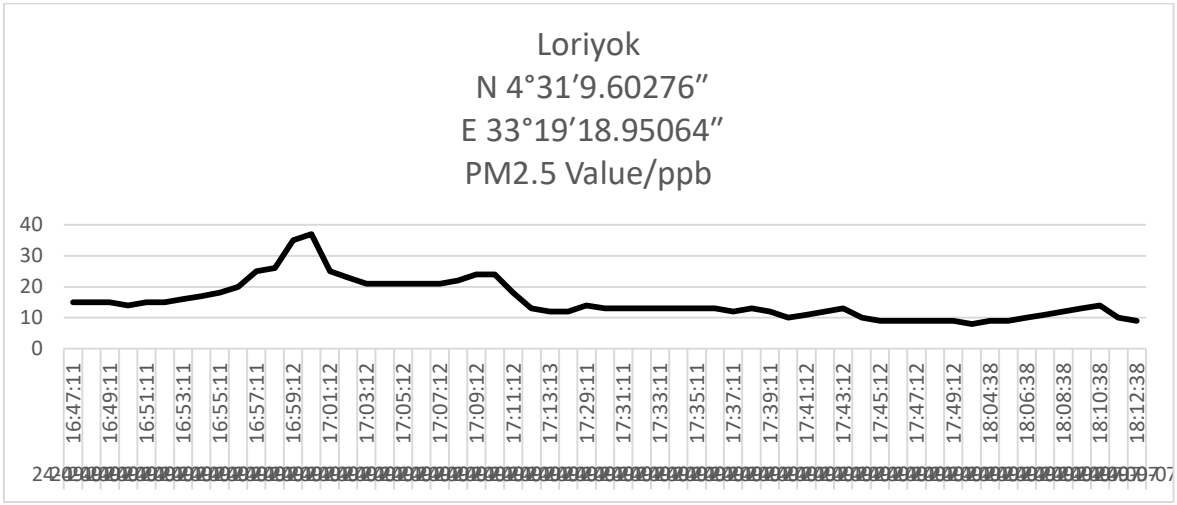


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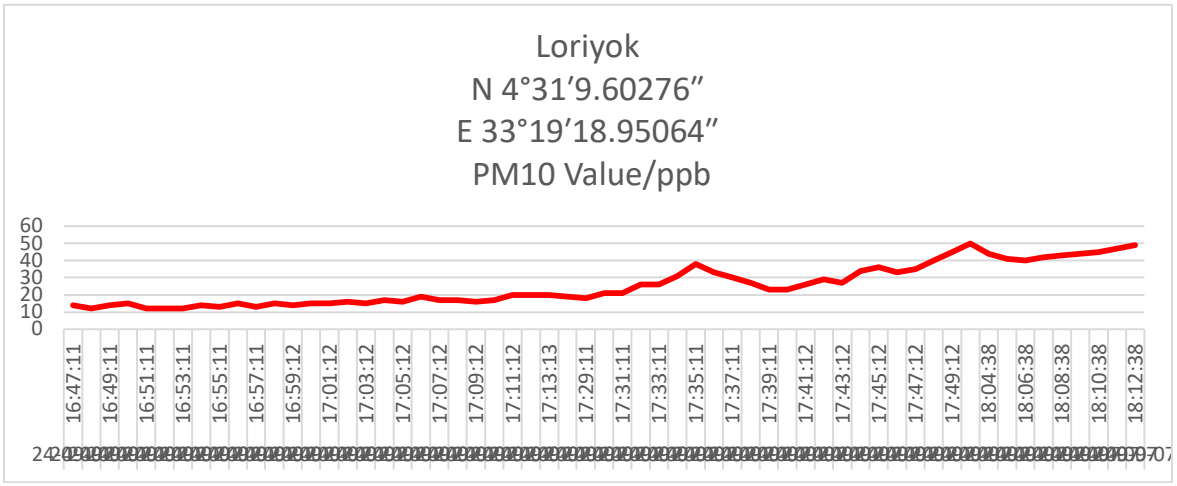


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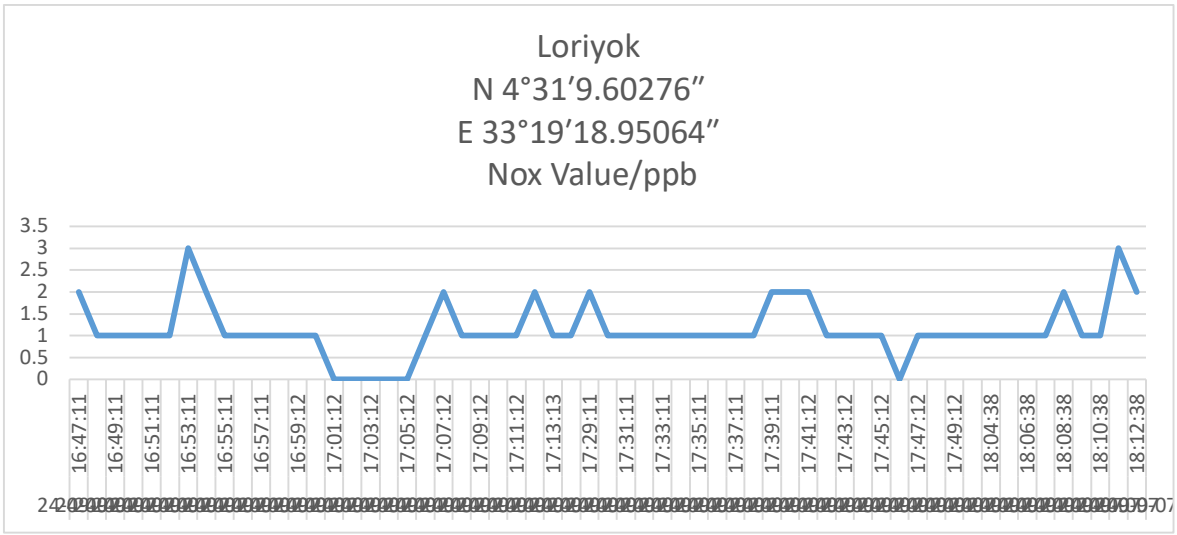


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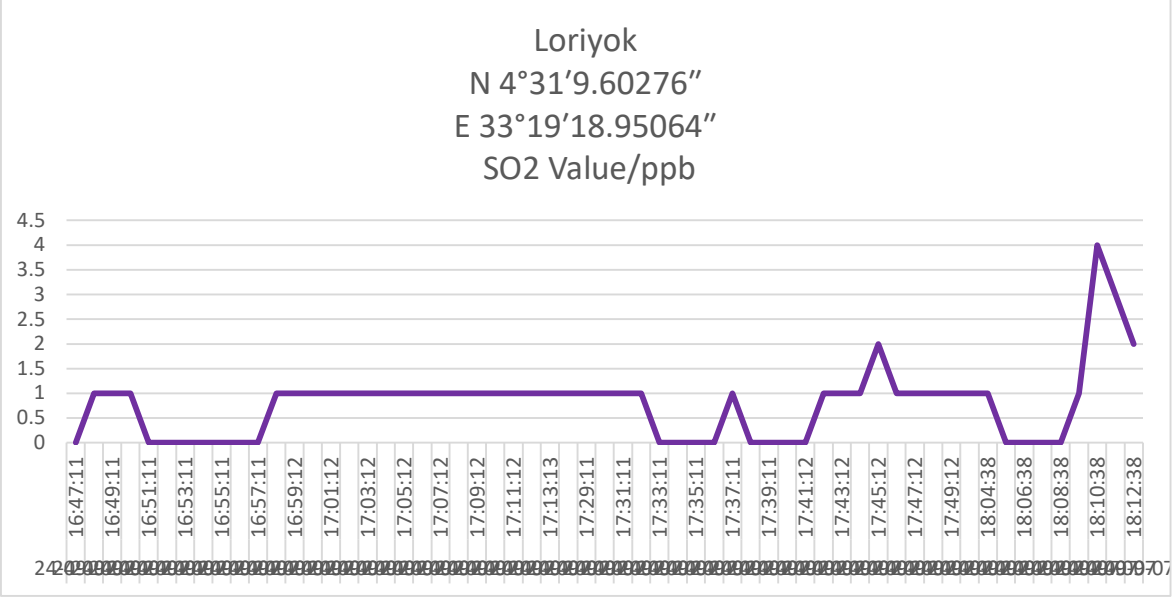


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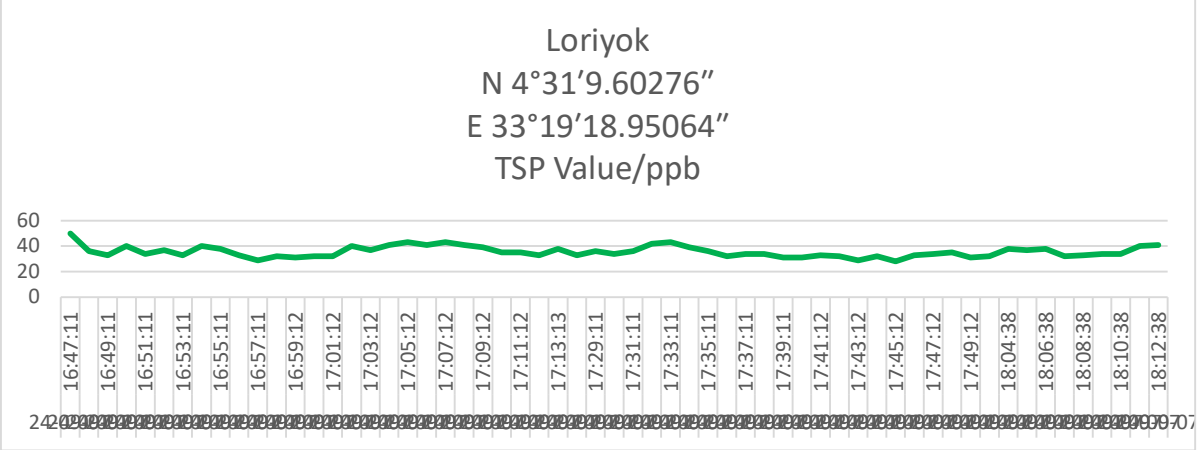


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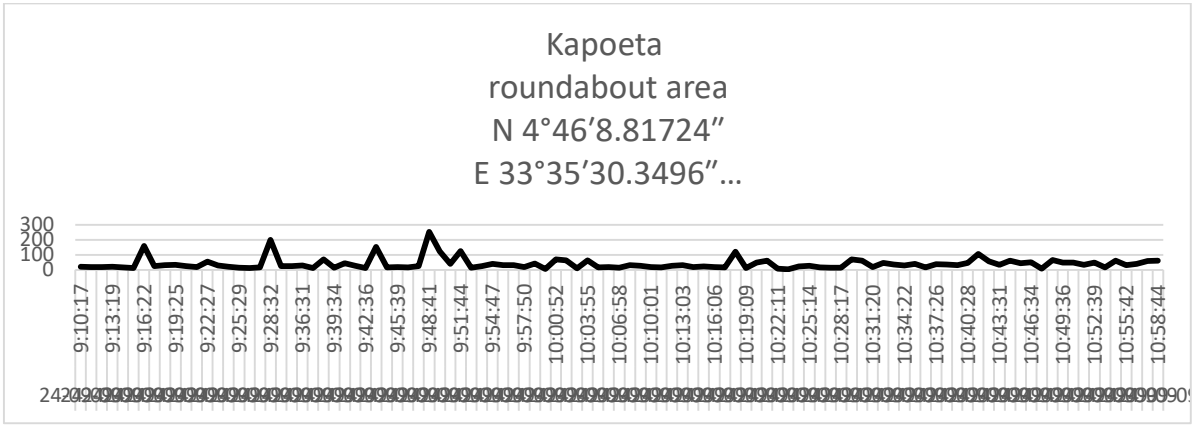


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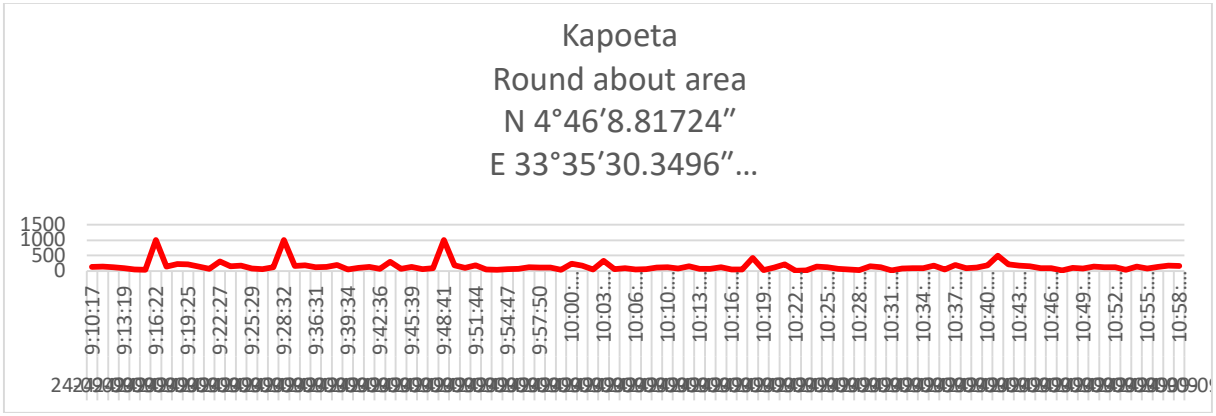


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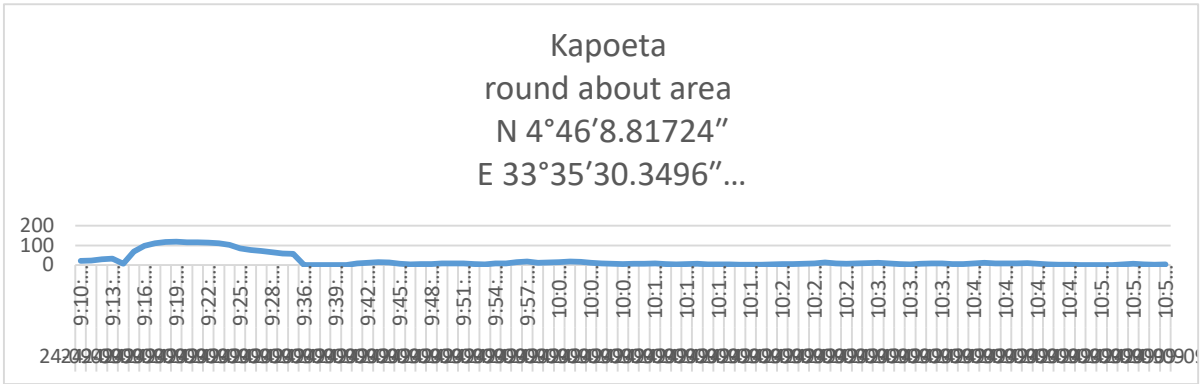


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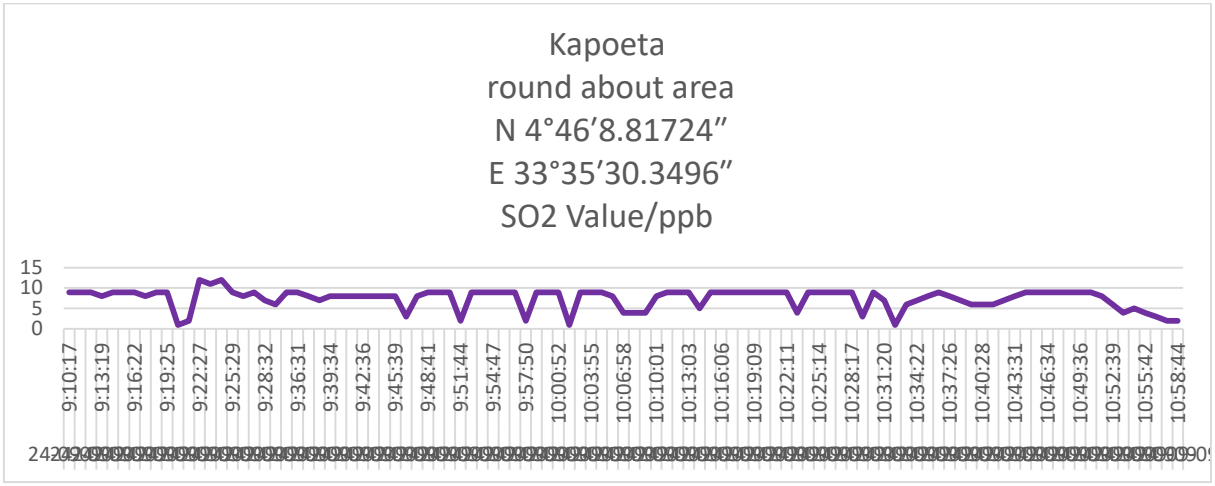


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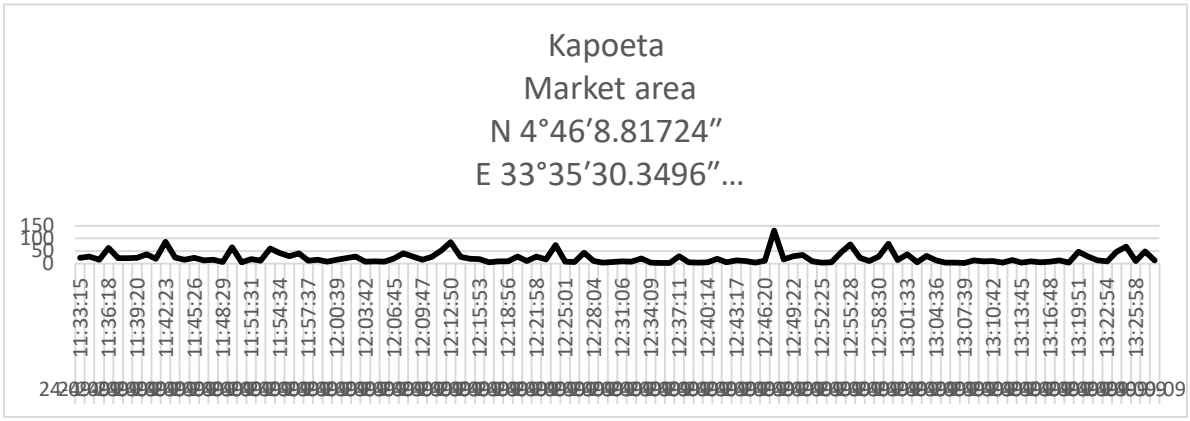


Figure 57 PM2.5 MP12

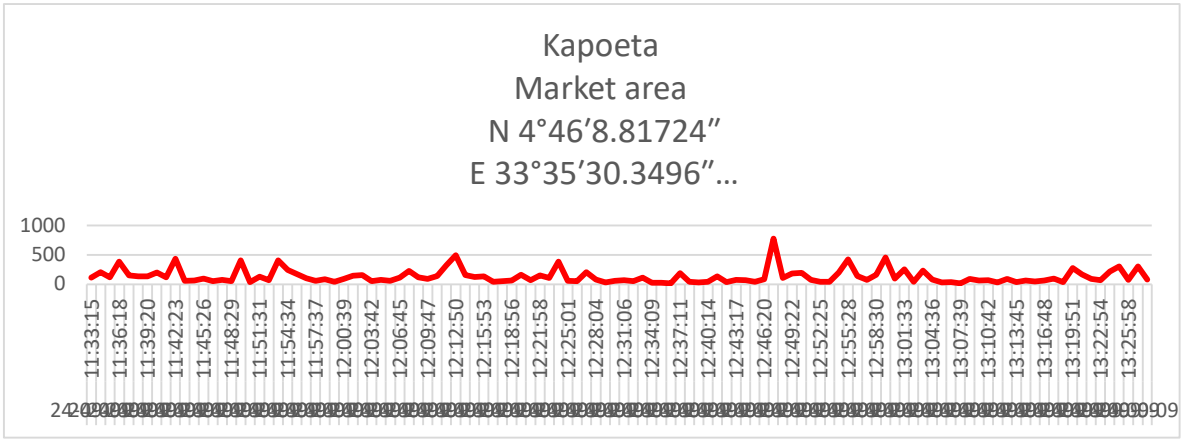


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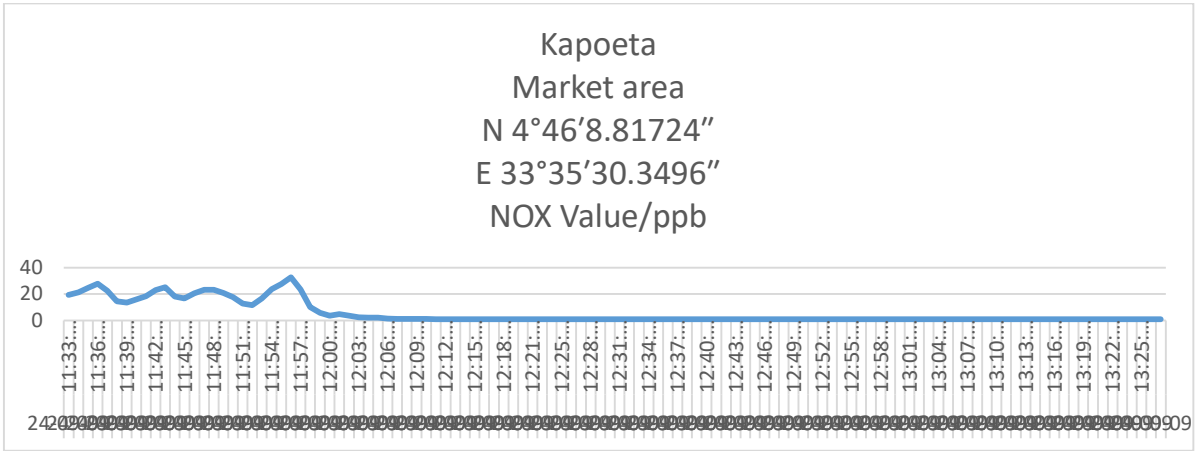


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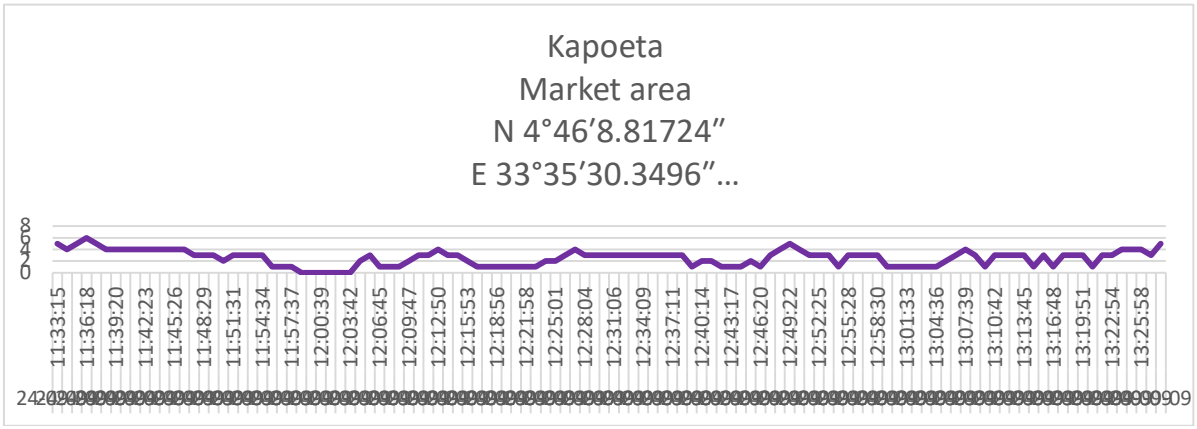


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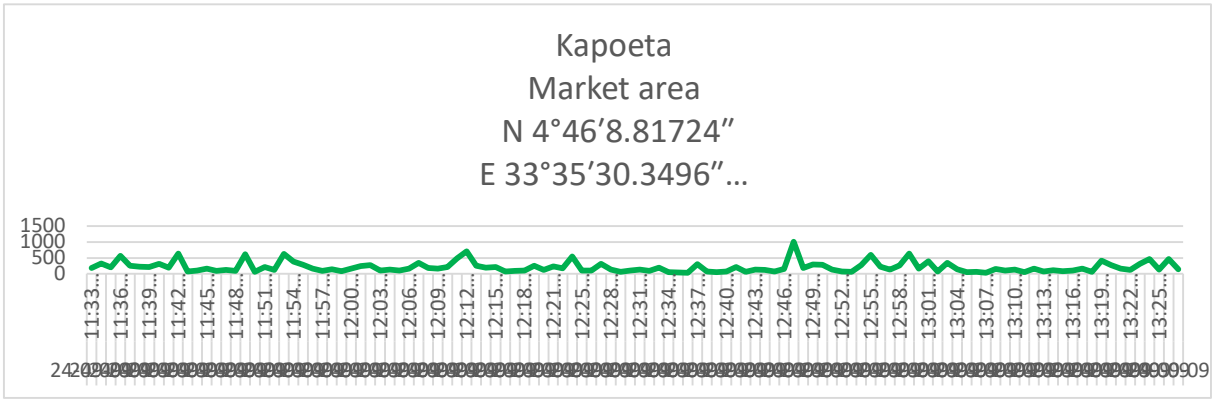


Figure 61 TSP MP12

PM 2.5

PM 10

NOx

SO2

TSP

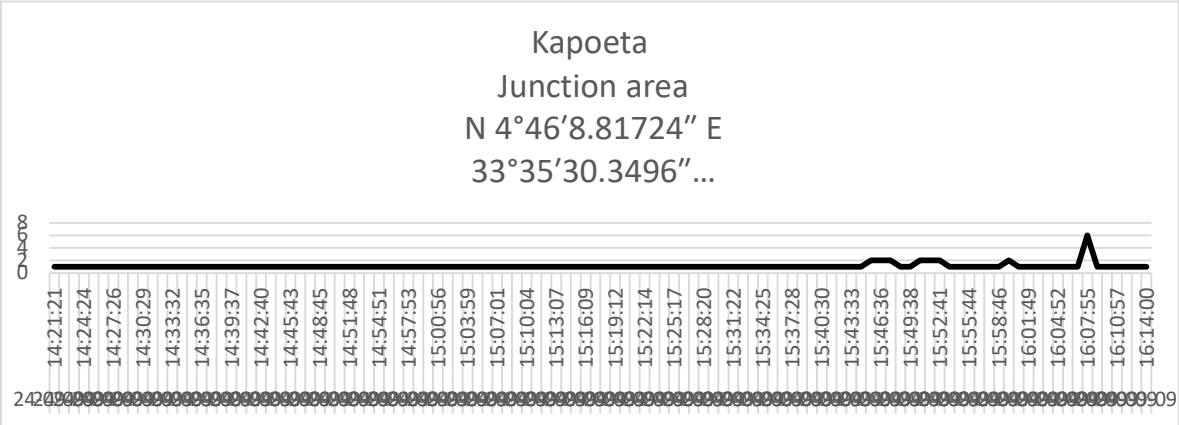


Figure 62 PM 2.5 MP13

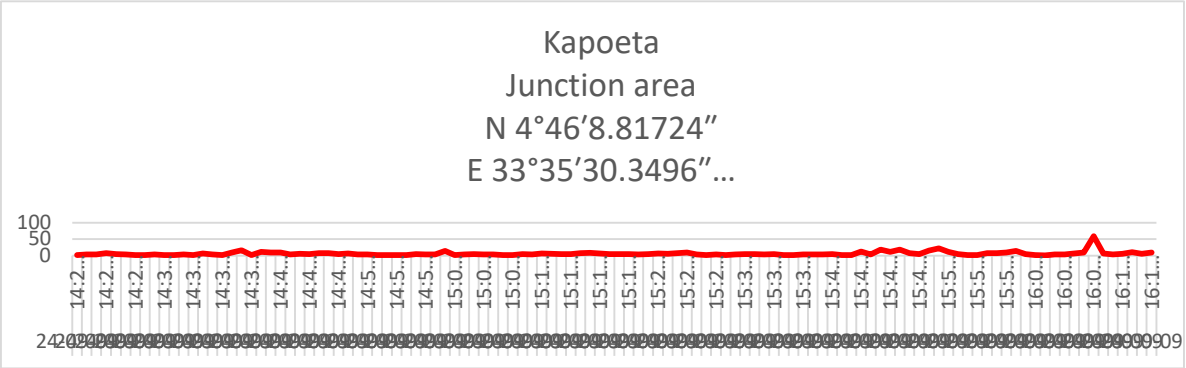


Figure 63 PM 10 MP13

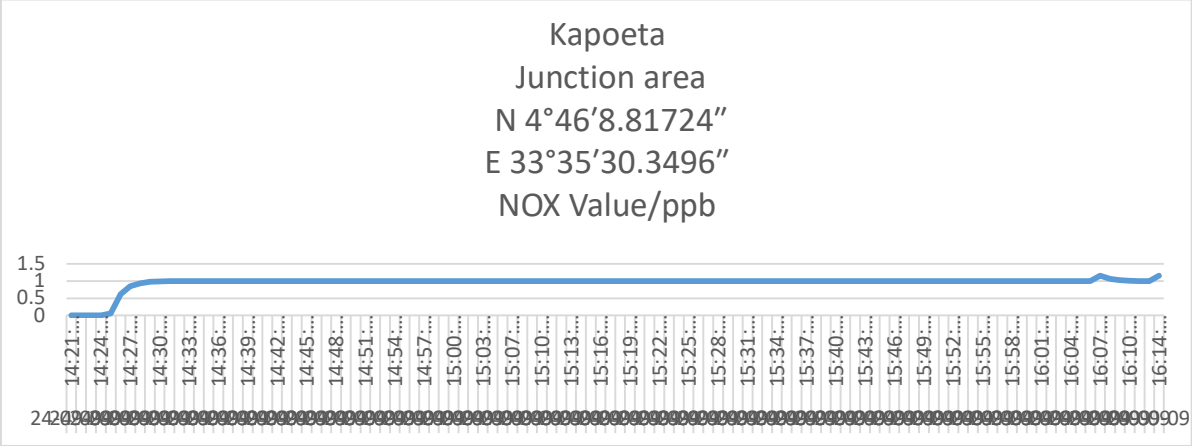


Figure 64 NOx MP13

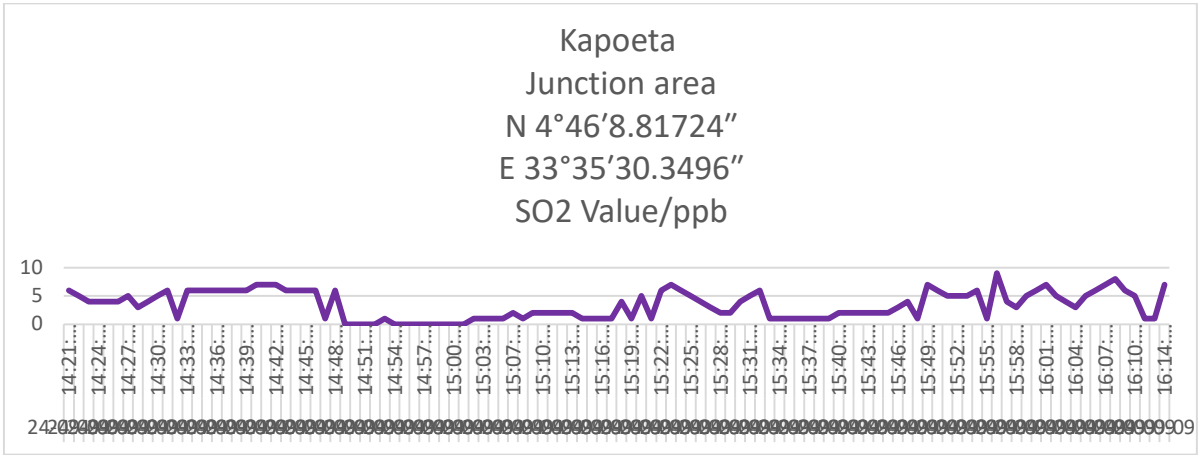


Figure 65 SO2 MP13

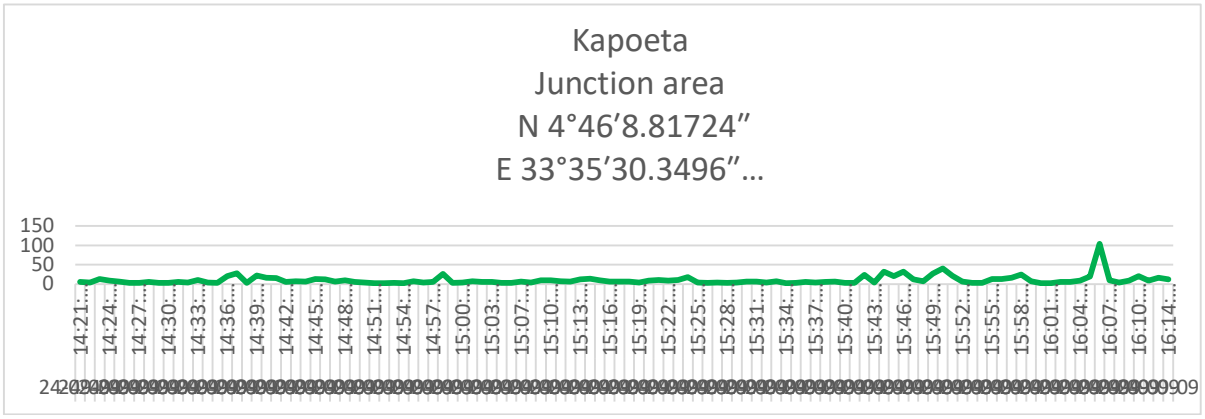


Figure 66 TSP MP13



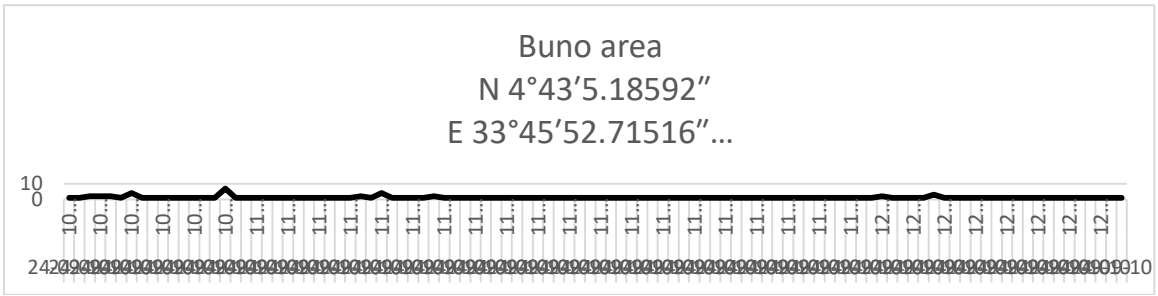


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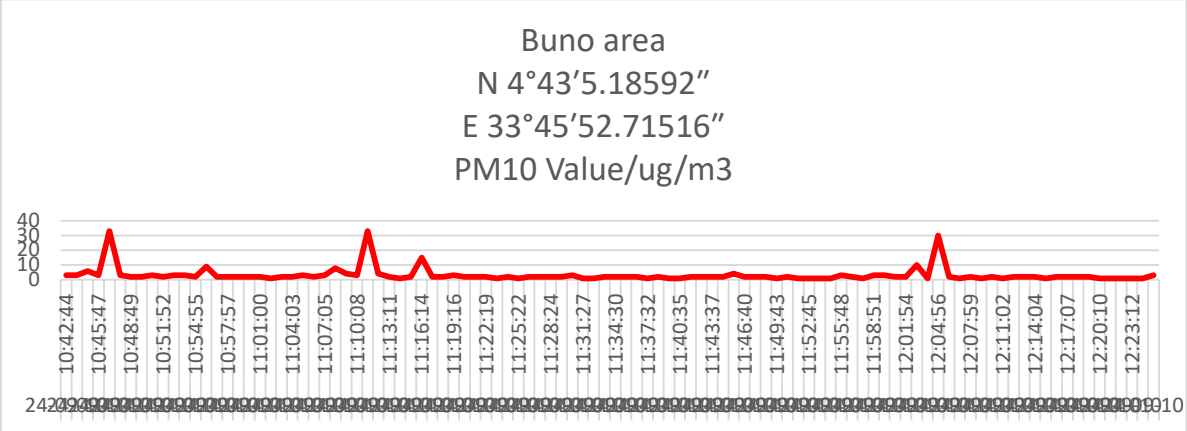


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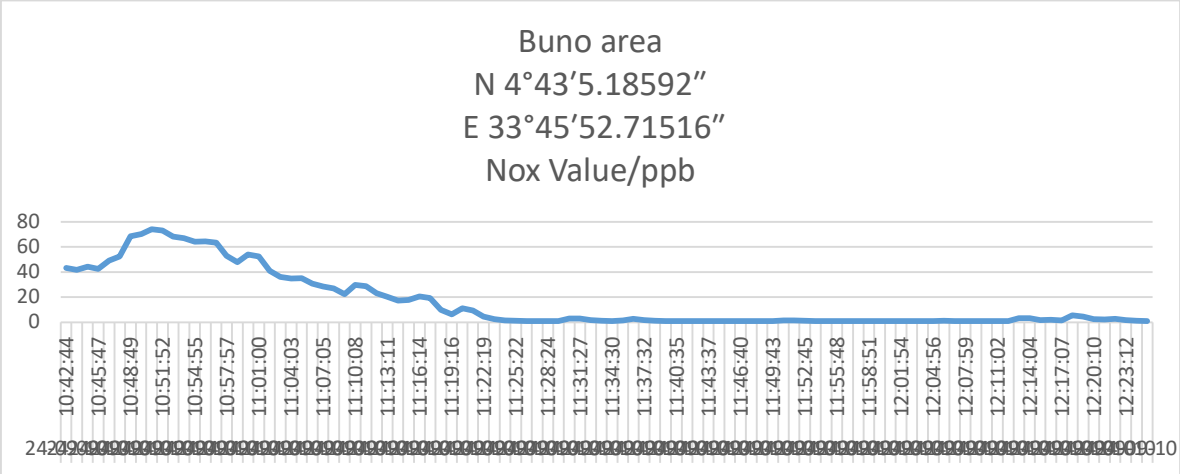


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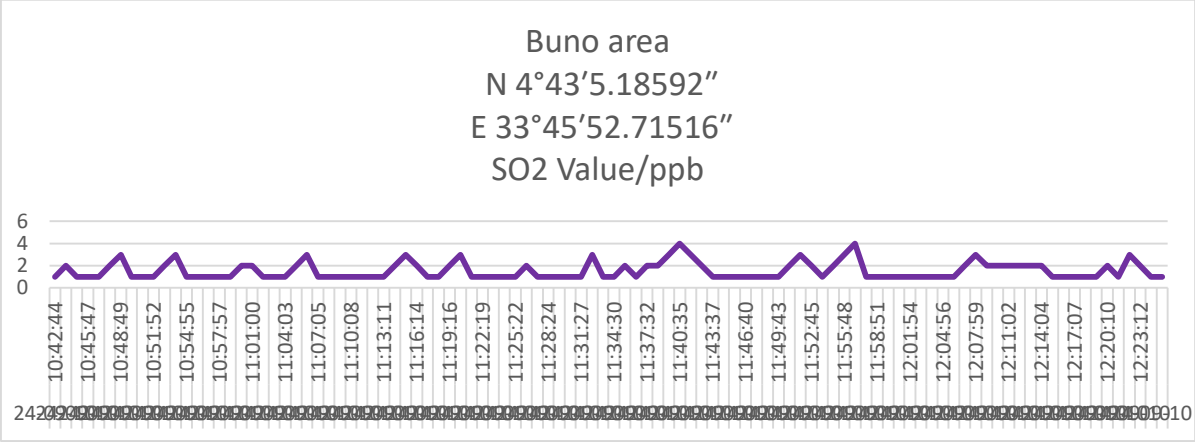


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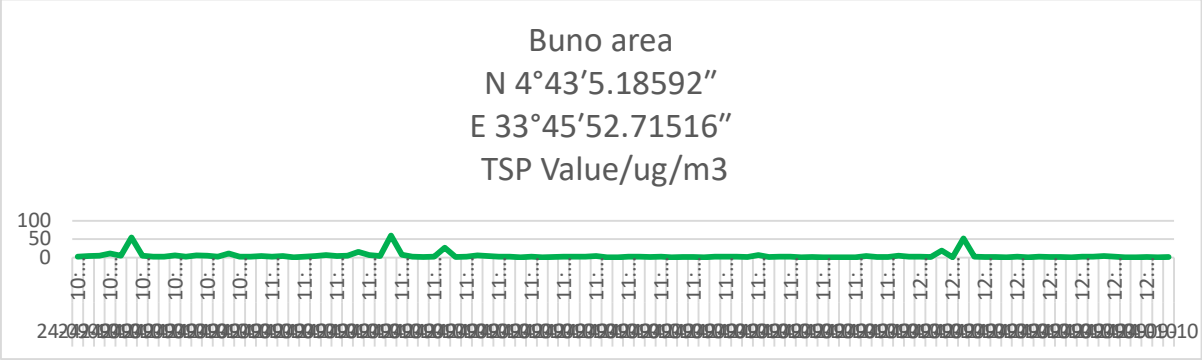


Figure 71 TSP MP14



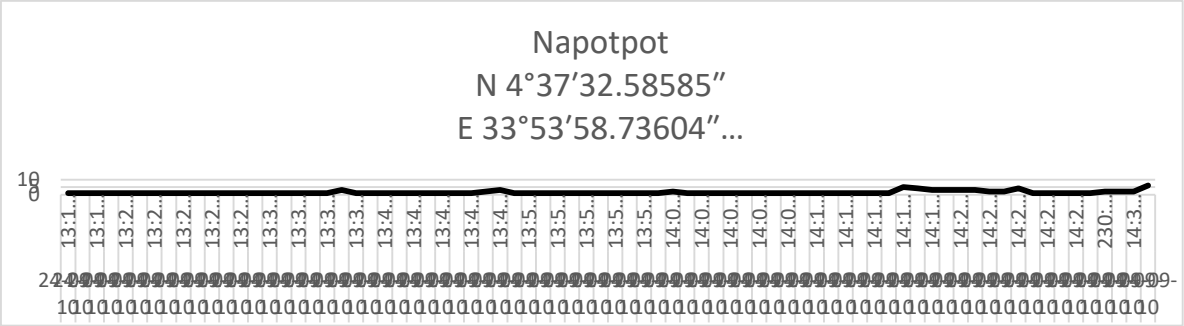


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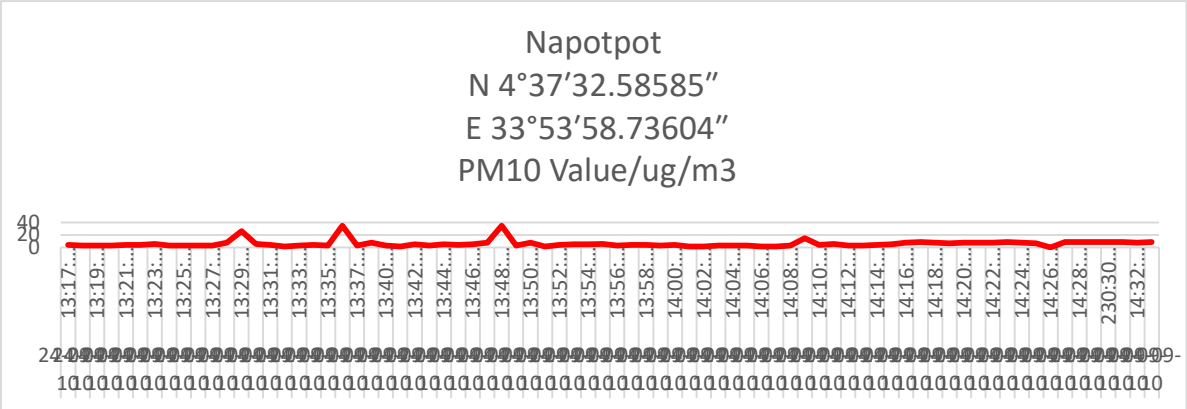


Figure 73 PM 10 MP15

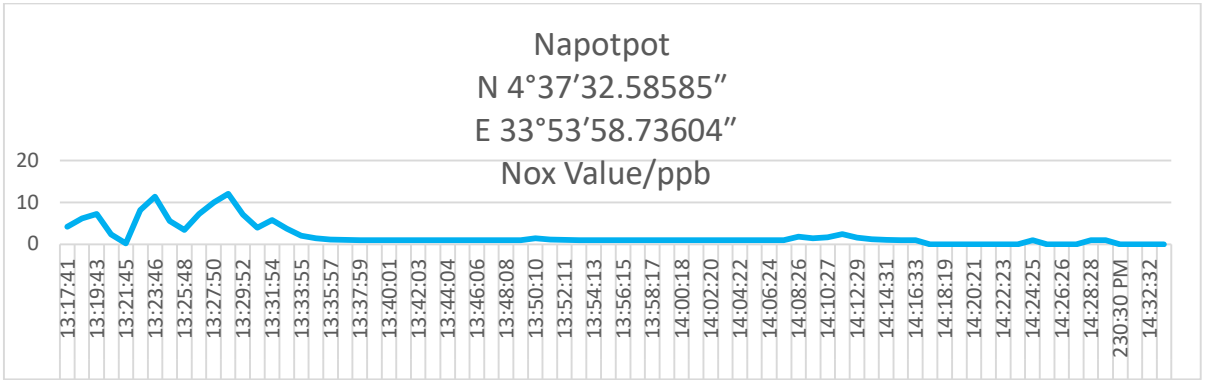


Figure 74 NOx MP15

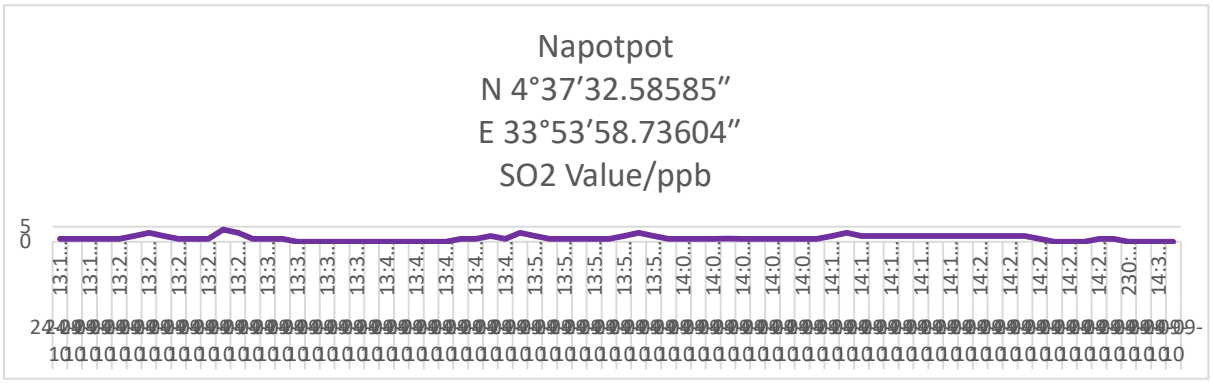


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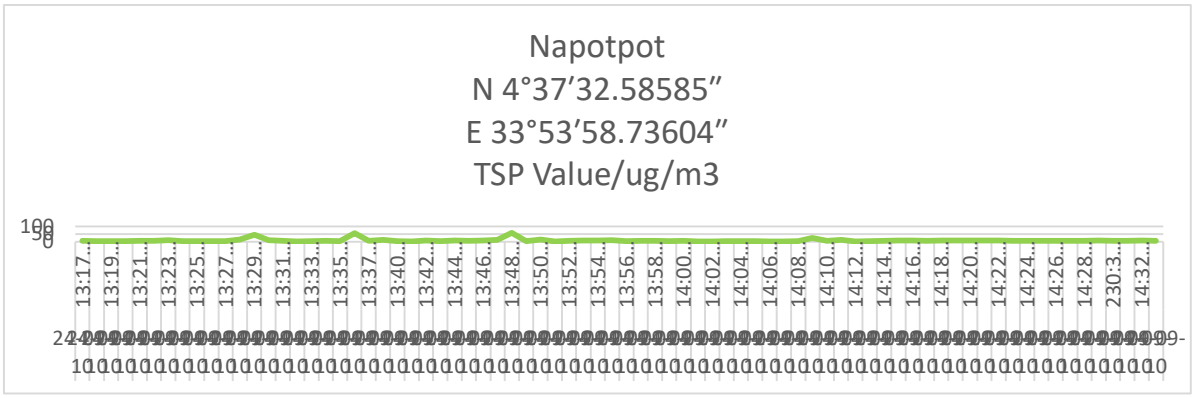


Figure 76 TSP MP15



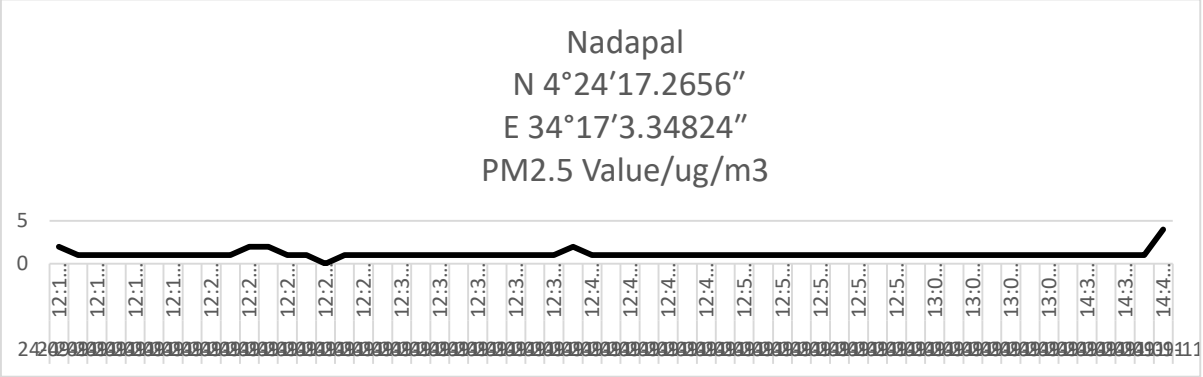


Figure 77 PM 2.5 MP16

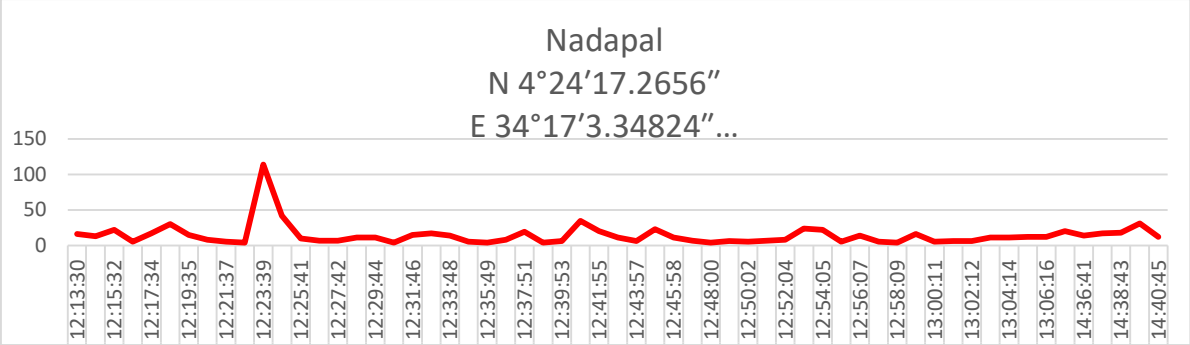


Figure 78 PM 10 MP16

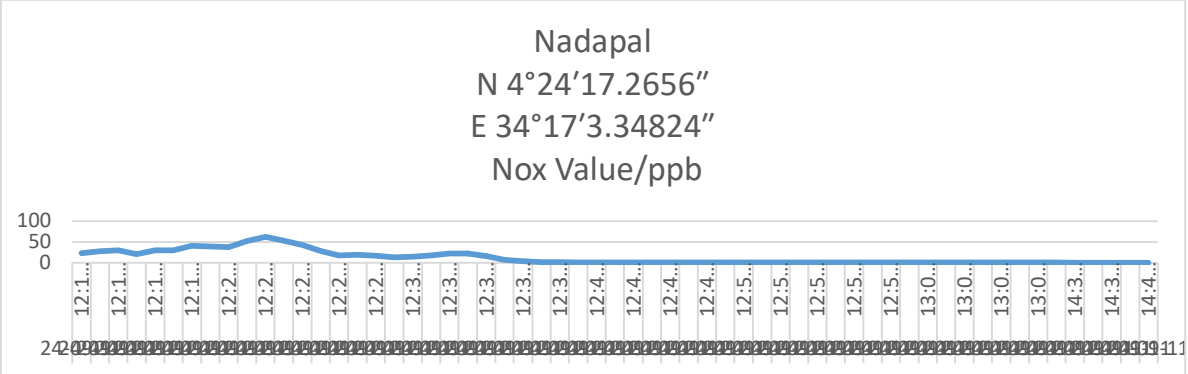


Figure 79 NOX MP16

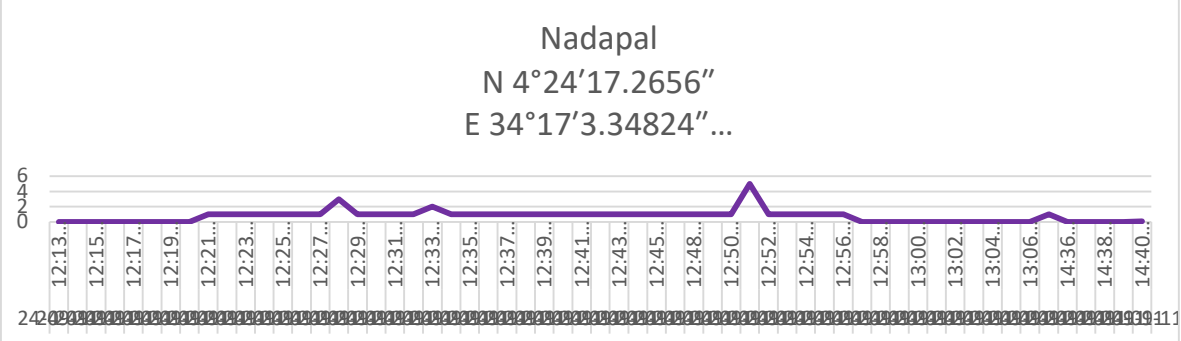


Figure 80 SO2 MP16

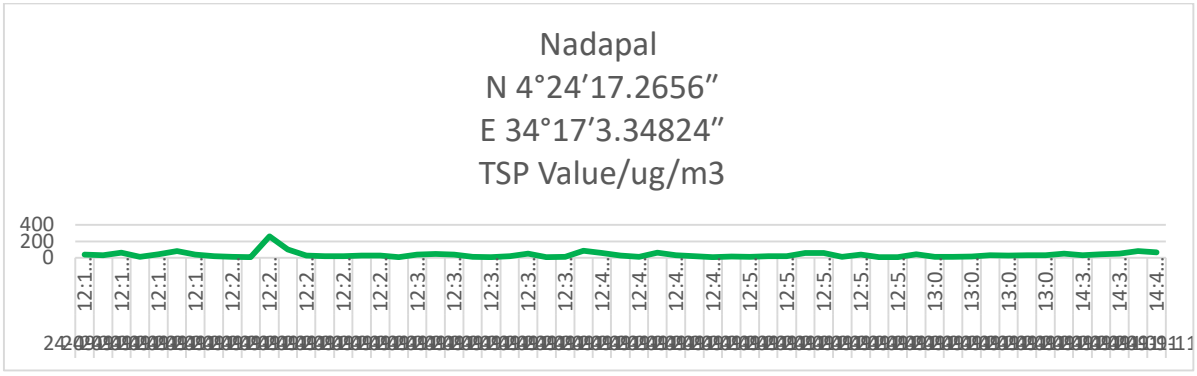
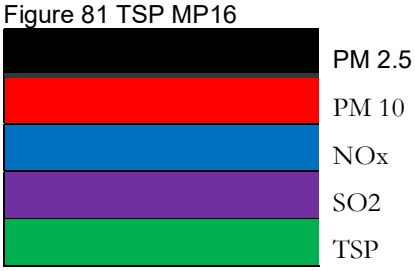
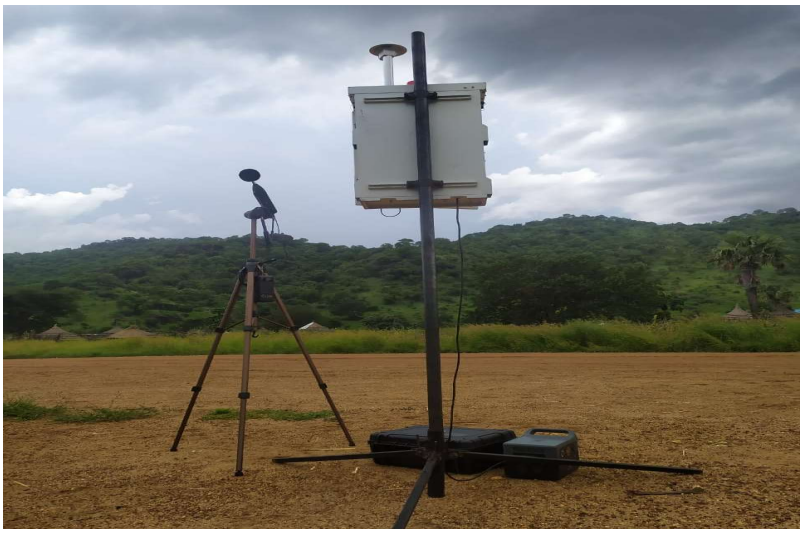


Figure 81 TSP MP16



APPENDIX II: PHOTO PLATES

	Mp1 Juba area (Blind Mountain area)
	Mp2 Illiangari
	Mp3 Liria

©Airsense EL Ltd

	Mp4 Torit
	Mp5 Abalwa
	Mp6 Tirangore

	Mp7 Hiyala
	Mp8 Illeu
	Mp9 Lobira

	Mp10 Loriyok
	MP11 Kapoeta roundabout area
	MP12 Kapoeta Market area

	Kapoeta Junction area
	Mp14 Buno
	Mp15 Napotpot

	Mp16 Nadapal

APPENDIX IV: EQUIPMENT CALIBRATION CERTIFICATE

Calibrate report

Product	Air Quality Monitor System	**Model**	AQM-09
Quantity	**1pcs**	**Cali date**	February,10, 2024
Product No.	OC210200296600		
Appearance	☑Clean ☑Non corrosive ☑No damage		
Gas type	NO2:ppb SO_2:ppb CO:ppm O3:ppb PM2.5:ug/m³ PM10:ug/m³ TSP:ug/m³ Wind veloci: m/s Wind direct:° Atmospheric : hpa Temperature and humidity: ℃/%RH		
Accuracy	±3%F.S		
resolution	0.1ppm 1ppb 1ug/m³		
Response time	≤30S		
Survey range	SO_2:0-2000ppb CO:0-200ppm NO2: 0-2000ppb O3:0-2000ppb PM2.5:0-1000ug/m³ PM10:0-1000ug/m³ PM1 : 0-1000ug/m³ TSP : 0-1000ug/m³ Windveloci:0-30m/s Winddirect:0-360° Atmospheric :600-1100 hpa Temperature: -20-50℃ Humidity:0%-100%RH		
Signal output mode	4G LTE		
Power supply voltage	AC 220V/50Hz		
Power dissipation	≤ 30W		
Working temperature and humidity range	-20℃-50℃ / 0%RH-100%RH		
Testing condition indoor	Temperature: 25℃ Humidity: 60%RH		
Calibration gas	CO SO2 O3 NO2		
Cali gas test	1.CO: Cali gas concentration: 100 ppm Inspect concentration: 98.7 ppm 2.SO_2: Cali gas concentration: 1000 ppb Inspect concentration: 998 ppm 3.O3: Cali gas concentration: 1000 ppb Inspect concentration: 997 ppm 4.NO2: Cali gas concentration: 1000 ppb Inspect concentration: 998 ppm 5.PM2.5:Measured value: 45 ug/m³ TSP:Measured value: 51 ug/m³ 6.PM10:Measured value: 59 ug/m³ Wind direct:Measured value : 319 ° 7.Wind veloci:Measured value: 1.4 m/s Atmospheric :Measured value: 1002 hpa 8.Temperature: Measured value: 24.1 ℃ Humidity:Measured value: 52 %RH		
Test result	**Qualified**		
Remark			

Quality judgment:

Tester: xiu tai chen

Company: Henan Oceanus Import & Export Co., Ltd.

OQC : hong yan jin

Date:February,10, 2024

Auditor: yan hui wang

APPENDIX V: LAB DESIGNATION LETTER

NATIONAL ENVIRONMENT MANAGEMENT AUTHORITY

Mobile Lines: 0724-253 398, 0723-363 010, 0735-013 046
Telkom Wireless: 020-2101370, 020-2183718
Incident Lines: 0786-101100, 0741-101100

P.O. Box 67839, 00200
Popo Road, Nairobi, Kenya
E-mail: dgnema@nema.go.ke
Website: www.nema.go.ke

NEMA/21/2/LAB 65/AELL **18th February, 2022**

AirSense Environmental Lab Ltd
6th Floor, Room 6C, Lakeoil Plaza,
Along Lunga Lunga Road,
P.O Box 15225-00400,
NAIROBI

RE: LABORATORY DESIGNATION BY NEMA.

Pursuant to your application for designation, your laboratory was inspected and evaluated based on ISO 17025 for laboratory competence to carry out tests and samplings.

The AirSense Environmental Lab Ltd qualified and has in principle been designated to undertake **Air Quality analysis and Noise Level Measurements** subject to the attached terms and conditions.

However, pursuant to section 119 of EMCA 1999 the Gazettement will take effect once the Authority places a notice in the Kenya Gazette.

ALI MWANZEI
For: DIRECTOR GENERAL

Appendix F: Water Quality Analysis Report

Republic of South Sudan

Ministry of Roads and Bridges

TRANSPORT SECTOR DEVELOPMENT PROJECT

Environmental and Social Impact Assessment (ESIA) for the Upgrading of Juba - Torit - Kapoeta - Nadapal Road to Paved (Asphalt) Standard



APPENDIX F – BASELINE WATER QUALITY REPORT

Revision	Purpose description	Originated	Checked	Reviewed	Authorized	Date
1.0	Issued to Client	RNN	LKN	LKN	GKM	10/10/2024

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List of Abbreviations

BOD	Biological Oxygen Demand
Cl	Chloride
COD	Chemical Oxygen Demand
DO	Dissolved Oxygen
E. coli	Escherichia coli
EAS	East African Standard
ESIA	Environmental and Social Impact Assessment
F	Fluoride
KENAS	Kenya Accreditation Service
NEMA	National Environment Management Authority
NO_3	Nitrates
pH	Potential of Hydrogen (measure of acidity or alkalinity)
PO_4^{3-}	Orthophosphates
TDS	Total Dissolved Solids
TSS	Total Suspended Solids
WHO	World Health Organization

1. Introduction

This report presents the findings of the water quality assessment conducted along the Juba-Torit-Kapoeta-Nadapal Road corridor. The road traverses' various rivers and wetlands, which are critical sources of water for domestic, agricultural, and ecological purposes. As part of the Environmental and Social Impact Assessment (ESIA), water samples were collected from multiple key locations to assess baseline water quality and identify potential impacts of road development on these water bodies. The laboratory analysis was performed by **Spectralab Analytical Services Ltd** in Kenya, following international standards such as **World Health Organization (WHO)** and **East African Standard** (portable Water – Specification) **EAS 12**. The lab has been accredited Kenya Accreditation Service KENAS as s Testing Laboratory and has been designated by National Environment Management Authority NEMA to undertake laboratory tests and analysis. Copies of accreditation and designation are attached in the report **Appendix B.**

The report aims to provide baseline water quality data for the project area and inform potential mitigation measures for safeguarding water quality during road construction and operation.

2. Methodology

2.1.1. Sampling Locations

Water samples were collected from key rivers, streams, borrow pits and boreholes along the road corridor, including: Huwaru Stream; Lofiri Primary School Borehole; River Idolo; River Hoss; River Khorjip; River Kineti; Kineti River Swamp; River Imoli (Kudo); Permanent BP (Borrow Pit) at Lofiri; and River Kidepo.

These locations were selected based on their proximity to critical points of the project, including river crossings, community water sources, and wetlands. This selection ensured comprehensive coverage of water bodies potentially impacted by road construction activities.

2.1.2. Sampling Procedure

Water samples were collected using sterilized containers to prevent contamination. The samples were taken from flowing water at mid-stream to ensure that they represented the general water quality. The samples were immediately stored in cool, dark conditions and transported to the laboratort for laboratory analysis.

2.1.3. Laboratory Analysis

The water samples were analysed for a range of parameters, including physical, chemical, and microbiological indicators. The following tests were conducted:

- Physical Parameters: Total Suspended Solids (TSS), pH, Turbidity, Conductivity
- Chemical Parameters: Chloride (Cl), Fluoride (F), Nitrogen as Nitrates (NO_3), Orthophosphates (PO_4^{3-}), Total Dissolved Solids (TDS)
- Oxygen Demand: Dissolved Oxygen (DO), Chemical Oxygen Demand (COD), Biological Oxygen Demand (BOD)
- Microbial Contaminants: Escherichia coli (E. coli)

Each parameter was compared to the **WHO** and **EAS 12** standards for potable and natural water to assess compliance.

3. Results and Discussion

The results of the water quality analysis are summarized below, with detailed laboratory results presented in **Appendix A**.

3.1. Physical Parameters

- Total Suspended Solids (TSS): TSS levels varied significantly between samples, with the highest levels observed in Swampy Area at Kineti (45 mg/L) and River Hoss (19 mg/L). These values exceed the acceptable limits, indicating potential sedimentation or runoff issues.
- pH: Most locations had pH levels within the WHO and EAS standard range of 5.5 to 8.5. Notable exceptions include River Idolo (pH 4.79), which is below the lower limit, indicating acidic conditions that may affect aquatic life and water usability.
- Turbidity: Several sites, such as Swampy Area at Kineti (103 NTU) and River Hoss (79.2 NTU), recorded turbidity levels significantly above the WHO standard (5 NTU), suggesting high levels of suspended particles that may impair water quality and pose health risks if untreated.

3.2. Chemical Parameters

- Chloride (Cl): Chloride concentrations were well within the acceptable range (250mg/L), with the highest value recorded at River Imoli (5.21 mg/L). This suggests minimal chloride contamination across the sampling points.
- Fluoride (F): Fluoride levels were also compliant with the WHO limit of 1.5mg/L, with the highest value observed in Kineti River Swamp (0.56 mg/L). These values indicate that fluoride concentrations are not of concern.
- Nitrogen as Nitrates (NO_3): Nitrate concentrations were consistently low across all samples, with the highest reading of 1.90 mg/L at Swampy Area at Kineti, well below the limit of 45mg/L. This indicates limited agricultural or wastewater influence on the water sources.
- Orthophosphates (PO_4^{3-}): Orthophosphate levels were within acceptable limits (2.2mg/L), with Swampy Area at Kineti recording the highest level (0.55 mg/L). These levels suggest minimal nutrient pollution, though monitoring may be required to detect potential future impacts from agricultural runoff.

3.3. Oxygen Demand

- Dissolved Oxygen (DO): Most samples recorded adequate DO levels, with values ranging from 6.71 mg/L at Swampy Area at Kineti to 9.00 mg/L at Huwaru Stream. Adequate DO levels indicate healthy water bodies capable of supporting aquatic life.
- Chemical Oxygen Demand (COD) & Biological Oxygen Demand (BOD): COD and BOD levels were generally low or absent in most samples, indicating minimal organic pollution in the water sources.

3.4. Microbial Contamination

Escherichia coli (E. coli): All sampled points tested negative for E. coli, suggesting the absence of microbial contamination in the analysed water sources. This is a positive indication for the suitability of the water for human consumption and other uses.

4. Interpretation of Results

The analysis of water samples indicates mixed water quality across the sampling locations:

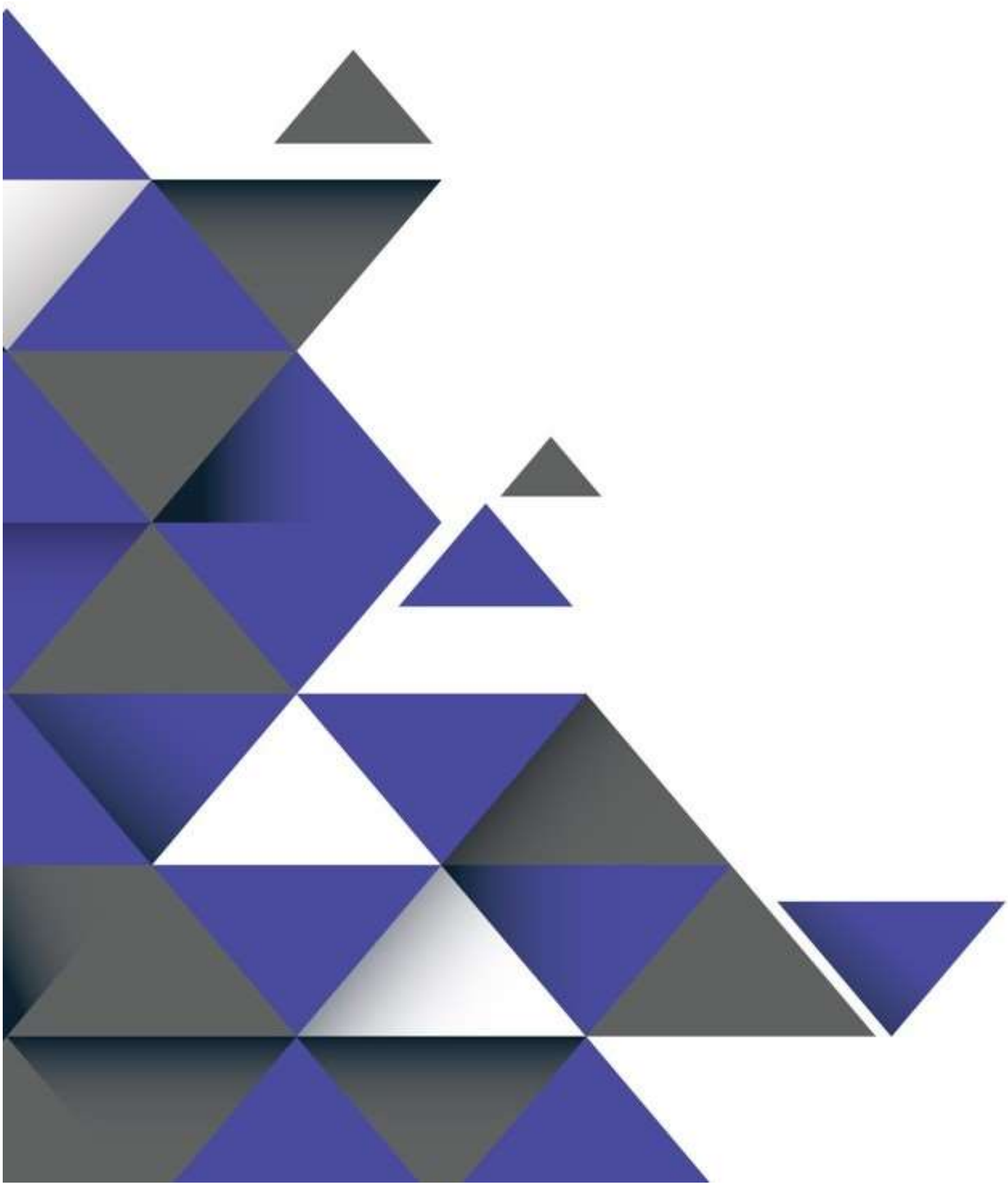
- Turbidity and TSS levels were found to be elevated at several points, especially in wetland areas such as Kineti River Swamp. These high levels could be indicative of erosion or runoff, which may increase during road construction.
- pH variability, particularly the low pH at River Idolo, suggests localized acidic conditions that may impact aquatic ecosystems.
- Chemical and microbial contamination were found to be minimal, with no significant concerns regarding chloride, fluoride, nitrate, or microbial contaminants such as E. coli.

While many of the analysed parameters meet the required standards, issues such as high turbidity, TSS, and localized pH deviations highlight areas where mitigation measures may be necessary, particularly during the construction phase.

5. Conclusion

The water quality assessment reveals that while the water sources are generally suitable for use, there are areas of concern related to physical water quality, particularly turbidity and suspended solids. The acidity observed in River Idolo also warrants further investigation. The data presented in this report will guide monitoring project impact/risks to the water resources/ sources.

Appendices



Appendix A: Laboratory Analysis Report

Spectralab

Research Testing Training

SSF No.: 9831

CERTIFICATE OF ANALYSIS

CoA No:SAS/CA/PWG-243660

Client: **Howard Humpreys East Africa Limited**	
Contact Person: **Robert Ngunjiri**	
Date Sampling: N/A	
Date Received: September 16, 2024	
Client's Code: SC-2579	

Sample Name	**Potable Water**
Customer's Sample ID.	**Huwaru Stream Water Sample Seasonal**
Laboratory ID.	SAS-PWG-243660
Date of Initial Testing	September 16, 2024
Date Reported:	September 25, 2024

Test Parameter	Test Method	Results	Units	Limit Based (EAS 12)	WHO Standard
Total Suspended Solids (TSS)	SAS-TM-CHEM-26	29.00	mg/L	ND	N/A
pH @25°C	SAS-TM-CHEM-02	6.70	pH units	5.5-8.5	6.50-8.50
Turbidity	SAS-TM-CHEM-24	146.50	NTU	Max 25	Max 5
Conductivity (EC)	SAS-TM-CHEM-03	84.90	µS/cm	Max 2500	N/A
Chloride (Cl^-)	SAS-TM-CHEM-27	5.21	mg/L	Max 250	Max 250
Fluoride (F^-)	SAS-TM-CHEM-11	0.05	mg/L	Max 1.5	Max 1.5
Nitrogen as Nitrates (NO_3^-)	SAS-TM-CHEM-14	0.59	mg/L	Max 45	Max 30
Ortho-phosphates (PO_4^{3-})	SAS-TM-CHEM-04	0.69	mg/L	Max 2.2	N/A
Total Dissolved Solids (TDS)	SAS-TM-CHEM-03	42.50	mg/L	Max 1500	Max 1500
Dissolved Oxygen (DO)	SAS-TM-CHEM-22	9.00	mg/L	N/A	N/A
Chemical Oxygen Demand	SAS-TM-CHEM-19	Nil	mg/L	N/A	N/A
Biological Oxygen Demand	SAS-TM-CHEM-53	Nil	mg/L	N/A	N/A
Escherichia coli (E.coli)	SAS-TM-MIC-03	Absemt	cfu/100mL	Absent	Absent

Remarks:

**mg/L - milligrams per liter, µg/L - micrograms per Liter **WHO - World Health Organisation

**ND - Not Detected, N/A- Not Applicable ***CFU-Colony Forming Units **EAS 12- Standard for Natural/Potable Water

SPECTRALAB ANALYTICAL SERVICES LIMITED
Tel: 0206 551 177, 0202 408 111
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Email: lab@spectralab.co.ke

25.09.2024

C.Nzioki (Analyst)

25.09.2024

P. Muthoni (Technical Manager)

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****End of report****

SPECTRALAB ANALYTICAL SERVICES LTD

OPINION & INTERPRETATION BASED ON EAS 12 AND WHO STANDARDS

Disclaimer: The interpretation, opinion and/or recommendation of analytical results presumes specific sampling, sample handling, extraction and analytical procedures for the parameters requested. Results given relates to the sample presented and analysed by Spectralab Analytical. Spectralab Analytical and its employees or agents will not be liable for any loss or damage arising from application or interpretation of the data supplied. *This IO statement is not part of the laboratory report*

CoA No: 243660	SSF NO: 9831	Date Of Report: 25/09/2024
Client: Howard Humpreys East Africa Limited		
Sample ID: Huwaru Stream Water Sample Seasonal		

Test Parameter	Result	Units	Limits Based on (EAS 12 Standard)	WHO Standard	Remarks (Based on EAS 12)
Total Suspended Solids (TSS)	29.00	mg/L	ND	N/A	Does Not Comply
pH @25°C	6.70	pH units	5.5-8.5	6.50-8.50	Complies
Turbidity	146.50	NTU	Max 25	Max 5	Does Not Comply
Conductivity (EC)	84.90	µS/cm	Max 2500	N/A	Complies
Chloride (Cl^-)	5.21	mg/L	Max 250	Max 250	Complies
Fluoride (F^-)	0.05	mg/L	Max 1.5	Max 1.5	Complies
Nitrogen as Nitrates (NO_3^-)	0.59	mg/L	Max 45	Max 30	Complies
Orthophosphates (PO_4^{3-})	0.69	mg/L	Max 2.2	N/A	Complies
Total Dissolved Solids (TDS)	42.50	mg/L	Max 1500	Max 1500	Complies
Dissolved Oxygen (DO)	9.00	mg/L	N/A	N/A	N/A
Chemical Oxygen Demand	Nil	mg/L	N/A	N/A	N/A
Biological Oxygen Demand	Nil	mg/L	N/A	N/A	N/A
Escherichia coli (E.coli)	Absent	cfu/100mL	Absent	Absent	Complies

Observations

***Some of the parameters tested did not meet the requirements of EAS 12 Standard for Natural/Potable Water.

Opinion and/or Interpretation

***Based on the sample submitted to the laboratory and the parameters tested for,this water requires treatment.

Technical Manager

Spectralab

Research Testing Training

SSF No.: 9831

CERTIFICATE OF ANALYSIS

CoA No:SAS/CA/PWG-243661

Client: **Howard Humpreys East Africa Limited**	
Contact Person: **Robert Ngunjiri**	
Date Sampling: N/A	
Date Received: September 16, 2024	
Client's Code: SC-2579	

Sample Name	**Potable Water**
Customer's Sample ID.	**Water Sample-Lofiri Primary School Borehole**
Laboratory ID.	SAS-PWG-243661
Date of Initial Testing	September 16, 2024
Date Reported:	September 25, 2024

Test Parameter	Test Method	Results	Units	Limit Based (EAS 12)	WHO Standard
Total Suspended Solids (TSS)	SAS-TM-CHEM-26	17.00	mg/L	ND	N/A
pH @25°C	SAS-TM-CHEM-02	6.87	pH units	5.5-8.5	6.50-8.50
Turbidity	SAS-TM-CHEM-24	96.30	NTU	Max 25	Max 5
Conductivity (EC)	SAS-TM-CHEM-03	612.00	µS/cm	Max 2500	N/A
Chloride (Cl^-)	SAS-TM-CHEM-27	9.38	mg/L	Max 250	Max 250
Fluoride (F^-)	SAS-TM-CHEM-11	0.26	mg/L	Max 1.5	Max 1.5
Nitrogen as Nitrates (NO_3)	SAS-TM-CHEM-14	<0.02	mg/L	Max 45	Max 30
Ortho-phosphates (PO_4^{3-})	SAS-TM-CHEM-04	0.11	mg/L	Max 2.2	N/A
Total Dissolved Solids (TDS)	SAS-TM-CHEM-03	306.00	mg/L	Max 1500	Max 1500
Dissolved Oxygen (DO)	SAS-TM-CHEM-22	8.62	mg/L	N/A	N/A
Chemical Oxygen Demand	SAS-TM-CHEM-19	Nil	mg/L	N/A	N/A
Biological Oxygen Demand	SAS-TM-CHEM-53	Nil	mg/L	N/A	N/A
Escherichia coli (E.coli)	SAS-TM-MIC-03	Absent	cfu/100mL	Absent	Absent

Remarks:

**mg/L - milligrams per liter, µg/L - micrograms per Liter **WHO- World Health Organisation
**ND - Not Detected, N/A- Not Applicable ***CFU- Colony Forming Units **EAS 12- Standard for Natural/Potable Water

SPECTRALAB ANALYTICAL SERVICES LIMITED
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25.09.2024

C.Nzioki (Analyst)

25.09.2024

P. Muthoni (Technical Manager)

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The results provided relates ONLY to the sample submitted to the laboratory on the date referenced above.

****End of report****

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CoA No: 243661	SSF NO: 9831	Date Of Report: 25/09/2024
Client: Howard Humpreys East Africa Limited		
Sample ID: Water Sample-Lofiri Primary School Borehole		

Test Parameter	Result	Units	Limits Based on (EAS 12 Standard)	WHO Standard	Remarks (Based on EAS 12)
Total Suspended Solids (TSS)	17.00	mg/L	ND	N/A	Does Not Comply
pH @25°C	6.87	pH units	5.5-8.5	6.50-8.50	Complies
Turbidity	96.30	NTU	Max 25	Max 5	Does Not Comply
Conductivity (EC)	612.00	µS/cm	Max 2500	N/A	Complies
Chloride (Cl^-)	9.38	mg/L	Max 250	Max 250	Complies
Fluoride (F^-)	0.26	mg/L	Max 1.5	Max 1.5	Complies
Nitrogen as Nitrates (NO_3^-)	<0.02	mg/L	Max 45	Max 30	Complies
Orthophosphates (PO_4^{3-})	0.11	mg/L	Max 2.2	N/A	Complies
Total Dissolved Solids (TDS)	306.00	mg/L	Max 1500	Max 1500	Complies
Dissolved Oxygen (DO)	8.62	mg/L	N/A	N/A	N/A
Chemical Oxygen Demand	Nil	mg/L	N/A	N/A	N/A
Biological Oxygen Demand	Nil	mg/L	N/A	N/A	N/A
Escherichia coli (E.coli)	Absent	cfu/100mL	Absent	Absent	Complies

Observations

***Some of the parameters tested did not meet the requirements of EAS 12 Standard for Natural/Potable Water.

Opinion and/or Interpretation

***Based on the sample submitted to the laboratory and the parameters tested for,this water requires treatment.

Technical Manager

Spectralab

Research Testing Training

SSF No.: 9831

CERTIFICATE OF ANALYSIS

CoA No:SAS/CA/PWG-243662

Client: **Howard Humpreys East Africa Limited**	
Contact Person: **Robert Ngunjiri**	
Date Sampling: N/A	
Date Received: September 16, 2024	
Client's Code: SC-2579	

Sample Name	**Potable Water**
Customer's Sample ID.	**River Idolo Water Sample Seasonal River**
Laboratory ID.	SAS-PWG-243662
Date of Initial Testing	September 16, 2024
Date Reported:	September 25, 2024

Test Parameter	Test Method	Results	Units	Limit Based (EAS 12)	WHO Standard
Total Suspended Solids (TSS)	SAS-TM-CHEM-26	11.00	mg/L	ND	N/A
pH @25°C	SAS-TM-CHEM-02	4.79	pH units	5.5-8.5	6.50-8.50
Turbidity	SAS-TM-CHEM-24	31.85	NTU	Max 25	Max 5
Conductivity (EC)	SAS-TM-CHEM-03	114.70	µS/cm	Max 2500	N/A
Chloride (Cl^-)	SAS-TM-CHEM-27	3.13	mg/L	Max 250	Max 250
Fluoride (F^-)	SAS-TM-CHEM-11	0.03	mg/L	Max 1.5	Max 1.5
Nitrogen as Nitrates (NO_3^-)	SAS-TM-CHEM-14	0.71	mg/L	Max 45	Max 30
Ortho-phosphates (PO_4^{3-})	SAS-TM-CHEM-04	0.22	mg/L	Max 2.2	N/A
Total Dissolved Solids (TDS)	SAS-TM-CHEM-03	57.30	mg/L	Max 1500	Max 1500
Dissolved Oxygen (DO)	SAS-TM-CHEM-22	6.92	mg/L	N/A	N/A
Chemical Oxygen Demand	SAS-TM-CHEM-19	26.66	mg/L	N/A	N/A
Biological Oxygen Demand	SAS-TM-CHEM-53	Nil	mg/L	N/A	N/A
Escherichia coli (E.coli)	SAS-TM-MIC-03	Absent	cfu/100mL	Absent	Absent

Remarks:

**mg/L - milligrams per liter, µg/L - micrograms per Liter **WHO - World Health Organisation
**ND - Not Detected, N/A- Not Applicable ***CFU-Colony Forming Units **EAS 12- Standard for Natural/Potable Water

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25.09.2024

C.Nzioki (Analyst)

25.09.2024

P. Muthoni (Technical Manager)

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CoA No: 243662	**SSF NO: 9831**	**Date Of Report: 25/09/2024**
Client: Howard Humpreys East Africa Limited		
Sample ID: River Idolo Water Sample Seasonal River		

Test Parameter	Result	Units	Limits Based on (EAS 12 Standard)	WHO Standard	Remarks (Based on EAS 12)
Total Suspended Solids (TSS)	11.00	mg/L	ND	N/A	Does Not Comply
pH @25°C	4.79	pH units	5.5-8.5	6.50-8.50	Does Not Comply
Turbidity	31.85	NTU	Max 25	Max 5	Does Not Comply
Conductivity (EC)	114.70	µS/cm	Max 2500	N/A	Complies
Chloride (Cl^-)	3.13	mg/L	Max 250	Max 250	Complies
Fluoride (F^-)	0.03	mg/L	Max 1.5	Max 1.5	Complies
Nitrogen as Nitrates (NO_3^-)	0.71	mg/L	Max 45	Max 30	Complies
Orthophosphates (PO_4^{3-})	0.22	mg/L	Max 2.2	N/A	Complies
Total Dissolved Solids (TDS)	57.30	mg/L	Max 1500	Max 1500	Complies
Dissolved Oxygen (DO)	6.92	mg/L	N/A	N/A	N/A
Chemical Oxygen Demand	26.66	mg/L	N/A	N/A	N/A
Biological Oxygen Demand	Nil	mg/L	N/A	N/A	N/A
Escherichia coli (E.coli)	Absent	cfu/100mL	Absent	Absent	Complies

Observations

***Some of the parameters tested did not meet the requirements of EAS 12 Standard for Natural/Potable Water.

Opinion and/or Interpretation

***Based on the sample submitted to the laboratory and the parameters tested for,this water requires treatment.

Technical Manager

Spectralab

Research Testing Training

SSF No.: 9831

CERTIFICATE OF ANALYSIS

CoA No:SAS/CA/PWG-243663

Client: **Howard Humpreys East Africa Limited**	
Contact Person: **Robert Ngunjiri**	
Date Sampling: N/A	
Date Received: September 16, 2024	
Client's Code: SC-2579	

Sample Name	**Potable Water**
Customer's Sample ID.	**River Hoss Seasonal Water Sample**
Laboratory ID.	SAS-PWG-243663
Date of Initial Testing	September 16, 2024
Date Reported:	September 25, 2024

Test Parameter	Test Method	Results	Units	Limit Based (EAS 12)	WHO Standard
Total Suspended Solids (TSS)	SAS-TM-CHEM-26	19.00	mg/L	ND	N/A
pH @25°C	SAS-TM-CHEM-02	7.12	pH units	5.5-8.5	6.50-8.50
Turbidity	SAS-TM-CHEM-24	79.20	NTU	Max 25	Max 5
Conductivity (EC)	SAS-TM-CHEM-03	126.65	µS/cm	Max 2500	N/A
Chloride (Cl^-)	SAS-TM-CHEM-27	5.21	mg/L	Max 250	Max 250
Fluoride (F^-)	SAS-TM-CHEM-11	0.09	mg/L	Max 1.5	Max 1.5
Nitrogen as Nitrates (NO_3^-)	SAS-TM-CHEM-14	<0.02	mg/L	Max 45	Max 30
Ortho-phosphates (PO_4^{3-})	SAS-TM-CHEM-04	0.29	mg/L	Max 2.2	N/A
Total Dissolved Solids (TDS)	SAS-TM-CHEM-03	61.80	mg/L	Max 1500	Max 1500
Dissolved Oxygen (DO)	SAS-TM-CHEM-22	7.87	mg/L	N/A	N/A
Chemical Oxygen Demand	SAS-TM-CHEM-19	Nil	mg/L	N/A	N/A
Biological Oxygen Demand	SAS-TM-CHEM-53	Nil	mg/L	N/A	N/A
Escherichia coli (E.coli)	SAS-TM-MIC-03	Absent	cfu/100mL	Absent	Absent

Remarks:

**mg/L - milligrams per liter, µg/L - micrograms per Liter **WHO - World Health Organisation
**ND - Not Detected, N/A- Not Applicable ***CFU-Colony Forming Units **EAS 12- Standard for Natural/Potable Water

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CoA No: 243663	SSF NO: 9831	Date Of Report: 25/09/2024
Client: Howard Humpreys East Africa Limited		
Sample ID: River Hoss Seasonal Water Sample		

Test Parameter	Result	Units	Limits Based on (EAS 12 Standard)	WHO Standard	Remarks (Based on EAS 12)
Total Suspended Solids (TSS)	19.00	mg/L	ND	N/A	Does Not Comply
pH @25°C	7.12	pH units	5.5-8.5	6.50-8.50	Complies
Turbidity	79.20	NTU	Max 25	Max 5	Does Not Comply
Conductivity (EC)	126.65	µS/cm	Max 2500	N/A	Complies
Chloride (Cl^-)	5.21	mg/L	Max 250	Max 250	Complies
Fluoride (F^-)	0.09	mg/L	Max 1.5	Max 1.5	Complies
Nitrogen as Nitrates (NO_3^-)	<0.02	mg/L	Max 45	Max 30	Complies
Orthophosphates (PO_4^{3-})	0.29	mg/L	Max 2.2	N/A	Complies
Total Dissolved Solids (TDS)	61.80	mg/L	Max 1500	Max 1500	Complies
Dissolved Oxygen (DO)	7.87	mg/L	N/A	N/A	N/A
Chemical Oxygen Demand	Nil	mg/L	N/A	N/A	N/A
Biological Oxygen Demand	Nil	mg/L	N/A	N/A	N/A
Escherichia coli (E.coli)	Absent	cfu/100mL	Absent	Absent	Complies

Observations

***Some of the parameters tested did not meet the requirements of EAS 12 Standard for Natural/Potable Water.

Opinion and/or Interpretation

***Based on the sample submitted to the laboratory and the parameters tested for,this water requires treatment.

Technical Manager

Spectralab

Research Testing Training

SSF No.: 9831

CERTIFICATE OF ANALYSIS

CoA No:SAS/CA/PWG-243664

Client: **Howard Humpreys East Africa Limited**	
Contact Person: **Robert Ngunjiri**	
Date Sampling: N/A	
Date Received: September 16, 2024	
Client's Code: SC-2579	

Sample Name	**Potable Water**
Customer's Sample ID.	**Khor-Dolep Seasonal**
Laboratory ID.	SAS-PWG-243664
Date of Initial Testing	September 16, 2024
Date Reported:	September 25, 2024

Test Parameter	Test Method	Results	Units	Limit Based (EAS 12)	WHO Standard
Total Suspended Solids (TSS)	SAS-TM-CHEM-26	17.00	mg/L	ND	N/A
pH @25°C	SAS-TM-CHEM-02	6.96	pH units	5.5-8.5	6.50-8.50
Turbidity	SAS-TM-CHEM-24	48.75	NTU	Max 25	Max 5
Conductivity (EC)	SAS-TM-CHEM-03	110.25	µS/cm	Max 2500	N/A
Chloride (Cl^-)	SAS-TM-CHEM-27	3.13	mg/L	Max 250	Max 250
Fluoride (F^-)	SAS-TM-CHEM-11	0.56	mg/L	Max 1.5	Max 1.5
Nitrogen as Nitrates (NO_3^-)	SAS-TM-CHEM-14	0.20	mg/L	Max 45	Max 30
Ortho-phosphates (PO_4^{3-})	SAS-TM-CHEM-04	0.33	mg/L	Max 2.2	N/A
Total Dissolved Solids (TDS)	SAS-TM-CHEM-03	55.20	mg/L	Max 1500	Max 1500
Dissolved Oxygen (DO)	SAS-TM-CHEM-22	8.22	mg/L	N/A	N/A
Chemical Oxygen Demand	SAS-TM-CHEM-19	Nil	mg/L	N/A	N/A
Biological Oxygen Demand	SAS-TM-CHEM-53	Nil	mg/L	N/A	N/A
Escherichia coli (E.coli)	SAS-TM-MIC-03	Absent	cfu/100mL	Absent	Absent

Remarks:

**mg/L - milligrams per liter, µg/L - micrograms per Liter **WHO - World Health Organisation

**ND - Not Detected, N/A- Not Applicable ***CFU-Colony Forming Units **EAS 12- Standard for Natural/Potable Water

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CoA No: 243664	**SSF NO: 9831**	**Date Of Report: 25/09/2024**
Client: Howard Humpreys East Africa Limited		
Sample ID: Khor-Dolep Seasonal		

Test Parameter	Result	Units	Limits Based on (EAS 12 Standard)	WHO Standard	Remarks (Based on EAS 12)
Total Suspended Solids (TSS)	17.00	mg/L	ND	N/A	Does Not Comply
pH @25°C	6.96	pH units	5.5-8.5	6.50-8.50	Complies
Turbidity	48.75	NTU	Max 25	Max 5	Does Not Comply
Conductivity (EC)	110.25	µS/cm	Max 2500	N/A	Complies
Chloride (Cl^-)	3.13	mg/L	Max 250	Max 250	Complies
Fluoride (F^-)	0.56	mg/L	Max 1.5	Max 1.5	Complies
Nitrogen as Nitrates (NO_3^-)	0.20	mg/L	Max 45	Max 30	Complies
Orthophosphates (PO_4^{3-})	0.33	mg/L	Max 2.2	N/A	Complies
Total Dissolved Solids (TDS)	55.20	mg/L	Max 1500	Max 1500	Complies
Dissolved Oxygen (DO)	8.22	mg/L	N/A	N/A	N/A
Chemical Oxygen Demand	Nil	mg/L	N/A	N/A	N/A
Biological Oxygen Demand	Nil	mg/L	N/A	N/A	N/A
Escherichia coli (E.coli)	Absent	cfu/100mL	Absent	Absent	Complies

Observations

***Some of the parameters tested did not meet the requirements of EAS 12 Standard for Natural/Potable Water.

Opinion and/or Interpretation

***Based on the sample submitted to the laboratory and the parameters tested for,this water requires treatment.

Technical Manager

Spectralab

Research Testing Training

SSF No.: 9831

CERTIFICATE OF ANALYSIS

CoA No:SAS/CA/PWG-243665

Client: **Howard Humpreys East Africa Limited**	
Contact Person: **Robert Ngunjiri**	
Date Sampling: N/A	
Date Received: September 16, 2024	
Client's Code: SC-2579	

Sample Name	**Potable Water**
Customer's Sample ID.	**Kineti River Current Bridge Location Human Activites Ongoing**
Laboratory ID.	SAS-PWG-243665
Date of Initial Testing	September 16, 2024
Date Reported:	September 25, 2024

Test Parameter	Test Method	Results	Units	Limit Based (EAS 12)	WHO Standard
Total Suspended Solids (TSS)	SAS-TM-CHEM-26	25.00	mg/L	ND	N/A
pH @25°C	SAS-TM-CHEM-02	6.78	pH units	5.5-8.5	6.50-8.50
Turbidity	SAS-TM-CHEM-24	66.60	NTU	Max 25	Max 5
Conductivity (EC)	SAS-TM-CHEM-03	75.70	µS/cm	Max 2500	N/A
Chloride (Cl^-)	SAS-TM-CHEM-27	5.21	mg/L	Max 250	Max 250
Fluoride (F^-)	SAS-TM-CHEM-11	0.03	mg/L	Max 1.5	Max 1.5
Nitrogen as Nitrates (NO_3^-)	SAS-TM-CHEM-14	0.09	mg/L	Max 45	Max 30
Ortho-phosphates (PO_4^{3-})	SAS-TM-CHEM-04	0.11	mg/L	Max 2.2	N/A
Total Dissolved Solids (TDS)	SAS-TM-CHEM-03	37.60	mg/L	Max 1500	Max 1500
Dissolved Oxygen (DO)	SAS-TM-CHEM-22	8.60	mg/L	N/A	N/A
Chemical Oxygen Demand	SAS-TM-CHEM-19	Nil	mg/L	N/A	N/A
Biological Oxygen Demand	SAS-TM-CHEM-53	Nil	mg/L	N/A	N/A
Escherichia coli (E.coli)	SAS-TM-MIC-03	Absent	cfu/100mL	Absent	Absent

Remarks:

**mg/L - milligrams per liter, µg/L - micrograms per Liter **WHO - World Health Organisation
**ND - Not Detected, N/A- Not Applicable ***CFU-Colony Forming Units **EAS 12- Standard for Natural/Potable Water

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CoA No: 243665	SSF NO: 9831	Date Of Report: 25/09/2024
Client: Howard Humpreys East Africa Limited		
Sample ID:Kineti River Current Bridge Location Human Activites Ongoing		

Test Parameter	Result	Units	Limits Based on (EAS 12 Standard)	WHO Standard	Remarks (Based on EAS 12)
Total Suspended Solids (TSS)	25.00	mg/L	ND	N/A	Does Not Comply
pH @25°C	6.78	pH units	5.5-8.5	6.50-8.50	Complies
Turbidity	66.60	NTU	Max 25	Max 5	Does Not Comply
Conductivity (EC)	75.70	µS/cm	Max 2500	N/A	Complies
Chloride (Cl^-)	5.21	mg/L	Max 250	Max 250	Complies
Fluoride (F^-)	0.03	mg/L	Max 1.5	Max 1.5	Complies
Nitrogen as Nitrates (NO_3^-)	0.09	mg/L	Max 45	Max 30	Complies
Orthophosphates (PO_4^{3-})	0.11	mg/L	Max 2.2	N/A	Complies
Total Dissolved Solids (TDS)	37.60	mg/L	Max 1500	Max 1500	Complies
Dissolved Oxygen (DO)	8.60	mg/L	N/A	N/A	N/A
Chemical Oxygen Demand	Nil	mg/L	N/A	N/A	N/A
Biological Oxygen Demand	Nil	mg/L	N/A	N/A	N/A
Escherichia coli (E.coli)	Absent	cfu/100mL	Absent	Absent	Complies

Observations

***Some of the parameters tested did not meet the requirements of EAS 12 Standard for Natural/Potable Water.

Opinion and/or Interpretation

***Based on the sample submitted to the laboratory and the parameters tested for,this water requires treatment.

Technical Manager

Spectralab

Research Testing Training

SSF No.: 9830

CERTIFICATE OF ANALYSIS

CoA No:SAS/CA/PWG-243656

Client: **Howard Humpreys East Africa Limited**	
Contact Person: **Robert Ngunjiri**	
Date Sampling: N/A	
Date Received: September 16, 2024	
Client's Code: SC-2579	

Sample Name	**Potable Water**
Customer's Sample ID.	**Swampy Area At Kinoti**
Laboratory ID.	SAS-PWG-243656
Date of Initial Testing	September 16, 2024
Date Reported:	September 25, 2024

Test Parameter	Test Method	Results	Units	Limit Based (EAS 12)	WHO Standard
Total Suspended Solids (TSS)	SAS-TM-CHEM-26	45.00	mg/L	ND	N/A
pH @25°C	SAS-TM-CHEM-02	6.50	pH units	5.5-8.5	6.50-8.50
Turbidity	SAS-TM-CHEM-24	103.00	NTU	Max 25	Max 5
Conductivity (EC)	SAS-TM-CHEM-03	187.95	µS/cm	Max 2500	N/A
Chloride (Cl^-)	SAS-TM-CHEM-27	7.30	mg/L	Max 250	Max 250
Fluoride (F^-)	SAS-TM-CHEM-11	0.04	mg/L	Max 1.5	Max 1.5
Nitrogen as Nitrates (NO_3)	SAS-TM-CHEM-14	1.90	mg/L	Max 45	Max 30
Ortho-phosphates (PO_4^{3-})	SAS-TM-CHEM-04	0.55	mg/L	Max 2.2	N/A
Total Dissolved Solids (TDS)	SAS-TM-CHEM-03	94.00	mg/L	Max 1500	Max 1500
Dissolved Oxygen (DO)	SAS-TM-CHEM-22	6.71	mg/L	N/A	N/A
Chemical Oxygen Demand	SAS-TM-CHEM-19	Nil	mg/L	N/A	N/A
Biological Oxygen Demand	SAS-TM-CHEM-53	Nil	mg/L	N/A	N/A
Escherichia coli (E.coli)	SAS-TM-MIC-03	Absent	cfu/100mL	Absent	Absent

Remarks:

**mg/L - milligrams per liter, µg/L - micrograms per Liter **WHO - World Health Organisation

ND - Not Detected, N/A- Not Applicable ***CFU-Colony Forming UnitsEAS 12- Standard for Natural/Potable Water

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CoA No: 243656	SSF NO: 9830	Date Of Report: 25/09/2024
Client: Howard Humpreys East Africa Limited		
Sample ID: Swampy Area At Kinoti		

Test Parameter	Result	Units	Limits Based on (EAS 12 Standard)	WHO Standard	Remarks (Based on EAS 12)
Total Suspended Solids (TSS)	45.00	mg/L	ND	N/A	Does Not Comply
pH @25°C	6.50	pH units	5.5-8.5	6.50-8.50	Complies
Turbidity	103.00	NTU	Max 25	Max 5	Does Not Comply
Conductivity (EC)	187.95	µS/cm	Max 2500	N/A	Complies
Chloride (Cl^-)	7.30	mg/L	Max 250	Max 250	Complies
Fluoride (F^-)	0.04	mg/L	Max 1.5	Max 1.5	Complies
Nitrogen as Nitrates (NO_3^-)	1.90	mg/L	Max 45	Max 30	Complies
Orthophosphates (PO_4^{3-})	0.55	mg/L	Max 2.2	N/A	Complies
Total Dissolved Solids (TDS)	94.00	mg/L	Max 1500	Max 1500	Complies
Dissolved Oxygen (DO)	6.71	mg/L	N/A	N/A	N/A
Chemical Oxygen Demand	Nil	mg/L	N/A	N/A	N/A
Biological Oxygen Demand	Nil	mg/L	N/A	N/A	N/A
Escherichia coli (E.coli)	Absent	cfu/100mL	Absent	Absent	Complies

Observations

***Some of the parameters tested did not meet the requirements of EAS 12 Standard for Natural/Potable Water.

Opinion and/or Interpretation

***Based on the sample submitted to the laboratory and the parameters tested for,this water requires treatment.

Technical Manager

Spectralab

Research Testing Training

SSF No.: 9830

CERTIFICATE OF ANALYSIS

CoA No:SAS/CA/PWG-243657

Client: **Howard Humpreys East Africa Limited**	
Contact Person: **Robert Ngunjiri**	
Date Sampling: N/A	
Date Received: September 16, 2024	
Client's Code: SC-2579	

Sample Name	**Potable Water**
Customer's Sample ID.	**River Imoli,Kudo Village Permanent**
Laboratory ID.	SAS-PWG-243657
Date of Initial Testing	September 16, 2024
Date Reported:	September 25, 2024

Test Parameter	Test Method	Results	Units	Limit Based (EAS 12)	WHO Standard
Total Suspended Solids (TSS)	SAS-TM-CHEM-26	19.00	mg/L	ND	N/A
pH @25°C	SAS-TM-CHEM-02	6.99	pH units	5.5-8.5	6.50-8.50
Turbidity	SAS-TM-CHEM-24	39.75	NTU	Max 25	Max 5
Conductivity (EC)	SAS-TM-CHEM-03	138.80	µS/cm	Max 2500	N/A
Chloride (Cl^-)	SAS-TM-CHEM-27	5.21	mg/L	Max 250	Max 250
Fluoride (F^-)	SAS-TM-CHEM-11	0.11	mg/L	Max 1.5	Max 1.5
Nitrogen as Nitrates (NO_3^-)	SAS-TM-CHEM-14	<0.02	mg/L	Max 45	Max 30
Ortho-phosphates (PO_4^{3-})	SAS-TM-CHEM-04	0.43	mg/L	Max 2.2	N/A
Total Dissolved Solids (TDS)	SAS-TM-CHEM-03	69.50	mg/L	Max 1500	Max 1500
Dissolved Oxygen (DO)	SAS-TM-CHEM-22	8.80	mg/L	N/A	N/A
Chemical Oxygen Demand	SAS-TM-CHEM-19	Nil	mg/L	N/A	N/A
Biological Oxygen Demand	SAS-TM-CHEM-53	Nil	mg/L	N/A	N/A
Escherichia coli (E.coli)	SAS-TM-MIC-03	Absent	cfu/100mL	Absent	Absent

Remarks:

**mg/L - milligrams per liter, µg/L - micrograms per Liter **WHO - World Health Organisation

ND - Not Detected, N/A- Not Applicable ***CFU-Colony Forming UnitsEAS 12- Standard for Natural/Potable Water

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25.09.2024

C.Nzioki (Analyst)

25.09.2024.

P. Muthoni (Technical Manager)

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OPINION & INTERPRETATION BASED ON EAS 12 AND WHO STANDARDS

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CoA No: 243657	SSF NO: 9830	Date Of Report: 25/09/2024
Client: Howard Humpreys East Africa Limited		
Sample ID: River Imoli,Kudo Village Permanent		

Test Parameter	Result	Units	Limits Based on (EAS 12 Standard)	WHO Standard	Remarks (Based on EAS 12)
Total Suspended Solids (TSS)	19.00	mg/L	ND	N/A	Does Not Comply
pH @25°C	6.99	pH units	5.5-8.5	6.50-8.50	Complies
Turbidity	39.75	NTU	Max 25	Max 5	Does Not Comply
Conductivity (EC)	138.80	µS/cm	Max 2500	N/A	Complies
Chloride (Cl^-)	5.21	mg/L	Max 250	Max 250	Complies
Fluoride (F^-)	0.11	mg/L	Max 1.5	Max 1.5	Complies
Nitrogen as Nitrates (NO_3^-)	<0.02	mg/L	Max 45	Max 30	Complies
Orthophosphates (PO_4^{3-})	0.43	mg/L	Max 2.2	N/A	Complies
Total Dissolved Solids (TDS)	69.50	mg/L	Max 1500	Max 1500	Complies
Dissolved Oxygen (DO)	8.80	mg/L	N/A	N/A	N/A
Chemical Oxygen Demand	Nil	mg/L	N/A	N/A	N/A
Biological Oxygen Demand	Nil	mg/L	N/A	N/A	N/A
Escherichia coli (E.coli)	Absent	cfu/100mL	Absent	Absent	Complies

Observations

***Some of the parameters tested did not meet the requirements of EAS 12 Standard for Natural/Potable Water.

Opinion and/or Interpretation

***Based on the sample submitted to the laboratory and the parameters tested for,this water requires treatment.

Technical Manager

Spectralab

Research Testing Training

SSF No.: 9831

CERTIFICATE OF ANALYSIS

CoA No:SAS/CA/PWG-243658

Client: **Howard Humpreys East Africa Limited**	
Contact Person: **Robert Ngunjiri**	
Date Sampling: N/A	
Date Received: September 16, 2024	
Client's Code: SC-2579	

Sample Name	**Potable Water**
Customer's Sample ID.	**Stagnated (Permanent Borrow Pit)-Lofiri Water Sample (A1)**
Laboratory ID.	SAS-PWG-243658
Date of Initial Testing	September 16, 2024
Date Reported:	September 25, 2024

Test Parameter	Test Method	Results	Units	Limit Based (EAS 12)	WHO Standard
Total Suspended Solids (TSS)	SAS-TM-CHEM-26	23.00	mg/L	ND	N/A
pH @25°C	SAS-TM-CHEM-02	8.27	pH units	5.5-8.5	6.50-8.50
Turbidity	SAS-TM-CHEM-24	66.20	NTU	Max 25	Max 5
Conductivity (EC)	SAS-TM-CHEM-03	320.00	µS/cm	Max 2500	N/A
Chloride (Cl^-)	SAS-TM-CHEM-27	9.38	mg/L	Max 250	Max 250
Fluoride (F^-)	SAS-TM-CHEM-11	0.36	mg/L	Max 1.5	Max 1.5
Nitrogen as Nitrates (NO_3^-)	SAS-TM-CHEM-14	1.21	mg/L	Max 45	Max 30
Ortho-phosphates (PO_4^{3-})	SAS-TM-CHEM-04	0.18	mg/L	Max 2.2	N/A
Total Dissolved Solids (TDS)	SAS-TM-CHEM-03	160.00	mg/L	Max 1500	Max 1500
Dissolved Oxygen (DO)	SAS-TM-CHEM-22	7.52	mg/L	N/A	N/A
Chemical Oxygen Demand	SAS-TM-CHEM-19	Nil	mg/L	N/A	N/A
Biological Oxygen Demand	SAS-TM-CHEM-53	Nil	mg/L	N/A	N/A
Escherichia coli (E.coli)	SAS-TM-MIC-03	Absent	cfu/100mL	Absent	Absent

Remarks:

**mg/L - milligrams per liter, µg/L - micrograms per Liter **WHO - World Health Organisation
**ND - Not Detected, N/A- Not Applicable ***CFU-Colony Forming Units **EAS 12- Standard for Natural/Potable Water

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25.09.2024

C.Nzioki (Analyst)

25.09.2024

P. Muthoni (Technical Manager)

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CoA No: 243658	SSF NO: 9831	Date Of Report: 25/09/2024
Client: Howard Humpreys East Africa Limited		
Sample ID: Stagnated (Permanent Borrow Pit)-Lofiri Water Sample (A1)		

Test Parameter	Result	Units	Limits Based on (EAS 12 Standard)	WHO Standard	Remarks (Based on EAS 12)
Total Suspended Solids (TSS)	**23.00**	mg/L	ND	N/A	Does Not Comply
pH @25°C	**8.27**	pH units	5.5-8.5	6.50-8.50	Does Not Comply
Turbidity	**66.20**	NTU	Max 25	Max 5	Does Not Comply
Conductivity (EC)	320.00	µS/cm	Max 2500	N/A	Complies
Chloride (Cl^-)	9.38	mg/L	Max 250	Max 250	Complies
Fluoride (F^-)	0.36	mg/L	Max 1.5	Max 1.5	Complies
Nitrogen as Nitrates (NO_3^-)	1.21	mg/L	Max 45	Max 30	Complies
Orthophosphates (PO_4^{3-})	0.18	mg/L	Max 2.2	N/A	Complies
Total Dissolved Solids (TDS)	160.00	mg/L	Max 1500	Max 1500	Complies
Dissolved Oxygen (DO)	7.52	mg/L	N/A	N/A	N/A
Chemical Oxygen Demand	Nil	mg/L	N/A	N/A	N/A
Biological Oxygen Demand	Nil	mg/L	N/A	N/A	N/A
Escherichia coli (E.coli)	Absent	cfu/100mL	Absent	Absent	Complies

Observations

***Some of the parameters tested did not meet the requirements of EAS 12 Standard for Natural/Potable Water.

Opinion and/or Interpretation

***Based on the sample submitted to the laboratory and the parameters tested for,this water requires treatment.

Technical Manager

Spectralab

Research Testing Training

SSF No.: 9831

CERTIFICATE OF ANALYSIS

CoA No:SAS/CA/PWG-243659

Client: **Howard Humpreys East Africa Limited**	
Contact Person: **Robert Ngunjiri**	
Date Sampling: N/A	
Date Received: September 16, 2024	
Client's Code: SC-2579	

Sample Name	**Potable Water**
Customer's Sample ID.	**River Kedipo Water Sample Seasonal**
Laboratory ID.	SAS-PWG-243659
Date of Initial Testing	September 16, 2024
Date Reported:	September 25, 2024

Test Parameter	Test Method	Results	Units	Limit Based (EAS 12)	WHO Standard
Total Suspended Solids (TSS)	SAS-TM-CHEM-26	83.00	mg/L	ND	N/A
pH @25°C	SAS-TM-CHEM-02	7.30	pH units	5.5-8.5	6.50-8.50
Turbidity	SAS-TM-CHEM-24	380.00	NTU	Max 25	Max 5
Conductivity (EC)	SAS-TM-CHEM-03	282.00	µS/cm	Max 2500	N/A
Chloride (Cl^-)	SAS-TM-CHEM-27	5.21	mg/L	Max 250	Max 250
Fluoride (F^-)	SAS-TM-CHEM-11	0.09	mg/L	Max 1.5	Max 1.5
Nitrogen as Nitrates (NO_3^-)	SAS-TM-CHEM-14	0.18	mg/L	Max 45	Max 30
Ortho-phosphates (PO_4^{3-})	SAS-TM-CHEM-04	1.02	mg/L	Max 2.2	N/A
Total Dissolved Solids (TDS)	SAS-TM-CHEM-03	141.00	mg/L	Max 1500	Max 1500
Dissolved Oxygen (DO)	SAS-TM-CHEM-22	9.02	mg/L	N/A	N/A
Chemical Oxygen Demand	SAS-TM-CHEM-19	Nil	mg/L	N/A	N/A
Biological Oxygen Demand	SAS-TM-CHEM-53	Nil	mg/L	N/A	N/A
Escherichia coli (E.coli)	SAS-TM-MIC-03	Absent	cfu/100mL	Absent	Absent

Remarks:

**mg/L - milligrams per liter, µg/L - micrograms per Liter **WHO - World Health Organisation
**ND - Not Detected, N/A- Not Applicable ***CFU-Colony Forming Units **EAS 12- Standard for Natural/Potable Water

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25.09.2024

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20.09.2024.

P. Muthoni (Technical Manager)

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CoA No: 243659	SSF NO: 9831	Date Of Report: 25/09/2024
Client: Howard Humpreys East Africa Limited		
Sample ID: River Kedipo Water Sample Seasonal		

Test Parameter	Result	Units	Limits Based on (EAS 12 Standard)	WHO Standard	Remarks (Based on EAS 12)
Total Suspended Solids (TSS)	83.00	mg/L	ND	N/A	Does Not Comply
pH @25°C	7.30	pH units	5.5-8.5	6.50-8.50	Complies
Turbidity	380.00	NTU	Max 25	Max 5	Does Not Comply
Conductivity (EC)	282.00	µS/cm	Max 2500	N/A	Complies
Chloride (Cl^-)	5.21	mg/L	Max 250	Max 250	Complies
Fluoride (F^-)	0.09	mg/L	Max 1.5	Max 1.5	Complies
Nitrogen as Nitrates (NO_3^-)	0.18	mg/L	Max 45	Max 30	Complies
Orthophosphates (PO_4^{3-})	1.02	mg/L	Max 2.2	N/A	Complies
Total Dissolved Solids (TDS)	141.00	mg/L	Max 1500	Max 1500	Complies
Dissolved Oxygen (DO)	9.02	mg/L	N/A	N/A	N/A
Chemical Oxygen Demand	Nil	mg/L	N/A	N/A	N/A
Biological Oxygen Demand	Nil	mg/L	N/A	N/A	N/A
Escherichia coli (E.coli)	Absent	cfu/100mL	Absent	Absent	Complies

Observations

***Some of the parameters tested did not meet the requirements of EAS 12 Standard for Natural/Potable Water.

Opinion and/or Interpretation

***Based on the sample submitted to the laboratory and the parameters tested for,this water requires treatment.

Technical Manager

Appendix B: NEMA Accreditation and KESNA Certificates

NATIONAL ENVIRONMENT MANAGEMENT AUTHORITY

Tel: (254-020)-6005522 / 3 / 6 / 7, 6001945, 6008767
Mobile line: 0724 253 398, 0723 363 010, 0735 013 046, 0735 010 237
Telkom Wireless: 020-2101370
Fax: (254-020)-6008997
Hotline: 020-8077233, 020-6006041

P. O. Box 67839 - 00200
Popo Road, Nairobi, Kenya
E-mail: dgnema@nema.go.ke
website: www.nema.go.ke

NEMA/21/2/VOL.II **28th April 2016**

Spectralab Analytical Servises Limited
1st Floor, ABC Bank Building
Dar Es Salaam Road, Off Enterprise Road, Industrial Area
P.O. Box 50208-00200
NAIROBI.

RE: LABORATORY DESIGNATION BY NEMA.

Pursuant to your application for designation, your laboratory was inspected and evaluated based on ISO 17025 for laboratory competence to carry out tests and samplings.

Your laboratory qualified and has in principle been designated to undertake **Water, Effluent, Sludge, Soil and Petroleum Analysis** subject to the attached terms and conditions.

You will however await the due process of laboratory gazettement.

DAVID ONGARE
For: DIRECTOR GENERAL

DN/mm

Certificate No. **TL/84**

KENYA ACCREDITATION SERVICE

KENAS

Accreditation Certificate

This is to certify that

SPECTRALAB ANALYTICAL SERVICES LIMITED

is accredited as a Testing Laboratory
upon satisfying the requirements of

ISO/IEC 17025: 2017

General requirements for the competence of testing and calibration laboratories in respect of the attached schedule

Effective from: **30th November 2023**

Expiry on: **29th November 2027**

KENYA ACCREDITATION SERVICE KENAS ISO/IEC 17025 ACCREDITED TESTING

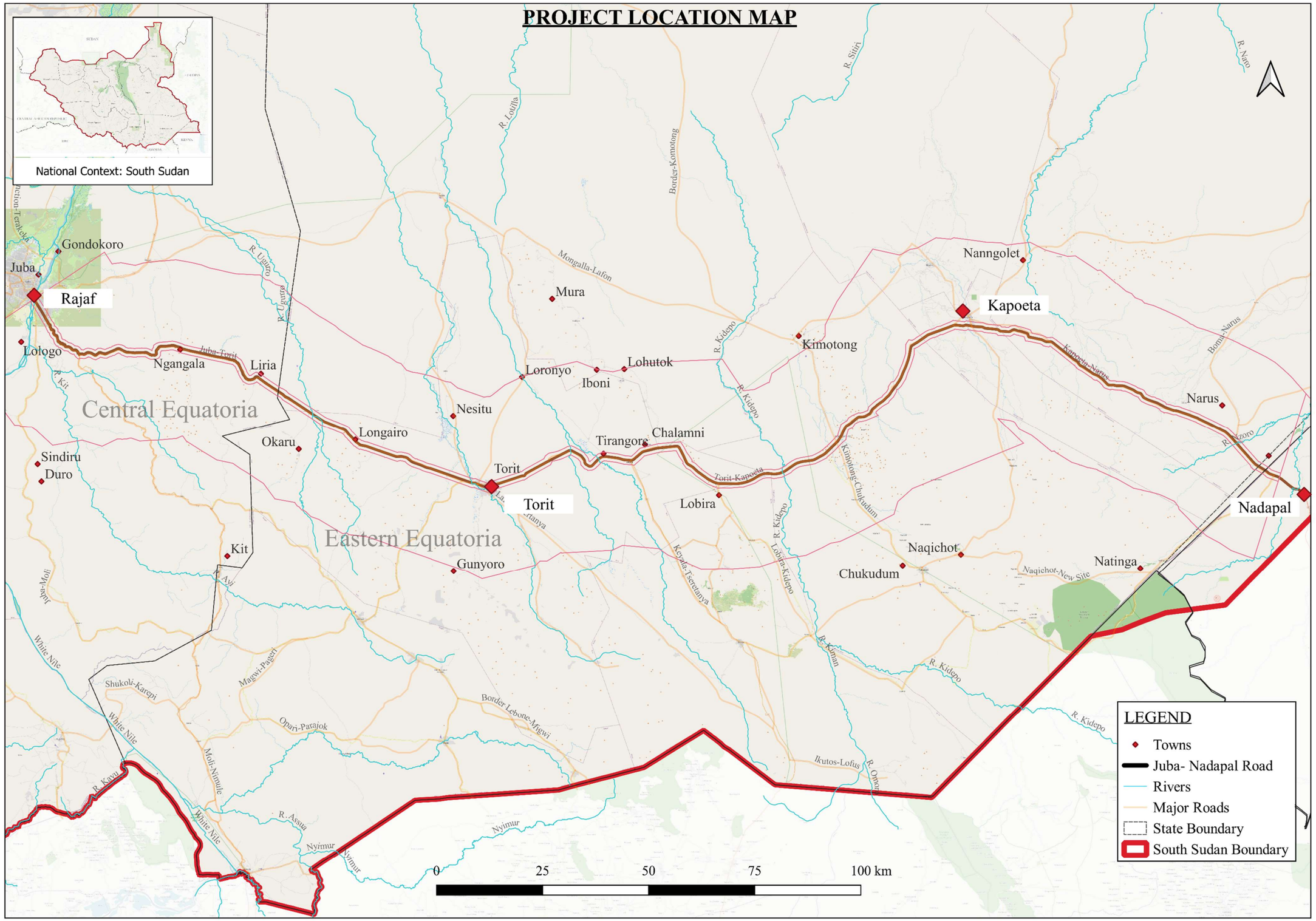
ilac-MRA

Martin Kipchirchir

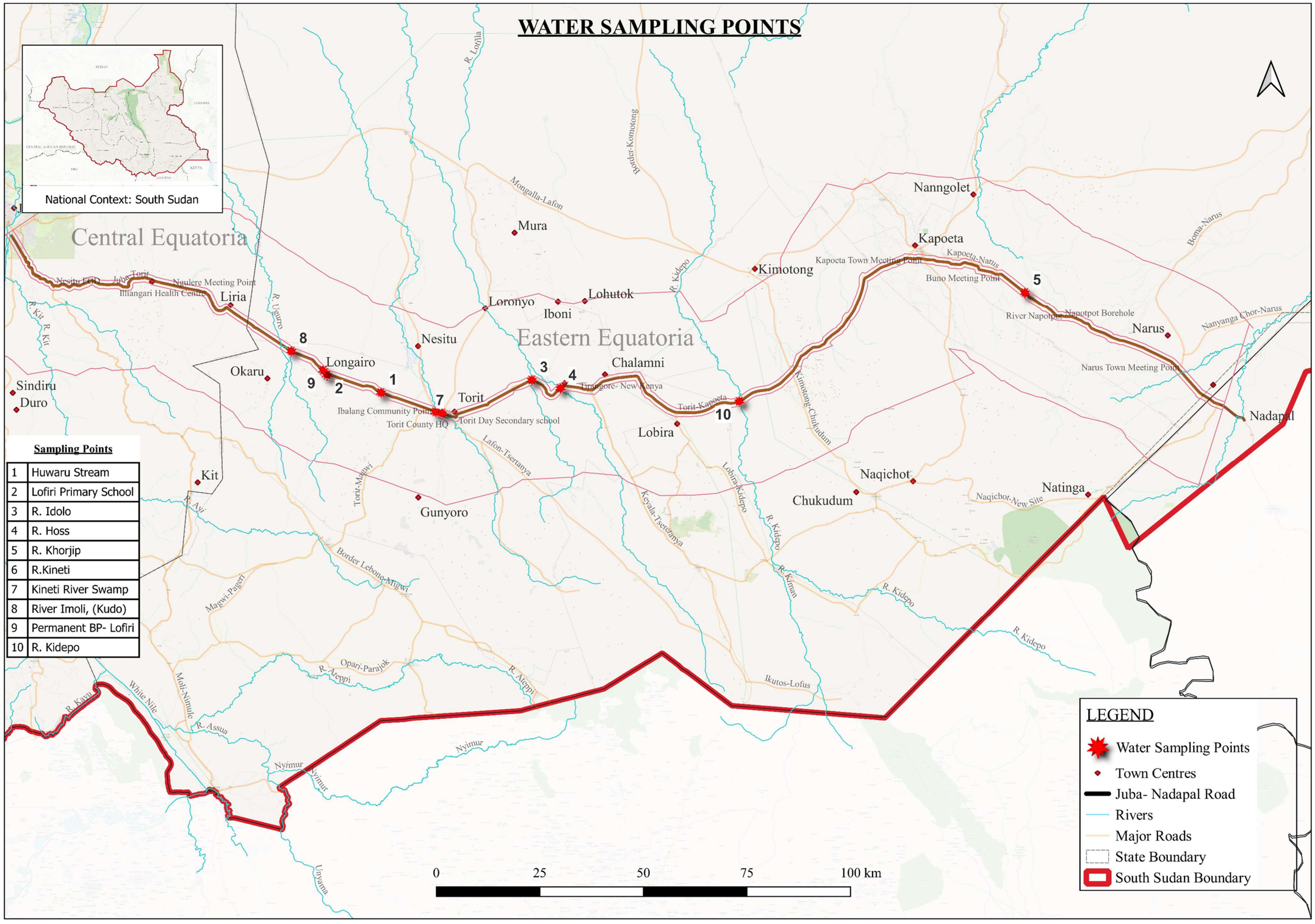
Chief Executive Officer / Authorised Officer
Kenya Accreditation Service

Appendix G: Project Maps

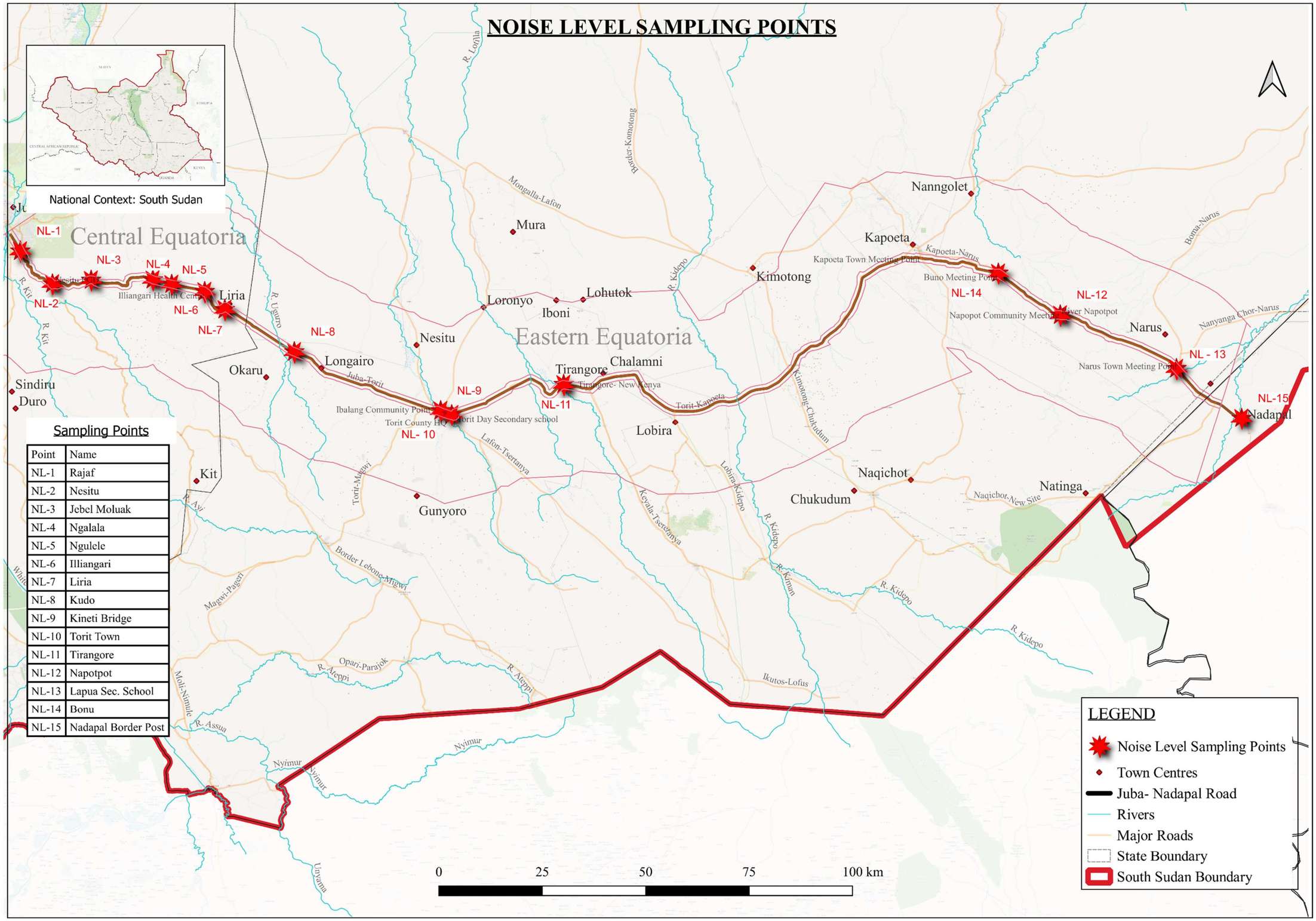
Appendix G.1: Project Location Map



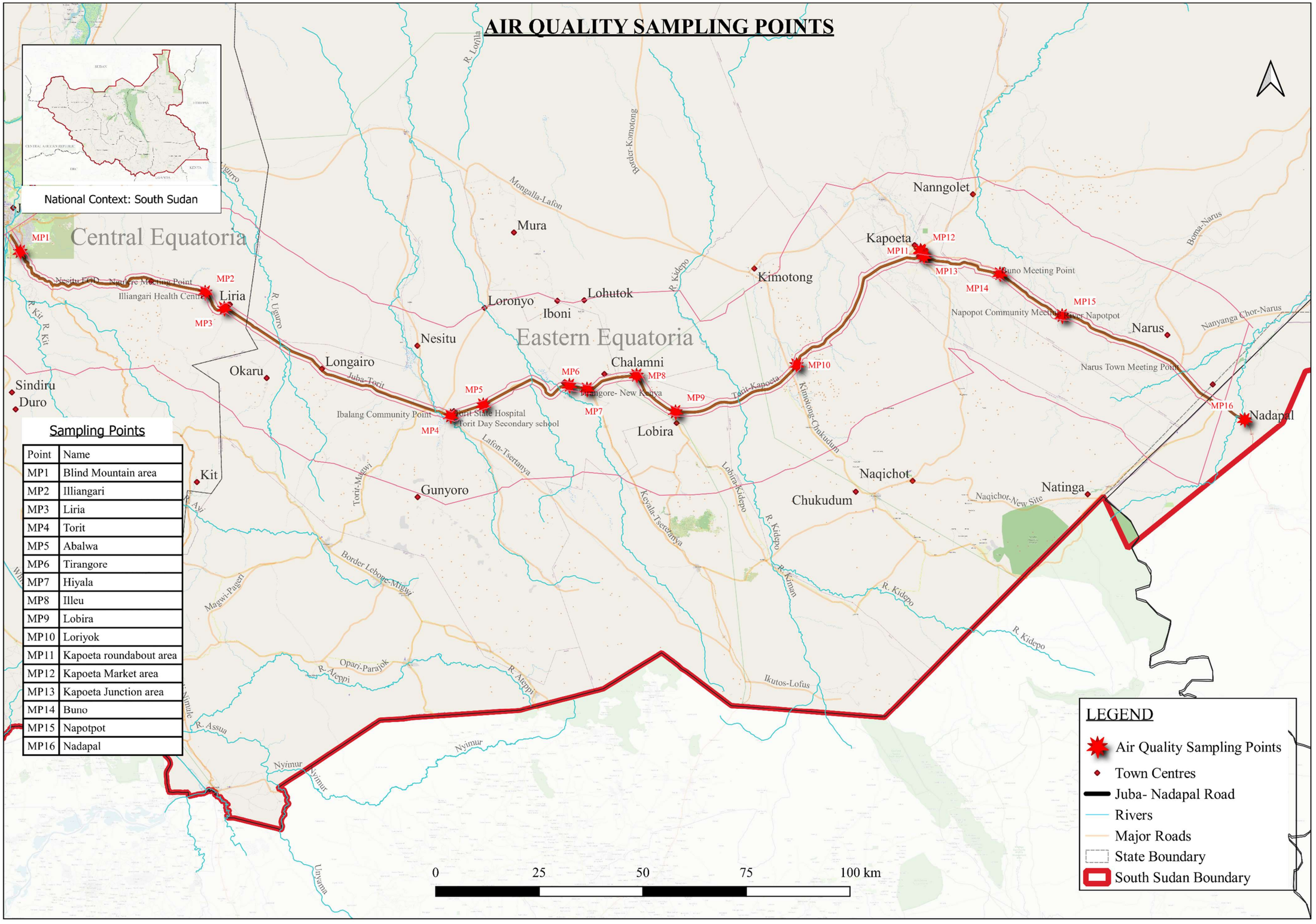
Appendix G.2: Water Sampling Points



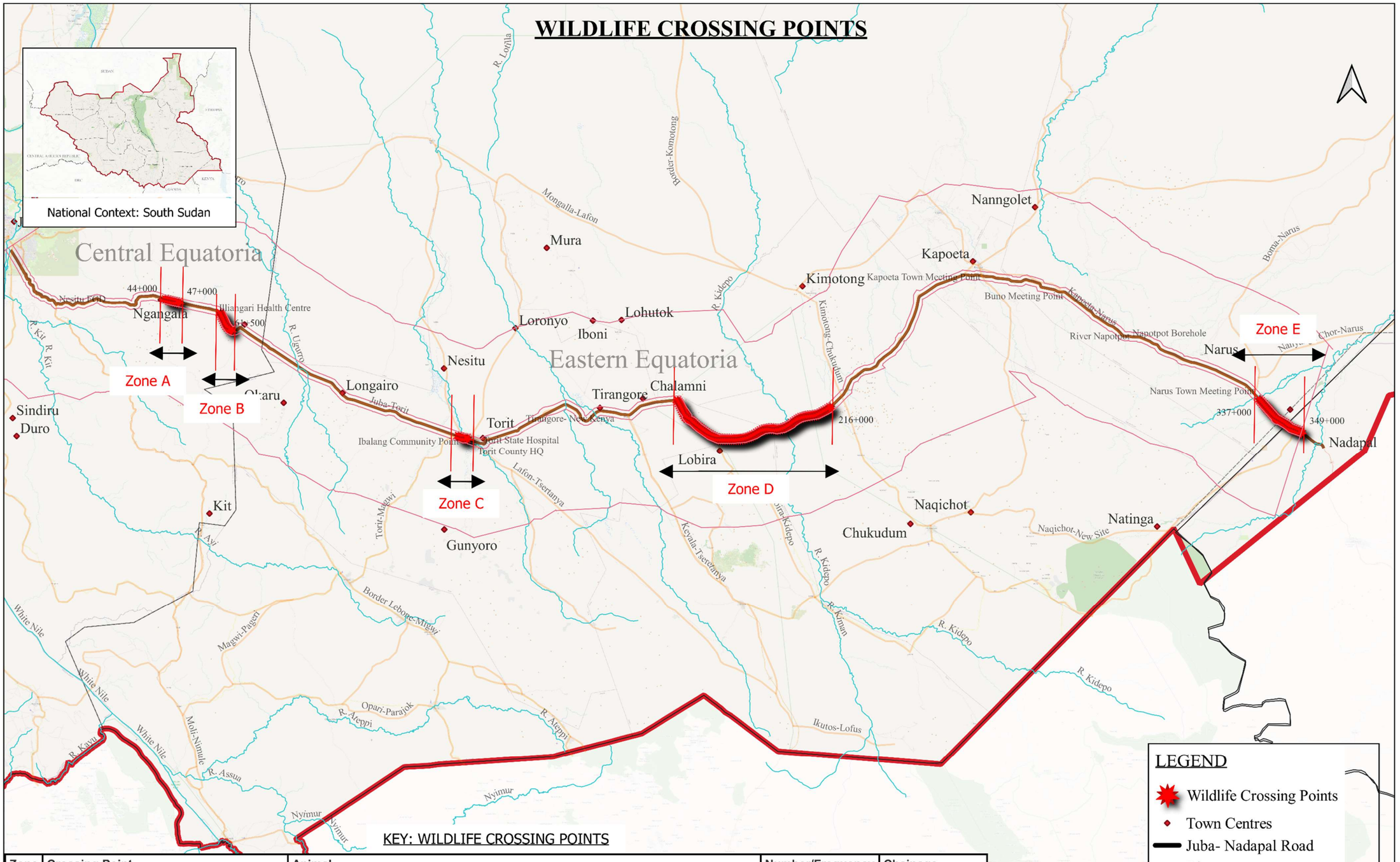
Appendix G.3: Noise Measurement Points



Appendix G.4: Air Quality Measurement Points



Appendix G.5: Wildlife Crossing Areas



KEY: WILDLIFE CROSSING POINTS

Zone	Crossing Point	Animal	Number/Frequency	Chainage
A	Abilingwa near the bridge	Elephants, Antelopes	Less/rare	44+00 – 47+00
B	Pass between the two hills in Illiangari	Monkeys	Less/rare	57+00 - 61+500
C	Khor Lakabata	Antelopes	Less/rare	120+00 -122+00
D	Mt Oduniarik -Lotoba-Langior- Kidepo Valley	Elephants, Hyenas, Leopard, Cheeta, Lions, Monkey, Buffalos, Antelopes, Gazal, Dikdik	More/daily	176+00 - 216+00
E	Nakodok (1and 2)	Elephants, Buffalos	Less/Seasonally	337+00 - 349+00

Appendix H: Occupational Safety and Health Management Plan

Republic of South Sudan
Ministry of Roads and Bridges

SOUTH SUDAN CONNECTIVITY FOR GROWTH PROJECT

Environmental and Social Impact Assessment (ESIA) for the Upgrading of Juba - Torit - Kapoeta - Nadapal Road (354.05Km) to Paved (Asphalt) Standard



Appendix H - OCCUPATIONAL HEALTH AND SAFETY MANAGEMENT PLAN

Revision	Purpose description	Originated	Checked	Reviewed	Authorized	Date
1.0	Issued to Client	RN/TO	LKN	LKN	MKG	25/10/2024
2.0	Revised - Client & WB Comments	TO	LKN	LKN	MKG	29/11/2024

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List of Abbreviations

dB(A)	decibels measured on ‘A’ weighting
EHS	Environment, Health and Safety
EP	Emergency Plan
EP’s	Emergency Plans
HIRA	Hazard Identification, Risk Assessment
HIV/AIDS	Human Immunodeficiency Virus/ Acquired Immunodeficiency Syndrome
HSP	Health and Safety Plan
JSA	Job Safety Analysis
MSDS	Material Safety Data Sheets
OHS	Occupational Health and Safety
OHSMP	Occupational Health and Safety Plan
PPE	Personal Protective Equipment
STIs	Sexually Transmitted Infections

1 Introduction

The construction and operation of the Road project has significant potential to impact on workers' health, safety and security. This Occupational Health and Safety Management Plan (OSHMP) has been developed to mitigate these impacts in line with requirements of the applicable national, international standards and guidelines. The plan is designed to anticipate, avoid, and manage the risks to the health and safety of project workers.

1.1 Purpose

This Occupational Health and Safety Plan (OHSP) aims to provide guidelines to manage health and safety risks to a reasonable level during the upgrading of the Juba – Torit – Kapoeta - Nadapal road.

1.2 Objectives

The Specific Objectives of the OHSP are to:

- Ensure the project complies with applicable national occupational health and safety statutory requirements, social policies, and procedures and to align with World Bank and IFC standards.
- Outline the mitigation, monitoring, consultative, and institutional measures required to enhance the safety of the project.
- Spell out practices that ensure all personnel engaged in the works comply with the prescriptions of the OHSP
- Respond to changes in safety conditions during the work through review, monitoring, and control programs in consultation with the Project Supervision team and ensure that corrective actions are completed promptly.
- Enable a systematic and proactive approach to addressing safety issues during the project's implementation.
- Provide guidelines for record-keeping on site.

1.3 Responsibility

The Occupational Safety and Health management plan shall contain concise description of the management structure with clear specification of the responsibilities of the responsible parties. It shall also provide linkages with the Government.

2 Hazard Identification, Risk Assessment (HIRA) and Control

A baseline risk assessment or HIRA should be conducted to establish an appropriate risk profile or a set of profiles. It shall be used to prioritize an action program for the issue-based risk assessments during construction.

2.1 Types of Risk Assessments to be Conducted at Site

2.1.1 Baseline Hazard Identification and Risk Assessment

The Contractor shall carry out a Baseline Risk Assessment for the project during the planning stage to obtain a benchmark of the type and size of potential hazards that significantly impact operational activities, processes, and system-based for the project. All preceding risk assessments shall be benchmarked from the baseline risk assessment data collected and documented. All project hazard identification and risk assessment shall follow the procedure below.

2.1.2 General Operations Risk Assessment

The Contractor shall develop a general Hazard Identification and Risk Assessment for the project, and all operations during the construction phase shall be listed. This assessment shall include but not be limited to the following areas.

- Camp site Construction/Operations Risk Assessment
- Road Construction Risk Assessment
- Provision and use of PPE
- Security risk assessment
- Hazard Risk Assessment
- Transport/Fleet Risk Assessment
- Decommissioning Risk Assessment

2.1.3 Site Specific Risk Assessment

specific risk assessment before work is executed.

2.1.1 Risk Assessment and Control Procedure

The Contractor shall apply the following procedures in risk assessment

- **Identifying the activity**: The activity to be controlled must be described in full. Managers and workers should be consulted to ensure that all steps in the activity are identified
- **Identify who is at risk**: The impact of your activity on others influences the type of risk controls that may need to be in place.
- **Identify the Hazard**: Identification of Hazards through the above-listed processes
- **Identify the associated risks**: Risk identification is like hazard identification, except that you need to identify the harm that can be caused.
- **Rate the risks with existing controls**: The contractor shall adopt the 5X5 matrix for risk rating.
- **Identify appropriate additional controls**: The Contractor's Risk Rating Procedure does not allow the activity to continue if the risk rating is VERY HIGH or HIGH. Therefore, additional risk controls must be implemented to reduce the risk rating further.
- **Re - rate the risks**: The activity must be reassessed to assess if the additional risk controls are sufficient to reduce the risk. The final risk rating must be MEDIUM or LOW for the activity to proceed.
- **Implement the risk controls**: The risk controls identified in this procedure need to be implemented and used. If training is required, then this must be done before using it or any other risk control. The risk controls must be working to ensure that the risks have been reduced to the lowest risk level that is reasonably practicable
- **Risk assessment review**: A risk assessment is a "living" document that must be reviewed regularly. The EHS committee shall set an annual or bi - annual review date.

3 Inspections, Hazard Reporting, and Incident Investigation Procedure

3.1 Workplace Inspections and Hazard Reporting

Workplace health and safety inspections are vital to maintaining a safe workplace and identifying existing or potential hazards so that appropriate corrective action can be taken.

The EHS personnel shall assess in conjunction with the Project Supervision. These inspections must be conducted monthly, at a minimum. Workplace-specific checklists should be developed by supervisors and used for regularly scheduled inspections. Completed reports should be forwarded to management promptly.

It is important to observe both conditions and procedures during the inspection. If a hazard poses an immediate threat, take immediate action to eliminate the hazard.

A follow-up of all reports and actions taken to eliminate hazards must be completed promptly. Subsequent workplace inspections should review the items from previous inspections to ensure that remedial action has resolved the concern.

3.1.1 Workplace Safety and Welfare

The Workplace Safety and Welfare Plan should be prepared to cover offices, workshops, camps, kitchens, concrete plants, asphalt plants, road construction sites, borrow pits, bridge construction activities, and other activities associated with road construction project activities.

The Contractor shall do the following:

- Fence the site against unauthorized entry
- Take measures to prevent objects from falling from a height
- Provide and keep safe egress and access to each place of work located at the site
- Put up appropriate signs, including traffic routes, authorized personnel only, etc.
- Keep the site tidy, well-lit, and well-laid out
- Provide sufficient welfare and first aid facilities
- Provide adequate fire precautions such as fire extinguishers, escape routes
- Ensure that existing power lines (buried or overhead) are identified and associated safe systems of work are in place
- Take necessary precautions to ensure that electrical systems are well maintained in a safe condition
- Ensure that vehicles and people are kept apart, with traffic routes maintained in a safe condition
- Minimize and eliminate the risk of manual handling using mechanical equipment or arrange material to be supplied in manageable sizes and weights to reduce the risk of back injury
- Take all measures to reduce exposure to noise and vibration
- Ensure that holes are protected, with clear markings and fixed covers to prevent falls
- Risks associated with excavation including collapse of excavation and trapping workers inside, workers and equipment falling into excavations
- Risk of work-at-height e.g. construction of bridges
- Confined space entry including entry in to deep excavations, long culverts, etc.
- Risk of struck or trapped by moving machines and equipment
- Risk of hot works
- Exposure to hazardous materials
- Exposure to extreme weather
- Risk to lone workers

The plan should cover the following areas.

- Site Security
- Traffic and Pedestrian Arrangement
- Storage Areas
- Waste Areas
- Spill Control
- Passageways
- Lighting
- Access to Worksites
- Stacking of Materials

- Maintenance of Stairs, Steps, and Landings.
- Fire Fighting General Rules.
- Welfare and Toilet Facilities.
- High risk activities e.g. deep excavations, work at height, working in areas with electrical energy/charge, working with hazardous materials, working in confined spaces etc.

4 Vehicle/ Equipment and Tools Safety

All vehicles, machinery, and equipment should be serviced to:

- Manufactures recommendations
- Industrial standards
- Legislated requirements
- Contractor's best practices

To ensure the safe operating condition of all equipment, the Contractor's daily/periodic pre-inspection and preventive practice should be based on the highest protocol.

The Contractor should develop safe operating procedures for all Plants and Equipment including Backhoe, Dozers, Loaders, Road Graders, Trucks. The procedure should be posted on every plant and Equipment.

4.1 Construction Vehicle Management

The Contractor should manage construction vehicle movements to ensure that all traffic associated with the works can safely travel on the road to and from the construction sites, safely enter and exit the site access points, manoeuvre to and from traffic streams, and turn at work areas, borrow areas, stockpile sites, and quarries. All construction vehicle movements should be planned to minimize the risk to other road users and keep the traffic generated by the project to a minimum.

The types of construction vehicle movements may include deliveries of materials, supplies, plants, or equipment to the site and transportation of dimension loads.

Haulage of materials on and off sites associated with earthworks operations; deliveries of soil, gravel, asphalt, concrete, and bitumen from batching plants to pavers; and regular trips by construction personnel in work trucks.

5 Emergency Response

5.1 Emergency Response Plan

To identify potential emergencies and describe the necessary arrangements to respond effectively should a severe and imminent emergency arise inside and outside regular working hours. Effective planning and response can eliminate unnecessary calls to the public emergency services and reduce overall injury, damage, and loss that may directly or indirectly affect all project workers, staff, and visitors.

This plan applies to the entire project area, including campsite(s), borrow pit areas, quarry areas, and any other site where active works occur. Guidance is provided to support developing and maintaining emergency plans (EP's) for any other emerging emergency during construction. Additionally, it seeks to minimize the exposure of consequences and the management of emergencies for the Project Supervision team, the Contractor and its employees, sub-contractors, visitors, and other third parties on construction sites and campsite(s)

This EP should include the following elements:

- Security and control information
- Means of escape information
- Communications, i.e., alarms, radios, etc.
- Emergency phone numbers
- Emergency phone list of key personnel (24-hour contacts)
- Location of hazardous substances
- List of qualified fire marshals
- List and contact details of the doctor, nurse, and first aiders

This EP addresses the likelihood and severity of all potential emergencies. Arrangements for transporting severely injured personnel to the hospital should be made via local ambulance. A site map to the nearest hospital facility along the road should be posted at locations around the project.

- List of possible emergencies
- Fire/Explosion
- Accident/Medical event
- Adverse Weather / Natural Disaster
- External/Security events
- Loss of containment of dangerous substances/Spills
- Fall from height event
- Excavations
- Active shooter and workplace violence
- Infectious diseases emergencies

5.2 Site Signage

Good practice requires all construction sites to have signs for safety measures. The signs at the project site shall be visible, provide a clear message, and be consistent throughout the project's construction duration.

The project site shall comply with the South Sudanese or regional sign standards. The Contractor shall provide all necessary signs for the Works. These shall include, but not be limited to:

- Standard road signs.
- Warning signs.
- Danger signs.
- Control signs.
- Direction signs.

All locations need several safety signs that do not relate to specific hazards and are instead used to communicate important information about crucial workplace safety protocols. These include:

- Signs marking fire escape routes, fire exit locations, assembly points, and fire equipment
- Reminders to wear appropriate safety gear
- Location markers for first aid kits and emergency equipment
- Signs highlighting prohibited behaviours, like smoking or unauthorized access.

5.3 Personal Protective Equipment

Personal Protective Equipment (PPE) is required for workers during general, specific, and hazardous tasks. PPE is the least effective way to control risk and is always the last resort to protect workers. The types of PPE used should include:

- Respirators and masks. Any worker must wear a respirator, e.g., at the crushing plant, blasting sites must first obtain medical clearance to wear a respirator.
- Foot protection (safety shoes and boots)
- Body protection (high visibility clothing, long sleeves, wide-brimmed hats, gloves)
- Helmets.
- Eye protection
- Face masks must be constantly worn.

Workers should be obliged to wear PPE when required and when is reasonably practicable. Other requirements include that:

- Workers should be fully trained in the safe use, storage, and maintenance of PPE.
- PPE must be checked before use for the correct type fit and that it is undamaged.
- Reuse of disposable, contaminated, or damaged PPE is not allowed on site
- PPE shall be correctly stored.
- A register of all PPE issued during the construction work should be maintained
- Any person found not wearing appropriate PPE should be advised and the noncompliance recorded
- Employees found damaging or misusing PPE should be disciplined.
- Visitors to the site should also be required to have minimal PPE, which the Contractor should provide.

5.4 Blasting Safety

For all blasting that may be carried out on the project, the Contractor should comply with Government requirements for safety and handling and use of explosives. Further, a licensed subcontractor or personnel should be hired to carry out the work.

6 Health and Safety Training

Training is crucial to establishing and maintaining high safety standards for performing all job functions. The Contractor will be required to commit to ensuring that all employees are adequately trained to perform their job functions safely. Workers must participate in their training and follow the instructions that they are given.

The Contractor should provide training to ensure the requirements of safety and health standards and international best practices in construction Safety are met and continuously evaluate employee training needs to keep workers safe and healthy on the job. Each training topic shall have training objective(s) and materials, as well as the time and location of the training. Training and awareness should be carried out to achieve a safe community and workplace.

6.1 Training Scope

The contractor shall conduct training for Contractor personnel. The training will cover the following:

- Site Health and Safety Induction
- Overview of the HSP and the applicable Regulations
- Hazard Identification and Risk Assessment
- Safe use of tools and equipment
- Confined space entry
- Specific supervisor training
- Lockout/Tag-out
- New Worker Orientation
- Safe work procedures for road construction operations
- Use of Personal Protective Equipment
- Traffic Control
- First Aid and Medical Care
- Safety moment/ talk at start of project activities focusing on planned tasks for the day.

6.2 Health and safety of the surrounding and affected communities

All activities relevant to the health and safety of surrounding and affected communities should be covered by a risk assessment before commencing any activity. The Contractor should identify potential risks and propose mitigation measures to avoid accidents. Common risk categories should be addressed, but the community risk assessment should focus predominantly on the following:

- Infrastructure and equipment; design and safety, especially risks associated with transporting materials, traffic, delivery and management, plant and infrastructure security, and road construction.
- Ecosystem services, including project-related diseases, endemic serious diseases, impacts
- on soil and water resources (and implications for health and community livelihoods).
- Communicable exposure to diseases, especially HIV/AIDS and other sexually transmitted infections (STIs), and the impacts of labour migration in this context.
- Health and nuisance risks, including dust, noise, and water pollution.

7 Occupational Safety & Health Risks and Impacts Management

7.1 Summary of Potential Risks and Impacts Managements

The project workers will be exposed to various OSH risks related to project construction activities, as listed in section 3.3.1.

7.2 Mitigation Measures and Monitoring Controls

The mitigation and monitoring measures for the OSH risk are presented in Table 7-1 and Table 7-2 respectively.

7.3 Incident Notification and Reporting

The contractor will develop and implement procedures for incident notification, reporting, response and corrective measures. Workers and other project parties should be sensitized on importance of reporting incidents in a timely manner. The elements of the procedure will include:

- Categories of reportable incidents
- To whom the notification is made including regulatory requirements/ obligations.
- Type and nature of incident (minor incidents/ first aid cases, medical treatment, fatalities).
- Timelines for notification and reporting
- Response measures and timelines
- Reporting requirements including root-cause analysis and preventive & corrective measures.

Table 7 - 1: OSH Management Plan

Aspect	Potential Risk/ Impact	Mitigation Measures	Responsibility	Timing/ Phase	Implementation Cost (USD)
Safety risk from project construction works	▪ Fall from height ▪ Risk of excavations/ fall into excavation and trapping workers inside ▪ Exposure to hazardous materials ▪ Exposure to extreme weather ▪ Risk of lone working ▪ Risk of being struck and/or being caught by moving parts of machinery ▪ Risk of electrocution ▪ Risk of attack by wildlife	▪ Preparation of safe work procedures/ method statements including work permit system ▪ Provision of fall arrest, safety harness etc. ▪ Excavation wall protection e.g. sloping, shoring ▪ Securing/barricading of work fronts/ areas ▪ Providing safe means of egress from excavations ▪ Weather forecast records. ▪ Use of signage (warning & precautions) ▪ Machine/equipment guarding ▪ Use of banks man ▪ Escort by security rangers in wildlife prone sections ▪ Training in OSH and awareness to workers, including regular toolbox talks ▪ Appoint and train first aiders. ▪ Preparation of incident notification, reporting and root-cause analysis/ corrective actions procedures. ▪ Preparation of emergency preparedness and response plan. ▪ Undertake regular emergency drills.	Contractor	Construction	4,000,000

Table 7 - 2: OSH Monitoring Plan

Potential Risk/ Impact	Mitigation Measures	Monitoring Indicators	Responsibility	Timing/ Phase			Implementation Cost (USD)
				Daily	*Quarterly*	*Annual*	
▪ Fall from height ▪ Risk of excavations/ fall into excavation and trapping workers inside ▪ Exposure to hazardous materials ▪ Exposure to extreme weather ▪ Risk of lone working ▪ Risk of being struck and/or being caught by moving parts of machinery ▪ Risk of electrocution ▪ Risk of attack by wildlife	▪ Preparation of safe work procedures/ method statements including work permit system ▪ Provision of fall arrest, safety harness etc. ▪ Excavation wall protection e.g. sloping, shoring ▪ Securing/barricading of work fronts/ areas ▪ Providing safe means of egress from excavations ▪ Weather forecast records. ▪ Use of signage (warning & precautions) ▪ Machine/equipment guarding ▪ Use of banks man ▪ Escort by security rangers in wildlife prone sections ▪ Training in OSH and awareness to workers, including regular toolbox talks	▪ Approved work procedures/method statements ▪ Provided & use of PPE ▪ Secured work areas/fronts ▪ Safe mean of access/egress ▪ records of weather forecast ▪ guarding/safety mechanisms installed on machinery/equipment ▪ Security personnel/ rangers ▪ Training records & reports. ▪ Trained first aiders. ▪ incident notification, reporting corrective actions procedures. ▪ Executed emergency preparedness and response plan. ▪ Records-number of drill carried out	Contractor	√	√	√	2,000,000

8 Monitoring and Reporting

Monitoring the implementation of the health and safety plan should be an ongoing process. Daily, Weekly, and Monthly monitoring and reporting should be conducted by the ESHS personnel.

The Project Supervisions team should periodically monitor HS implementation within the project area and site. Indicators that should aid in the monitoring include:

- Findings of occupation health and safety reports
- Physical Inspection of the site
- Incident Reports on site
- Incident reports with local police stations and grievance committees
- Schedule of health and safety training on-site.

8.1 Health and Safety Reports

From the results of health and safety inspections, the ESHS personnel should prepare Health and Safety Reports, which, among others, should have the following:

- Training statistics
- Health and safety statistics, including sheets of PPE given to the Contractor's staff
- Incident log
- Complaints log
- Findings of health and safety audits and inspections
- Monitoring, inspection, and compliance reports/records
- Correspondence with public authorities
- Induction and training records
- Minutes of Occupational Health and Safety (OHS) review meetings and evidence of any action taken.

These records should be shared with the Engineer on a weekly basis. The engineer should then file them to be always availed to government inspectors, as applicable. The engineer shall prepare and issues action plans (instructions) to the contractor for non-compliance and escalation for repeated non-compliance to OSH matters.

8.2 Performance Criteria

The performance of the Occupational Health and Safety Plan (OHSMP) should be based on the following;

- No. of Risk assessments conducted
- No. and type of Incident and accident reports
- No. and type of Safety and health trainings
- No. of penalties for breaches of occupational safety and health guidelines
- No. of toolbox talks provided
- Employee inductions conducted.

8.3 Workers Grievances

The contractor shall develop appropriate workers grievance mechanism, free from intimidation/ victimization as proposed in this study. The grievance logs shall be reviewed weekly by a committee with representation from contractor, client, supervising engineer and workers. Feedback on deliberation shall be communicated to the workers. A clear mechanism for appeal of deliberation shall be availed to the workers/ victims.

9 Suggested EHSS Contract Clauses to be Included

The following Clauses have been proposed to be included in the Environment Heath Safety and Security (EHSS) Contract. The clauses provide specific actions to avoid or effectively manage OHS incidents.

9.1 Security

The Contractor shall evaluate the security strategy and arrangements required for all worksites including transport. This evaluation shall be performed by qualified security experts and shall form the basis for the Worksite Security Strategy and Plan which shall be prepared, submitted and approved by the Engineer as part of the Project Area-Environmental Social Management Plan (PA-ESMP). The Security Strategy and Plan shall describe:

- Security risks and the identified mitigation / management measures
- Roles and responsibilities including details of the Contractor and Subcontractors
- Detection, monitoring and management procedures
- Escalation plans including resources

9.2 Equipment and Operating Standards

The facilities and equipment used by the Contractor are installed, maintained, revised, inspected and tested pursuant to the manufacturer’ s recommendations. The recommendations are available in the language of communication approved by the Engineer).

9.3 Work Permit

The Contractor puts in place a work permit procedure, prior to the starting of the works. The procedures define the approval process between the person qualified to issue the work permit and the personnel (or Subcontractors) carrying out the work.
Permits are issued in writing. Unless specified otherwise in the Contract, or instructed otherwise by the Engineer, works which require a work permit are defined in the health and safety plan.
All other work permits required by the Engineer should be implemented by the Contractor.

9.4 Personal Protective Equipment

The Contractor ensures that all personnel, visitors or third parties entering a Project Area are equipped with

- Personal Protection Equipment (PPE).
- Where appropriate, PPE must be worn by women as well as by men.
- Personnel and visitors to Project Areas are equipped with a safety helmet, safety shoes and a reflective jacket as a minimum. Other PPEs shall be provided based on hazards/ risks informed by Job Safety analysis (JSA).
- Adequate quantities of PPE are available on the Project Areas.
- Storage conditions must be compatible with usage pursuant to the provisions of ESHS Specifications.
- Contractor personnel are trained in how to use and care for PPE and the Engineer has access to training certificates.
- When handling acids, caustics, and chemicals with corrosive or toxic properties, suitable protection shall be worn to prevent accidental contact with the substance.

9.5 Dangerous Substances

A substance is considered dangerous if one or several of its properties render it dangerous. The Contractor identifies and manages dangerous substances planned for use on the Project Area in the manner described in the relevant Clause.

- The assessment of the impact of the toxicity of dangerous substances on the reproductive functions of women and men must be taken into account.
- The transport to the Project Area and use of dangerous substances requires prior authorization from the Engineer.

- Details of risks and related prevention and protection measures are included in the health and safety plan.
- The Contractor obtains all necessary authorizations and/or licenses for the storage and use of dangerous substances from local authorities. A copy of the authorizations is provided to the Engineer.
- For each dangerous substance used, the Contractor should implement the recommendations described (i) in the Material Safety Data Sheets (MSDS), and (ii) by the Globally Harmonized System of Classification and Labelling of Chemicals established by the United Nations for hazardous chemicals.
- Copies of MSDSs are kept on the Project Area and made available to personnel. The Contractor provides the Engineer with copies of all MSDSs.
- Storage of dangerous substances
- Storage areas are designed and equipped by the Contractor based on the chemical and physical properties of the substances, on the types of containers stored, the number of people requiring access, the ventilation requirements, the quantities of the substance used and potential chemical reaction with other substances.
- The Contractor anticipates and plans for the storage and management of hazardous waste.
- Storage areas for dangerous substances are subject to strict rules, which are regularly checked by the ESHS manager.
- Storage areas are clearly identified with warning signs at the entrance. The Contractor displays the storage plan (location of the different products, maximum inventory), a summary of labelling system and information on chemical incompatibilities.
- Chemicals which could react together (leading to explosions, fire, projections or the emission of dangerous gases) are physically separated.
- Products that react violently with water are stored so as to prevent contact with water, even in the event of flooding.
- Inflammable products are always stored separately in a dedicated area with adequate ventilation.
- Buildings used to store large quantities of dangerous substances are isolated from other buildings to avoid the spreading of fire. Such buildings are constructed using solid and non-combustible building materials and are equipped with evacuation systems and the appropriate firefighting equipment. Access to the buildings is clear, allowing for rapid evacuation in the event of an accident. The electrical systems are reduced to the essential minimum, and access points are equipped with adequate lighting (300 lux).
- All storage areas are equipped with secondary retentions. Each storage area acts as a general secondary retention. Suitable absorbents (neutralising and non-combustible) are available in the storage area to clean up any spills and leaks.
- The Contractor maintains the storage area at a suitable temperature for dangerous substances to prevent overpressure and bursting of containers.

9.6 Planning for Emergency Situations

- The Contractor shall establish an emergency plan as a section of the PA-ESMP. It covers the following emergency situations as a minimum:
    a. e.g. Fire or explosion.
    b. e.g. Collapse of structures, or scaffolding.
    c. e.g. Loss of the containment of dangerous substances.
    d. e.g. Safety incident or malicious act.
- The Contractor shall maintain fit-for-purpose Emergency Response Capability, which shall be clearly documented.
- At a minimum, the Contractor shall make contingency arrangements for calling a Doctor and transporting injured persons to hospital. The telephone numbers of the emergency services and the name, address and telephone number of the Doctor and the nearest hospital shall be prominently displayed in the Contractor ´ s office.
- The Contractor ensures that all personnel are informed and aware of how to react in an emergency, and responsibilities are defined. Information and awareness training is documented, and available on all Project Areas.
- The Contractor organises and documents emergency simulation exercises within three (3) months of the physical start of the works, and subsequently once every twelve (12) months up to the issue of the Taking-Over Certificate. The Engineer is invited to participate in each of these exercises.

9.6.1 Fire Protection

Based on a fire safety risk assessment, the Contractor should ensure that adequate and appropriate fire safety measures are in place to minimise the risk of injury or loss of life in the event of a fire.

- Appropriate actions include: Keeping sources of ignition and flammable substances apart; Avoiding accidental fires; Ensuring good housekeeping at all times, e.g. avoiding build-up of rubbish that could burn; Installing smoke alarms and fire alarms or bells; Installing fire warning systems; Having correct fire-fighting equipment; Keeping fire exits and escape routes clearly marked and unobstructed at all times; Ensuring workers receive appropriate training on procedures they need to follow, including fire drills.
- Fire should not be used as a method of forest or vegetation clearance.
- Fire extinguishers are made available in each building at clearly identified locations, and fires are strictly forbidden outside of the cooking area.
- If applicable, the Contractor plans with local fire-brigades for emergencies.

9.6.2 Medical Check-ups

The Contractor organizes medical check-ups carried out by a doctor or an appropriately qualified nurse for all Contractor's. Personnel prior to the initial mobilization to the Project Area to check aptitude for the work. Medical check-ups are adapted to the anticipated occupied positions and carried out pursuant to the recommendations of the International Labour Organization. Subsequent to the check-up, a written medical certificate is issued declaring the aptitude of the worker for the allocated tasks.

Hearing tests are conducted for the Contractor's personnel exposed to noise levels above 80 dB(A) to establish initial audiograms. Annual tests are carried out to monitor any changes and detect any deterioration.

The Engineer can request additional medical examinations for the Contractor's Personnel if considered necessary, all costs to be borne by the Contractor.

A medical examination is carried out on any Contractor's Personnel returning to work after leave caused by a work-related accident. A written medical certificate is issued confirming the Contractor's Personnel's aptitude to return to work at the designated workstation.

The Contractor can produce a copy of its Contractor's Personnel's work aptitude certificates at the request of the Engineer or any competent authority. Specific arrangements for tasks' assignments or workstations shall be made for pregnant Personnel.

9.6.3 First-aid

The Contractor ensures a minimum of first-aid provisions on any work site, including: suitably stocked first-aid kits; an adequate number of staff appointed and trained to take charge of first-aid arrangements and ensure that staff and workers are informed about first-aid arrangements.

The Contractor equips the Project Area with a communication system exclusively for the purposes of communication with the first aid services. Information on how to communicate with the first aid services is clearly indicated near the communications equipment.

9.7 Medical Services and Personnel

The Employer should inform the Contractor about the presence and number of medical personnel in the Project Area. If not otherwise instructed by the Engineer, the Contractor shall collaborate with local health authorities and make arrangement with an appropriate number of local doctors, and/or nurses, hospitals and ambulance services to ensure that medical staff, first aid facilities, sick bay and ambulance service are available at a minimum within 45 minutes at the Site, and at any accommodation for Contractor's and Employer's Personnel or if appropriate, be based in the Project Area.

The Contractor guarantees access to health care for all personnel in case of accident or illness occurring during the execution of the works.

In absence of a health or health post in the vicinity, or within the Project Area, the Contractor shall make contingency arrangement for transporting injured persons to a hospital.

9.7.1 Emergency Response/ Medical Evacuations

The Contractor allocates rapid emergency transportation for first aid purposes to the first aid station.

In cases where there is no first aid emergency vehicle available to evacuate severely ill or injured personnel, the Contractor establishes an agreement with a specialized company for the handling of project workers in the event of a serious accident requiring an emergency medical evacuation and ensures that transport is guaranteed any time and as fast as possible. The Contractor should provide a copy of the agreement to the Engineer within one month of the physical start of works.

The agreement includes a convention with a referring hospital where the member of personnel evacuated in emergency conditions should be treated.

In highly remote areas or in demonstrably life-threatening cases, the agreement may cover the use of air transportation (if available) in order to evacuate the injured patient(s) to the referring hospital.

The telephone numbers of the emergency services and the name of the service providers and the doctors shall be prominently displayed in the Contractor´s site office.

9.7.2 Access to Health Care and Training

The Contractor guarantees access to health care for all personnel in case of accident or illness occurring during the execution of the works, i.e.:

a. Medical check-ups: initial (recruitment), annual and upon returning to work after sick leave.
b. Screening, vaccinations and preventive healthcare.
c. General healthcare during the execution of the works.
d. Medical assistance in the event of an accident and assistance for emergency evacuations.

Subcontractor's personnel, other contractors, the Employer or the Engineer, present at the Project Area, must never be refused medical assistance, under the pretext that they are not directly employed by the Contractor. The Contractor may however define a unit rate cost per medical act for personnel, other than its own Contractor's Personnel, display this rate in the healthcare centre and forward the information to the Engineer.

In the event of accident or serious illness, medical personnel must be trained, available and equipped with the necessary material, medicines and consumables to provide first aid for the patient, stabilise their condition, until the patient is:

a. Either treated or discharged; or
b. Hospitalized at the camp or in a larger hospital; or
c. Evacuated to a medical centre which is well equipped for intensive care, if necessary.

9.7.3 Health Monitoring

The Contractor cannot recruit workers in poor health.

The initial pre-recruitment examination must confirm that applicants are physically able to carry out the tasks required for the position.

The detection of pregnancy during the initial pre-recruitment examination of female applicants shall not constitute grounds for declining recruitment, unless medical risk is proven.

The Contractor organizes annual medical check-ups for its Contractor's Personnel and keeps up to date a medical record for each Contractor's Personnel. The presence of Contractor's Personnel for medical check-ups, treatment and hospitalization is incorporated into the Contractors planning.

If applicable and as recommended by a doctor or instructed by the Engineer, the Contractor provides the Contractor's Personnel with prophylaxis and vaccinations against local diseases and vectors. In particular, the Contractor should promote the use of impregnated mosquito nets by its Contractor's Personnel in camps or offsite lodging and distributes these nets appropriately.

The health and safety plan includes a Contractor's Personnel health risk assessment based on exposure to dangerous substances and describes the medical monitoring implemented.

9.8 Sanitary Repatriation

The Contractor is responsible for the sanitary repatriation of Contractor’ s Personnel in the event of a serious injury or illness, based on a diligent examination and a statement of the doctor in charge. The Contractor should take out the necessary insurance to cover the cost of the sanitary repatriation of Contractor’ s Personnel.

9.9 Hygiene, Accommodation and Food

1. Drinking water
   a. The Contractor provides personnel with drinking water at all Project Areas. The quantity and quality of this water complies with the standards of the World Health Organization at supply points.
   b. Unless the supply of drinking water is provided by a certified supplier, the quality of the drinking water provided to workers is tested at least at the start of the works and then on a monthly basis. The protocol for taking and analysing samples is based on the recommendations of the World Health Organization. The results shall be documented and made available to the Engineer.
2. Accommodation conditions
   a. The accommodation provided for non-resident Personnel in a camp or an alternative structure outside of the Project Areas, such as a hotel or rented house, will comply with the conditions prescribed by the Engineer-
   b. The person in charge of managing the accommodation has a specific duty to report to the ESHS manager or if existent, the HS manager, the outbreak of any contagious diseases, food poisoning and other important casualties. The ESHS Manager in turn will inform the appropriate health authorities.
   c. Rooms are lit and equipped with power sockets, beds and windows fitted with mosquito nets. Flooring is of a hard and impervious material.
   d. The temperature in rooms and common areas shall be kept at an appropriate level during occupied hours and providing adequate ventilation.
   e. The Contractor provides drinking water tap, shower, toilet in detail and distributed across the personnel. The showers and toilets must be separate for men and women.
3. Hygiene in shared areas
   a. Sanitary areas (showers, sinks, urinals, toilets) are cleaned and disinfected by the Contractor’s cleaning service at least once every 24 hours. Cleaning operations are documented.
   b. The canteen, kitchen and kitchen utensils are cleaned after each meal service.
   c. The number and location of toilets on Project Areas shall be adapted to the number of employees and the configuration of the Project Areas (distance, isolated area, etc.). For urinals and toilets, usual standards are 1 unit to max15 persons.
   d. Toilet facilities are conveniently located and easily accessible. In addition, all toilet rooms shall be well-lit, have good ventilation or external windows, have sufficient hand wash basins and be conveniently located.
4. Food
   a. Contractor shall provide meals at a reasonable cost or free of charge to its Contractor’ s Personnel per shift in a canteen area and according to an approved procurement system.
   b. The Contractor defines and implements actions in order to guarantee (i) the quality and quantities of food stuffs, (ii) compliance with health rules when preparing meals, (iii) fitting out and servicing premises and equipment, both in the kitchen and food storage areas.
   c. The Contractor inspects the cleanliness of food transport vehicles, temperature control and the cold chain, as well as best-before dates, and takes the necessary corrective actions. The temperatures of chillers are regularly checked.
   d. The Contractor checks that health requirements are met for food storage conditions in the kitchen or other locations, food cooking times and temperatures, and the conditions in which prepared products are left prior to consumption, to ensure no health risks. Prepared food is eaten or thrown away, no food remains are reused.
   e. The Contractor recruits trained canteen personnel and ensured that supervisors monitor compliance with sanitary instructions. The Contractor ensures that canteen personnel have means of ensuring compliance with health rules (changing rooms, linen, hand washers, the condition of flooring and paint, and the existence of a cleaning plan).
5. At the request of the Engineer, the doctor at the health centre, which should be specified, carries out an audit on all Project Areas every 3 months, and documents the results, and includes the conditions of hygiene in which meals are prepared and food conserved. The results of this audit are provided to the Engineer.
6. The Contractor, on the basis of the advice of the doctor at the health centre, informs Contractor’s Personnel on appropriate behaviour in terms of workplace hygiene. The Contractor regularly reiterates

the importance of hygiene, documents these reminders, and ensures that the information is understood, easy to apply and scrupulously complied with.

9.10 Substance Abuse

The use, possession, distribution or sale of illegal drugs, controlled substances (as per local regulations) and alcohol is totally prohibited on the Project Areas. The Contractor implements a zero-tolerance policy for the consumption of these substances. All workers shall be given a copy of code of conduct and signed copy maintained at site. The contractor shall undertake regular awareness through campaigns. These shall be captured/ reported on through the regular OSH reports by the contractor.

Any person suspected by the Engineer to be under the influence of alcohol or controlled substances on any Project Area is immediately suspended from his/her position by the Contractor, pending the results of medical tests.

Appendix I: Community Health and Safety Management Plan

Republic of South Sudan
Ministry of Roads and Bridges

SOUTH SUDAN CONNECTIVITY FOR GROWTH PROJECT

Environmental and Social Impact Assessment (ESIA) for the Upgrading of Juba - Torit - Kapoeta - Nadapal Road (354.05Km) to Paved (Asphalt) Standard



Appendix I - Community Health and Safety Management Plan (CHSMP)

Revision	Purpose description	Originated	Checked	Reviewed	Authorized	Date
1.0	Issued to Client	RNN	TO	LKN	MKG	25/10/2024
2.0	Revised - Client & WB Comments	TO	TO	LKN	MKG	01/12/2024

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List of Abbreviations

ARCSS	Agreement on the Resolution of the Conflict in the Republic of South Sudan
CSO	Civil Society Organisation
CHSMP	Community Health and Safety Management Plan
ESF	Environmental and Social Safeguards
ESIA	Environmental and Social Impact Assessment
ESMP	Environmental and Social Management Plan
ESS	Environmental and Social Standards
ERP	Emergency Response Plan
EPPRPs	Emergency Prevention, Preparedness and Response Plans
HIV/AIDS	Human immunodeficiency Virus/ Acquired immunodeficiency Syndrome
HR	Human Resource
MRB	Ministry of Roads and Bridges
NGO	Non-Governmental Organization
RTA	Road Traffic Accidents
RTGoNU	Revitalised Transitional Government of National Unity
STI	Sexually Transmitted Infections
TMP	Traffic Management Plan
WHO	World Health Organization

1. Introduction

The construction and operation of the Juba-Torit-Kapoeta-Nadapal Road project has significant potential to impact community health, safety, and security due to the large-scale nature of the works, increased vehicular traffic, environmental changes, and potential worker-community interactions. This Community Health and Safety Management Plan (CHSMP) has been developed to mitigate these impacts in line with the **World Bank's Environmental and Social Framework (ESF)** and its **ESS4** standard, as well as other applicable international guidelines.

The plan is designed to anticipate, avoid, and manage the risks to the health and safety of local communities throughout the life cycle of the project, taking into consideration both routine and non-routine circumstances. The plan presents:

- The objectives
- Legal and regulatory requirements
- Health and safety risks and impacts
- Management and monitoring plans
- Means of verification
- Reporting and documentation

1.1. Objectives

The primary objectives of the CHSMP are to:

- Anticipate and prevent adverse impacts on community health and safety.
- Minimize traffic-related risks during construction and operation of the road.
- Manage potential health hazards due to environmental changes or influx of workers.
- Ensure effective emergency preparedness and response.
- Address specific vulnerabilities of disadvantaged groups within the project area.

1.2. Linkage to other Environmental and Social Plans

This CHSMP should be read in the context of the Environmental and Social Management Plan (ESMP) as outlined in the ESIA Report. These plans have been designed to address a broad range of social and environmental risks.

It is recognized that the ESMP and associated plans are living tools that will be constantly updated to accommodate changing circumstances.

2. Legal and Policy Requirements

A summary of the legal requirements and standards relevant to the CHSMP are presented below. These have informed the measures to avoid and/or minimize the community's exposure to health and safety risks. The implementors shall be guided by these requirements including liaison with relevant authorities as applicable.

2.1. The Transitional Constitution of Republic of South Sudan, 2011 (rev.2013)

The Constitution provides for the right of every citizen to participate in the development of South Sudan. It allows women to participate equally with men in public life. It also safeguards cultural heritage, monuments of national, historic or religious importance.

2.2. Local Government Act, 2009

The Act outlines the principles of local governance which is the basis for decentralization and democratisation of the Local Government Authority System in South Sudan, It allows participation of all citizens in the exercise of their rights to express their opinions in the process of decision making in public affairs.

2.3. Labour Act, 2017

It provides for the working conditions of workers where no person should be discriminated, directly or indirectly or sexually harassed at the workplace.

2.4. Child Act, 2008

It outlines the rights of children where they should be protected from child labour and other abuses.

2.5. Penal Code Act, 2008

The Act defines and punishes the criminal offences in a country. Section 6 of the Act states that every person, who either by an act or omission, acts contrary to the provisions of this Act, commits an offence, and upon conviction, shall be sentenced in accordance with the provisions of this Act or other applicable law.

2.6. Agreement on the Resolution of the Conflict in the Republic of South Sudan

The Agreement on the Resolution of the Conflict in the Republic of South Sudan (ARCSS) resolved to

- Establish a Revitalised Transitional Government of National Unity (RTGoNU) in the Republic of South Sudan entrusted with the task of implementing the ARCSS.
- Permanent Ceasefire shall be observed meticulously n to ensure sustainable peace and facilitate the operationalization of the Transitional Security Arrangements and the voluntary repatriation, resettlement, rehabilitation and reintegration of returnees and Internally Displaced Persons.
- All parties shall create an enabling political, administrative, operational and legal environment for the delivery of humanitarian assistance and protection.
- Established principles and reforms for resource, economic and financial management. Specifically, RTGoNU shall develop comprehensive policies and legal and institutional frameworks for the preservation, conservation and sustainable use of the environment. Feasibility study of any project of South Sudan must include an environmental impact certificate from the Ministry of Environment and Forestry.
- Agreement on principles for Transitional Justice, accountability, reconciliation and healing.
- RTGoNU shall initiate and oversee a permanent constitution-making process, during the transitional period.

- Reconstitution of the Joint Monitoring and Evaluation Commission responsible for monitoring and overseeing the implementation of the Agreement and the mandate and tasks of the RTGoNU and recommend appropriate corrective action.

2.7. World Bank Group Environmental, Health, and Safety Guidelines

Relevant environmental, health, and safety standards from the World Bank Group Environmental, Health, and Safety (EHS) Guidelines that will guide the Juba–Torit–Kapoeta–Nadapal road upgrade project. For this road project, adherence to these guidelines is critical to ensuring proper community health and safety management. The ESIA report has analyzed gaps in national legislation and recommended standards to be adopted in the implementation 0of this project.

2.7.1. Community Health and Safety (Sect. 3)

Guidelines here focus on reducing the risks to surrounding communities, including traffic safety and managing the transport of hazardous materials. As the road traverses populated areas, minimizing risks to local communities is paramount.

2.7.2. Hazardous Materials Management (Sect. 1.5)

Since construction may involve hazardous materials (e.g., fuel, lubricants), this section provides guidelines on proper handling, storage, and disposal of hazardous substances to prevent contamination

2.7.3. Occupational Health and Safety (Sect. 2)

This section addresses the safety of workers involved in road construction. Key areas such as facility design, training, physical and chemical hazards, and the use of Personal Protective Equipment (PPE) are crucial to ensure worker safety during the project

2.7.4. Air Emissions and Ambient Air Quality (Sect. 1.1)

This section is relevant for controlling air quality during both construction and operational phases of the road project. The guidelines highlight emissions management from point, fugitive, and mobile sources. Ensuring emissions do not exceed the World Health Organization (WHO) air quality guidelines or local standards is critical, especially near sensitive areas

2.7.5. Noise Management (Sect. 1.7)

The noise control guidelines are essential for minimizing the impact of construction and operational noise, particularly near residential and sensitive receptors like schools and hospitals. These guidelines set permissible noise levels for different zones, which should be adhered to throughout the project.

2.7.6. Water Conservation and Wastewater Management (Sect. 1.3 & 1.4)

These sections outline best practices for managing wastewater and conserving water resources, which is critical for maintaining water quality at river crossings and during construction activities that might generate wastewater or impact hydrological systems.

2.7.7. Construction and Decommissioning (Sect. 4)

This section emphasizes environmental and social considerations during the construction phase, such as waste management, pollution prevention, and site rehabilitation, ensuring that the project has minimal negative impact on the environment and local communities.

2.8. World Bank's Environmental and Social Framework

The following Safeguards standards are critical in ensuring community health and safety for the proposed project development during construction, operational and decommissioning phases of the proposed project.

2.8.1. ESS1: Assessment and Management of Environmental and Social Risks and Impacts

The standard guides on procedures for assessing, managing and monitoring environmental and social risks and impacts. It guides on a mitigation hierarchy approach and differentiates measures that ensure adverse impacts do not disproportionately fall on the disadvantaged or vulnerable people.

2.8.2. ESS2: Labor and Working Conditions

Implementation of the project will create employment opportunities. The standard seeks to promote a safe and healthy work environment for all project workers by promoting fair treatment, ensuring there is no discrimination, and equal opportunities are offered to all project workers. The standard prevents the use of all forms of forced labour and child labour and supports the principles of freedom of association and collective bargaining of project workers in a manner consistent with national law. It also provides workers with accessible means to raise workplace concerns.

2.8.3. ESS3: Resource Efficiency & Pollution Prevention & Management

The standard promotes sustainable use of resources especially those associated with urbanization and economic activities such as road construction. It provides framework for avoiding or minimizing impacts on human health and environment, avoiding or minimising project-related emissions of short and long-lived climate pollutants, and avoiding or minimizing generation of hazardous and non-hazardous waste.

2.8.4. ESS4: Community Health and Safety

ESS4 addresses the health, safety and security risks and impacts on project -affected communities. Implementation of the road project will expose the local community to risks and impacts and it is important that the anticipated ones are identified and avoided/mitigated.

2.8.5. ESS7: Indigenous Peoples

These are local communities with distinct identities and aspirations that are distinct from mainstream groups in national societies. ESS7 will help in promoting sustainable development by engaging the local communities to ensure they benefit from the development process in ways that do not threaten their unique cultural identities and wellbeing by contributing to poverty reduction

2.8.6. ESS8: Cultural Heritage

The standard sets out measures for protecting cultural heritage within the Area of Influence throughout the project life cycle. It seeks to protect cultural heritage from the adverse impacts, address cultural heritage as an integral part of aspect of sustainable development, promote meaningful consultation with stakeholders regarding cultural heritage and promoting the equitable sharing of benefits from the use of cultural heritage

2.8.7. ESS10: Stakeholder Engagement & Information Disclosure

To ensure successful management of the environmental and social risks, all the relevant stakeholders need to be engaged from the early stages of the road project. The standard guides on the engagement process to ensure meaningful consultation, information disclosure, and grievance management.

3. Community Health & Safety Risks and Impacts

3.1. Summary of Potential Impacts

As with any project of this scale and nature, there are certain impacts that cannot be eliminated, i.e. residual impacts after implementing mitigation measures. The proposed Project will seek to avoid impacts wherever possible (by changes to Project planning and/or design) and implement measures to mitigate impacts where they remain (to reduce impacts that cannot be avoided to acceptable levels).

The following sections include a description of the potential community health and safety (CHS) risks and impacts and the mitigation measures proposed to reduce them to acceptable levels. These mitigation measures essentially comprise the management plan to avoid or mitigate negative impacts and enhance positive impacts related to the health and safety of local communities.

3.2. Construction Phase Impacts

The project's potentially CHS risks and impacts during the construction phase are described below.

(a) ***Safety risk from project infrastructure (such as bridges, and also the road itself***: the road project has potential safety risks from the road and the associated infrastructure during construction and operation. The project shall develop measures to ensure community safety including use of qualified personnel, use of approved and safe materials, design infrastructure able to withstand weather elements such as flooding that may pose further risks during operation.

(b) ***Traffic and road safety risks***: the project construction and operation activities have potential to cause road safety risks to the community and road users. The project shall develop specific road safety measures and monitor incidents. A traffic management plan has been prepared and should inform the road safety measures.

(c) ***Loss of ecosystem services***: the project construction activities/ features are likely to interfere/disrupt some ecosystems with potential adverse impacts to the community linked to health and safety e.g. access to services, source of food (nutrition) among others.

(d) ***Community exposure to diseases***: project activities may create/ pose health (disease) hazards with potential risks to the community e.g. water borne, air borne diseases and other communicable diseases. The project shall develop measures to prevent disease-causing hazards and management of labour influx to ensure community does not suffer project-related diseases.

(e) ***Risk from hazardous materials***: the project will require/ use some hazardous materials during construction, such as cement, bitumen, silica etc. Where release/ exposure to the community happens, there is potential adverse safety and health risks. The contractor shall ensure strict procedures to ensure safety in the transportation, storage and use of hazardous materials.

(f) ***Lack of emergency preparedness and response procedures***: lack of effective means to prevent and manage unanticipated incidents from project related activities may pose severe risks to the community. The project shall develop emergency preparedness and response procedures (EPRP) towards effective prevention and response to potential project incidents. The EPRP will be informed by risk hazard assessment and ensure coordinated response by various local authorities and community. The EPRP shall have the following elements as a minimum; control put in place, access to response equipment's, regular training and drills, incident notification to responders and affected communities, restoration and cleanup for major environmental incidents such as spillage.

(g) ***Risk from project security personnel***: security is a major concern in the project area and most if not, all works shall require use of armed security personnel. The community may be exposed to safety risks in the event of misuse of fire arms by the security personnel. The project shall develop measures to ensure incidents of fire arms misuse is avoided.

The objectives of the CHSMP during construction will be consistent with those identified in (Section 1.1) Specifically during construction this will include measures to:

- Avoid, minimize or compensate for the potential for community exposure to hazardous materials and substances during construction.
- Avoid, minimize or compensate for the potential for traffic related accidents.
- Avoid, minimize or compensate for the proposed Project's direct impacts on priority ecosystem services which may result in subsequent impacts to local income generating opportunities.
- Avoid, minimize or compensate for the potential for community exposure to communicable and vector-borne diseases.
- Avoid, minimize or compensate for a decline in the availability and / or quality of water resources available to local communities.
- Assist and collaborate with the local communities, local government, and other relevant partners, in their preparations to respond effectively to emergency situations; and
- In achieving these objectives MRB/Contractors will consider the differentiated exposure of different local communities to impacts and the higher sensitivity of vulnerable groups.

3.3. Mitigation Measures and Management Controls

The management actions require to fulfill the objective of the CHSMP during construction are presented in Table 3-1.

Table 3 - 1: CHS Management Plan

Aspect	Potential Risk/ Impact	Mitigation Measures	Responsibility	Timing/ Phase	Implementation Cost (USD)
Safety risk from project infrastructure	▪ Injuries from structure safety hazards.	▪ Use of signage (warning & precautions)	Contractor	Construction	100,000
	▪ Exposure to flooding incidents	▪ Sustainable designs-projected weather scenarios	▪ Client ▪ Contractor	Construction & Operation	500,000
Traffic and road safety risks	▪ Injuries from road accidents	▪ Speed calming features in design. ▪ Road safety awareness campaigns. ▪ Traffic management plan. ▪ Safety signage.	Client Contractor	Construction	500,000
Community exposure to diseases	▪ Water borne diseases ▪ Air-borne diseases ▪ Communicable diseases such as HIV/ STDs	▪ Appropriate construction methods to avoid water contamination and stagnation (dewatering of open excavations and effective drainage systems along access road) ▪ Dust suppression through work procedures and watering. ▪ Community sensitization on integration/ interaction between project workers and community. ▪ collaborate with County/State Governments and relevant NGOs to support improvements to existing health services ▪ develop and implement workforce Code of Conducts ▪ support women's empowerment and education programmes to promote women's rights and safe sexual practices (including the use of condoms and female condoms) and support.	Contractor	Construction	200,000
Risk from hazardous materials	▪ Environmental degradation ▪ Injury and/or diseases.	▪ Measures for transportation, storage and use of hazardous materials ▪ Project workers sensitization and training on use/ management.	Contractor	Construction	400,000
Lack of emergency preparedness and response procedures	▪ Injuries/ fatalities ▪ Property damage	▪ Preparation & implement of EPRP ▪ Sensitization & regular training for actors and community. ▪ Regular drills	Contractor	Contraction	500,000
Risk from project security personnel	Injuries/ fatalities.	▪ Due diligence to engaged firms/ security personnel. ▪ Training of security personnel ▪ Code of conduct.	Client.	Construction	300,000
Disruption/ availability of services	Limited/ reduced access	Provide community training related to pastoralist and agricultural livelihood improvement	Contractor	Construction	400,000

Table 3 - 2: CHS Monitoring Plan

Potential Risk/ Impact	Mitigation Measures	Monitoring Indicators	Responsibility	Timing/ Phase			Implementation Cost (USD)
				Daily	*Quarterly*	*Annual*	
Injuries from structure safety hazards.	Use of signage (warning & precautions)	Signages at Workfront's	Contractor	√			200,000
Exposure to flooding incidents	Sustainable designs-projected weather scenarios	▪ Sustainable design documents. ▪ Incidents of flooding	Client			√	500,000
Injuries from road accidents	▪ Speed calming features in design. ▪ Road safety awareness campaigns. ▪ Traffic management plan. ▪ Safety signage.	No. of incidents	Contractor Supervising Engineer	√			500,000
▪ Water borne diseases ▪ Air-borne diseases ▪ Communicable diseases such as HIV/ STDs	▪ Appropriate construction methods to avoid water contamination and stagnation. ▪ Dust suppression through work procedures and watering. ▪ Community sensitization on integration/ interaction between project workers and community.	▪ Work procedures/ method statements ▪ Watering logs ▪ Awareness/ campaign records & reports	Contractor	√	√		500,000
▪ Environmental degradation ▪ Injury and/or diseases.	▪ Measures for transportation, storage and use of hazardous materials ▪ Project workers sensitization and training on use/ management.	▪ Guidelines/ work procedures ▪ Storage facilities ▪ Training records	Contractor	√			800,000
▪ Injuries/ fatalities ▪ Property damage	▪ Preparation & implement of EPRP ▪ Sensitization & regular training for actors and community. ▪ Regular drills	▪ Documented EPRP procedures ▪ Drill reports/ records ▪ Training records	Contractor Supervising Engineer		√		300,000
Injuries/ fatalities.	▪ Due diligence to engaged firms/ security personnel. ▪ Training of security personnel ▪ Code of conduct.	▪ Engagement contracts including signed code of conduct ▪ Performance review and training records.	Client		√		100,000

3.3.1. Management During Operation

Potential Impacts

Impacts to community health and safety that occur during operations will be similar to those identified during construction (section 3.2.1) The implementation of the mitigation measures highlighted during the construction phase will also mitigate these impacts during operations.

The transmission of vector borne, and communicable disease may continue during operation. This may occur at a lower rate due to a smaller workforce; however, rates of transmission will also be dependent on rates on in- migration.

In addition, the social and demographic dynamic of the Project Area may change as a result of numerous factors and may result in changes to groups that are identified to be vulnerable or marginalized.

Objective and Targets

The objectives of the CHSMP during operations will be similar to those detailed for construction in (Section 3.2.2).

- Monitoring of the quality and availability of water resources in and around the proposed Project
- Continued monitoring of impacts to local livelihoods and the applicability of the livelihood restoration plan for managing impacts
- In partnership with local health authorities, monitor increased demands on health infrastructure.
- Continue to provide induction, training and voluntary testing facilities for communicable disease and STIs including HIV/AIDS for new personnel.
- Implementation of a tailored TMP for traffic requirements during operations; and
- Continue to implement the MRB External Feedback and Grievance Mechanism

3.3.2. Management for Decommissioning and Closure

Potential impacts

The impacts during decommissioning and closure will be like those identified during construction (Chapter 3); however, as a result of the cessation of operations impacts related to access and pressure on social and physical infrastructure, and decreased availability and quality of water resource will not occur.

Key impacts will relate to reduced health and well-being as a result of lost income associated with the downsizing and decommissioning and closure of the road. Those affected will include local employees (road maintenance officer and business people) and their families and those transporting goods and via the road

Objective and Targets

The objectives during decommissioning and closure will be to ensure that the objectives identified in Section 3.7.7 are achieved, and in addition, to ensure that impacts arising from the loss of income and reduction in the local economy are reduced as far as is practicable.

In addition, planning for this phase will be focused on the objective of ensuring public health and safety post-closure. Where contractors have been contributing to the improvement of local health and safety, sustainable alternatives should be identified that include planned and measured withdrawal from any responsibilities or rehabilitation or expansion of the road.

Management Actions

Management actions during the decommission and closure phase include:

- Manage environmental pollution including impacts to air quality during the dismantling of proposed Project infrastructure.
- Train employees on driving standards, and the transportation and handling of hazardous materials where relevant.
- Implement a handover and exit strategy for projects implemented that are aligned to community health and safety

- Actively plan to promote livelihood diversification and skill and capacity development, seeking to reduce the economic impact of decommissioning and closure on the local socio-economic system
- Ensue timely and open information sharing about proposed activities and expected changes in proposed Project activities.

4. Verification

4.1. Community Complaints

Community complaints and concerns will be captured and addressed through External contractors Feedback and Grievance Mechanism (refer to the Appendix N). The procedure has been designed to provide a simple, fair and transparent process for all external parties to provide feedback and to raise grievances.

4.2. Accountability and Responsibility

With respect to this CHSMP, Ministry of Roads and Bridge (MRB) has the responsibility to ensure that adequate measures are developed and implemented by contractors & parties, including third parties, to adhere to this CHSMP.

Furthermore, MRB and the contractors has the responsibility for ensuring that specific responsibilities allocated to them are organized and implemented. MRB has the responsibility to ensure that their employees and contractors are trained and aware of all required Community Health, Safety management procedures.

The overall accountability and responsibility for implementing these mitigation and avoidance measures will lie with the Client and the construction contractors. Key personnel to its implementation include Client Environment and social safeguards department and the contractor's health and Safety Mangers, Community liaisons, sociologist and Human Resources (HR) functions.

5. Reporting and Documentation

5.1. Government/ Authority Reporting

On the basis of monthly monitoring, reports will be generated and submitted to MRB for consideration. During the operational phase.

The reports will summarize the data collected through the monitoring program, identifying any occasions where specific remediation was taken. The reports will also summarize any complaints received from the local communities, setting out the complaint, whether it was substantiated, and any actions taken to alleviate the impact.

5.2. Internal Reporting

Monthly reports will be generated and lodged with the contractor's management team as part of the contractor's Environmental and Social Monitoring.

The reports will summarize the data collected through the monitoring program, identifying any occasions where specific remediation was taken. The reports will also summarize any complaints received from the local communities, setting out the complaint, whether it was substantiated, and any actions taken to alleviate the impact.

5.3. Community Reporting

On the basis of the existing reporting program undertaken during the construction, operational and decommissioning and closure phases, a summary report suitable for digestion by a non-technical community audience will be developed and disclosed on a monthly basis. This report will focus on graphical representation of information, particularly the outcome of community complaints and actions taken to remedy significant impacts. This will be undertaken in non-technical languages and in suitable local languages in a culturally appropriate manner.

The contractor's ES team (environmentalist & sociologist) will document community incidents and prepare monthly reports. The reports will be reviewed by the supervising engineer and by external monitors on quarterly basis.

Appendix J: Biodiversity Management Plan

Republic of South Sudan
Ministry of Roads and Bridges

SOUTH SUDAN CONNECTIVITY FOR GROWTH PROJECT

Environmental and Social Impact Assessment (ESIA) for the Upgrading of Juba - Torit - Kapoeta - Nadapal Road (354.05Km) to Paved (Asphalt) Standard



Appendix J - Biodiversity Management Plan

Revision	Purpose description	Originated	Checked	Reviewed	Authorized	Date
1.0	Issued to Client	JK	TOO	LKN	MKG	25/10/2024
2.0	Revised - Client & WB Comments	JK	TOO	LKN	MKG	29/11/2024

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List of Abbreviations

AC	Asphalt Concrete
AIDS	Acquired immune deficiency syndrome
BMP	Biodiversity Management Plan
CBD	Convention on Biological Diversity
CPC	Concrete Pipe Culverts
EHS	Environmental Health and safety
EHSG	Environment Health and Safety Guidelines
EMMP	Environmental Mitigation and Monitoring Plan
EPFI	Equator Principles Financial Institutions
ESIA	Environmental Social Impact Assessment
ESCP	Environmental and Social Commitment Plan
ESF	Environmental and Social Framework
EHSG	World Bank Environmental Health and Safety Guidelines
ESMP	Environmental and Social Management Plan
ESS	Environmental and Social Standards
FGD	Focused Group Discussions
GBV	Gender-Based Violence
GIIP	Good International Industry Practices
GM	Grievance Mechanism
GoSS	Government of South Sudan
GRC	Grievance Redress Committee
GRSS	Government of the Republic of South Sudan
HHEA	Howard Humphreys East Africa
HIV	Human immunodeficiency virus
IDA	International Development Association
LAPSSET	Lamu Port South Sudan Ethiopia Transport
LHS	Left Hand Side
MoEF	Ministry of Environment and Forestry
MRB	Ministry of Roads and Bridges
NBSAP	National Biodiversity Strategy and Action Plan
NDS	National Development Strategy
NGO	Non-Governmental Organization
NO	nitrogen oxides
OHS	Occupational Health and Safety
PPA	Project Preparation Advance
PPE	Personal protective equipment
RE	Resident Engineer
ROW	Right of Way
SEA	Strategic Environmental Assessment

SEP	Stakeholder Engagement Plan
SPLA	Sudan People's Liberation Army
SS-CFGP	South Sudan Connectivity for Growth Project
STI	sexually transmitted infection
WB	World Bank
WBG	World Bank Group

1 Introduction

1.1 The Project Overview

The Government of the Republic of South Sudan (GRSS) has received funding from the International Development Association (IDA) in the form of a Project Preparation Advance (PPA) and has utilized part of the funds for the Environmental and Social Impact Assessment (ESIA) study for upgrading of the Juba–Torit–Kapoeta–Nadapal road from gravel to paved (bitumen) standard.

The proposed Juba – Nadapal road upgrade is part of the major international trunk road starting from the Capital Juba to the Kenya Border at Nadapal providing linkage to the Kenya's Ports of Mombasa and Lamu. The project is an extension of the 1,355 km long Mombasa-Nairobi-Lokichogio-Nadapal road and it is also part of the highway corridor of the Lamu Port South Sudan Ethiopia Transport (LAPSSET) corridor being part of the Lamu – Garissa – Isiolo - Lokichar – Nadapal - Torit - Juba (1,230km) Highway.

This project, called South Sudan Connectivity for Growth Project (SS-CFGP) and a priority in the National Development Strategy, will connect Juba with Kenya, enhancing regional connectivity and economic integration. The upgrade is expected to foster sustainable growth, enhance livelihoods, and increase trade by addressing the current limitations of South Sudan's underdeveloped road infrastructure.

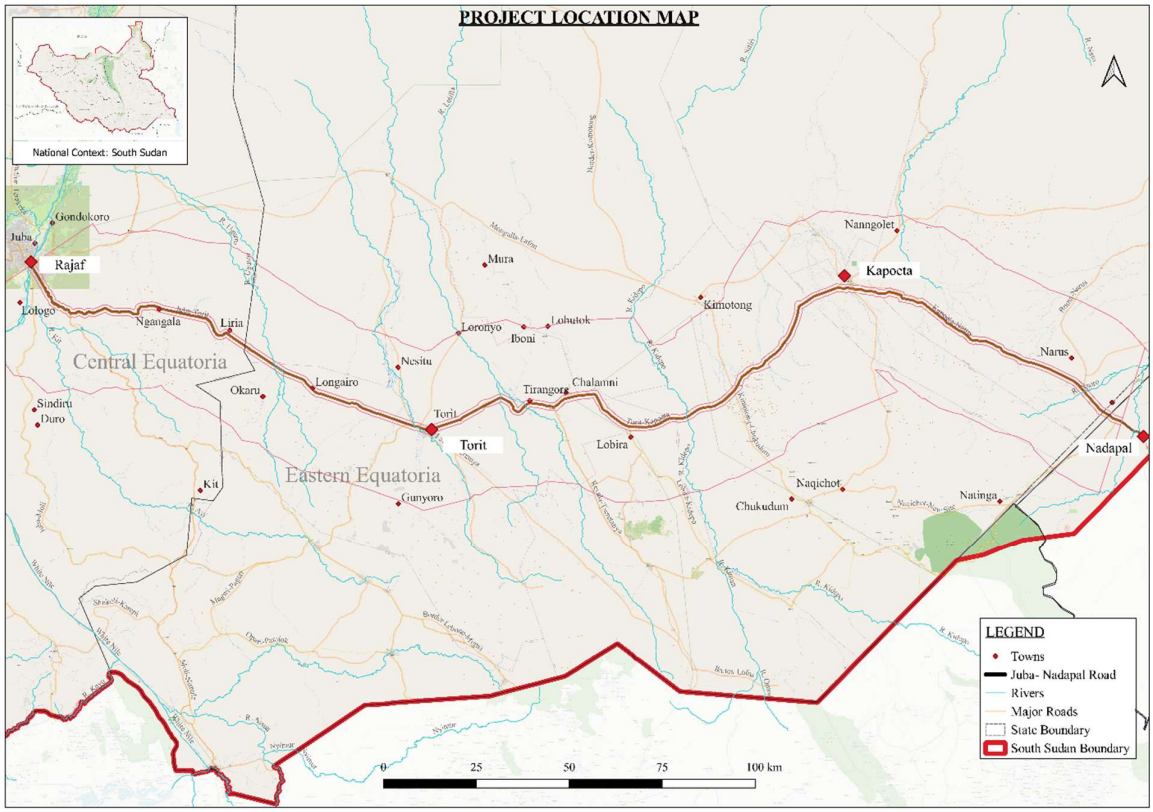


Figure - A - J - 1: Project Location Map

1.2 Objectives of Biodiversity Management Plan

The road construction activities on the Juba-Torit-Kapoeta-Nadapal Road can create negative outcomes on the natural environment along the Right of Way (RoW), with some areas such as the Kidepo Valley National Reserve being regarded as highly sensitive ecological areas exhibiting a high biodiversity of both flora and fauna. The goal of the Biodiversity Management Plan (BMP) is to implement a mitigation strategy for the project in such a way as NOT to achieve a net biodiversity loss of biodiversity and ecosystem services, or a net gain for the critical habitats and biodiversity features it supports.

The main objectives of this BMP are therefore to:

- describe the current baseline conditions for fauna and flora species, and their ecological characteristics;
- describe the actions and measures required for effective biodiversity management;
- identify possible impacts of the projects to biodiversity;
- outline specific measures to be implemented by the selected contractor (and subcontractors applicable) to avoid or minimize the negative impacts of the projects to biodiversity;
- respect the mitigation hierarchy by avoiding or mitigating biodiversity loss, with the aim of maintaining the diversity of species, habitats and ecosystems and the integrity of ecological functions;
- meet the requirements of the Environmental and Social Impact Assessment (ESIA) findings; the World Bank's Environmental and Social Framework Environmental Social Standards 6 (ESF ESS6) and international best practice for biodiversity conservation; and
- comply with applicable national and international policies and legislation.

It is important to note that impacts have been identified and presented in the ESIA. This Biodiversity Management Plan (BMP) is prepared specifically to describe actions and measures that will ensure minimal impacts from the construction of the Juba-Torit-Kapoeta-Nadapal Road to the local biodiversity.

2 Relevant Policy and Legal Framework

2.1 Policy Frameworks

2.1.1 South Sudan National Environment Policy 2015 – 2025

The policy document is based on the Rio principles of 1992, The Rio Declaration on the Environment and Development. The policy is guided by several principles that uphold human rights to a healthy and safe environment and affirm states' sovereign rights to exploit their natural resources for sustainable development without adversely affecting other states. The document emphasizes the collective responsibility in addressing environmental challenges and recognizes the right of local communities to participate in decision-making on issues that impact their lives, regardless of gender, ethnicity, religion, or other demographic factors. The objective of this policy document is to provide guidance and direction for the effective management of the environment to all stakeholders. The policy also promotes the use of Environmental and Social Impact Assessments (ESIA) for environmental management and sustainability.

2.1.2 South Sudan National Land Policy 2023

The policy is built on the principle that all citizens are entitled to tenure over their communal land, equitable access to land, gender equity and issuance of land and property titles, transparency in land dealings and participation in decision that affect land rights. The policy applies to land acquisition along the roads while ensuring consideration of the concerns of the citizens.

2.1.3 South Sudan Forest Policy

The policy document recognizes the importance of forests for commerce, livelihoods, communities, and their conservation. It introduces strict measures to protect the country's forest resources as an important asset, and measures to prevent changes in forest boundaries without legislative approval. The policy provides clarity on ownership and management responsibilities for forest reserves throughout South Sudan.

The document set clarities in roles and responsibilities of the relevant institutions, and it establishes the institutional mechanism for the protection and conservation of the country's forest resources.

2.1.4 South Sudan Wildlife and Protected Areas Policy 2012 – Draft

The draft South Sudan Wildlife and Protected Areas Policy is developed to address the challenges facing the country's wildlife resources and the institutions managing wildlife. These challenges include but are not limited to insecurity, poaching, habitat destruction, exploitation and unsustainable use of wildlife resources. The document is intended to provide a legal and institutional framework for conservation and sustainable management of wildlife and wildlife habitats, effective security and protection of wildlife and Protected Areas, avoid human-wildlife conflicts and ensure the equitable sharing of the benefits that arise from the wildlife resources for the present and the future generations.

2.1.5 The South Sudan National Biodiversity Strategy and Action Plan (NBSAP South Sudan) (2018-2027).

The National Biodiversity Strategy and Action Plan (NBSAP) of South Sudan is an expression of the intention of the Government and people of the country to integrate biodiversity concerns into public (national and subnational), private, and community policies, plans, programs and projects. The NBSAP is also a fulfilment of the commitment of the Government of South Sudan when it acceded to the United Nations Convention on Biological Diversity (CBD) on 17 February 2014 and became the 94th Party to the global treaty on biodiversity and sustainable development.

South Sudan envisions a NBSAP that establishes a strong framework for biodiversity conservation and contributes to economic prosperity and enhanced quality of life for all. The Vision of NBSAP for South Sudan is to establish a strong framework for biodiversity conservation that contributes to economic prosperity and enhanced quality of life while the goal is to develop and maintain an operational framework for conservation of biodiversity; sustainable use of biodiversity; fair and equitable sharing of the benefits arising from their utilization.

Implementation of the above strategic objectives of the NBSAP is envisaged to address the general threats and emerging issues for biodiversity management in South Sudan.

2.1.6 World Bank's Environmental and Social Framework[1]

The Bank has developed Environmental and Social Standards to identify and assess environmental and social risks and impacts associated with projects it is financing. The application of these standards not only reduces poverty and increases prosperity in a sustainable manner but also promotes environmental and social sustainability. The relevant standards to the road project are summarised in the Table A - J - 1.

Table A - J - 1: Relevant ESS Standards

ESS	Relevance
ESS1: Assessment and Management of Environmental and Social Risks and Impacts	The standard guides on procedures for assessing, managing and monitoring environmental and social risks and impacts. It guides on a mitigation hierarchy approach and differentiates measures that ensure adverse impacts do not disproportionately fall on the disadvantaged or vulnerable people. The standard encourages the utilization of national environmental and social institutions, systems, laws, regulations and procedures in the ESIA assessment.
ESS5: Land Acquisition, Restrictions on Land Use and Involuntary Resettlement	Implementation of the project might result in loss of land, assets, access to property and loss of income or other sources of livelihood. The standard guides on how resettlement is to be undertaken if there are people or communities who are likely to suffer from physical or/and economic displacement as a result of implementing the road project.
ESS6: Biodiversity Conservation and Sustainable Management of Living Natural Resources	This standard recognizes that protecting and conserving biodiversity and sustainably managing living natural resources are fundamental to sustainable development and it recognizes the importance of maintaining core ecological functions of habitats, including forests, and the biodiversity they support. ESS6 also addresses sustainable management of primary production and harvesting of living natural resources and recognizes the need to consider the livelihood of project-affected parties, including Indigenous Peoples, whose access to, or use of, biodiversity or living natural resources may be affected by a project.
ESS8: Cultural Heritage	The standard sets out measures for protecting cultural heritage within the Area of Influence throughout the project life cycle. It seeks to protect cultural heritage from the adverse impacts, address cultural heritage as an integral part of aspect of sustainable development, promote meaningful consultation with stakeholders regarding cultural heritage and promoting the equitable sharing of benefits from the use of cultural heritage
ESS10: Stakeholder Engagement and Information Disclosure	To ensure successful management of the environmental and social risks, all the relevant stakeholders need to be engaged from the early stages of the road project. The standard guides on the engagement

[1] IFC (2012) Performance Standard 6 - Guidance Notes, International Finance Corporation, Washington DC.

	process to ensure meaningful consultation, information disclosure, and grievance management.

2.2 Legal Framework

The Government of the Republic of South Sudan has established regulations to facilitate the Environmental and Social Management activities in the country that are summarized in Table A - J - 2.

Table A - J - 2: Relevant Laws Applicable to the Road Project

Applicable Law	Relevance
The Transitional Constitution of Republic of South Sudan, 2011 (rev.2013)	The Constitution provides for the right of every citizen to participate in the development of South Sudan. It allows women to participate equally with men in public life. It also safeguards cultural heritage, monuments of national, historic or religious importance.
The South Sudan Environment Bill 2023	The Draft Bill stipulates the need to undertake an Environmental Impact Assessment where and when the Lead Agency deems the project may have varies levels of impact in the Environment. The bill prohibits the commissioning of any developmental activity, which is anticipated to negatively change the environmental baseline condition, or which the law requires an ESIA. The bill requires a valid ESIA certificate [which is only issued by the National Ministry of Environment and Forestry] to be present to the authorities prior to commissioning of the intended developmental activity/project. The bill, however, has not been enacted into law so it remains just a guide.
The South Sudan Forest Bill 2023	The Bill provides for the sustainable management and utilization of extracts. It prohibits the extractive activities within or adjacent to forest ecosystems unless an Environmental and Social Impact is conducted.
The South Sudan Wildlife and Protected Areas Bill 2023	The Bill prohibits activities within protected areas, and it conditions any physical development within Protected Areas shall be subject to Environmental and Social Impact Assessment.
South Sudan Land Act 2009	The land act provides for the protection of the country's natural resources for both surface and sub-surface resources. For protecting the environment and the country's natural resources, chapter XI, article 70 of the Act provides for the conduct of a social and environmental impact assessment for any developmental activity, which has the potential to affect the environment. The assessment is to ensure that the social, Economic and Environmental implications of the activities on the land are taken into consideration before any decisions is made thereon. The act provided for the restoration of degraded environment due to developmental or any other activity.

2.3 Institutional Framework

2.3.1 The Ministry of Roads and Bridges

The MRB is the most important player in this project, as it the project proponent. Furthermore, it is the entity that ensures that all safeguards documentation such as the ESIA and RAP are completed and approved by the Ministry of Environment and Forestry. It does the supervision and monitoring of the ESIA.

2.3.2 The Ministry of Environment and Forestry

The Ministry of Environment and Forestry (MoEF) is responsible for the development and implementation of environmental policies, legislation, and strategic environmental management plans. It is the entity responsible for approving the ESIA Report, ensuring that environmental management guidelines and regulations are observed in this ESIA, and advising and supporting government agencies and the private sector in implementing environmentally sustainable projects, including road projects.

2.3.3 State Ministry of Physical Infrastructure – Central Equatoria State

The Ministry is a key player in the coordination of the inter-state road management. It is a very important stakeholder in providing guidance critical areas of the road that need special attention.

2.3.7 State Ministry of Physical Infrastructure – Eastern Equatoria State

Like the State Ministry of Physical Infrastructure of Central Equatoria State, the State Ministry of Physical Infrastructure in Eastern Equatoria State will be directly involved in the coordination and management of inter-state road project.

3 Biodiversity Baseline Survey Summary

3.1 Methodology

In order to gather both primary and secondary data related to biodiversity in the area, various methods were employed. The methods included both direct and indirect ways to gather primary data, and literature reviews, reports, publications and books to gather secondary data. For the mammals, plants and birds, drive through and transects each one covering a length of 500 m perpendicular from the Juba-Torit-Kapoeta-Nadapal Road were established on both sides of the road covering the major habitats namely woodlands, wooded grasslands, bushlands, grasslands and riverine areas. For the amphibians and reptiles, optimistic search methods were mainly employed. Further, focus group interviews with the settlements along the road were conducted. For the secondary data, literature review was conducted of which various technical reports, checklists, journals, books and office records were read.

3.2 Stakeholder Consultations

Throughout the project identification and implementation, different stakeholders at different levels were identified and consulted in order to solicit their concerns, views, opinions and suggestions. Consultations were conducted with government Ministries, Departments and Agencies dealing with biodiversity issues, project-affected persons and vulnerable groups traversed by the project road, utility authorities.

3.3 Community meetings

Consultative meetings, Key Informant Interviews, Focus Group Discussions and community meetings were held with relevant personnel, representatives and community at large along the project corridor. A checklist of guiding questions and/or issues was prepared before holding meetings with stakeholders. The key issues raised during consultations were reviewed and analyzed for their significance before being incorporated in the report.

3.4 Existing Biological conditions

The biological condition is the key feature of the baseline conditions. In this BMP, the biological environment has been subdivided into fauna and flora baseline conditions. In both cases, the terrestrial and aquatic baseline conditions are described, cognizant of the fact that the project interventions can have impacts on both groups. The following sections describe the different biodiversity types identified in the Project area.

3.4.1 Environmental Sensitive Areas

An environmentally sensitive area (ESA) can be defined as a type of designation for an area which needs special protection because of its ecological functions, landscape, wildlife or historical value.

Wetlands are a common feature of the flat plains within the project area and the existing road system traverses them on many occasions, often over causeways or raised roadbeds which have disrupted the wetland ecosystem. The predominance of wetlands is vitally important as part of the land-use strategy among the agro-pastoralist society which retreats to them during the long dry season to sustain their cattle with fresh fodder and water.

The other ESAs within the project area are wildlife conservation areas. Towards the East, the project road crosses the Kidepo Game Reserve, an important conservation area that extends into Uganda. Indeed, within the wider project area each year millions of white-eared kob, Mongalla gazelle, tiang and Bohor reedbuck migrate across the Boma Bandingilo Jonglei Landscape where the project road crosses between around Km 200 and Km 250.

3.4.2 Flora

From Juba to Torit, about three (3) distinct vegetation types were observed. These included woody grasslands (dominated by Acacia spp, Balanites spp, Grewia spp. Streams and riverine areas had palms (*Hyphaene coriace*), Acacias, and bamboo.

Nangala Hills area consisted of broad-leaved trees doum palms (*Hyphaene coriace*), *Kigelia africana*, Teak (*Techtona grandis*), Acacias, Terminalia.

The road then cuts through the Kidepo Game Reserve with some distinct vegetation type of wooded grassland. This is dominated by Combretums, Balanites, and Acacias. This vegetation type goes all the way to Kapoeta.

The wetland at the Kidepo River Bridge is dominated by sedges, doum palms (*Hyphaene coriace*), Ficus. The several wetlands will require non-directional drainage structures that can accommodate future changes in wetland characteristics that may be exacerbated by climate change.

Observation shows that there are three distinct vegetation types along the Torit-Kapoeta section. Torit to Kiyala; this is a purely closed woodland, and Kiyala to Kapoeta including luggas; more open wooded grassland. Within townships and small settlements along the road vegetation is dominated mostly by exotic species. The closed woodland from Kiyala is dominated by tall trees which include: *Sclerocarya, Tamarindus, Lannea, Balanites, Sterculia, Ziziphus, Combretum, Mangifera indica, Piliostigm, Azadirachta indica, Acacias, Ficus, Kigelia, Celtis, Hyphaene. Vitallaria, Ekebergia, Milicia, Khaya* (African mahogany), and *Erythrophleum*. The resurgence of this vegetation type is as a result of the influence of forest species which marks the transitional zone between the high-altitude species found on hill tops and the lowland woodland.

The second vegetation type from Kiyala to Kapoeta to Nadapal is more open lowland wooded grassland dominated by scattered trees and shrubs. It is well described as Acacia-Terminalia-Balamites open wooded grassland to bushland. The most dominant species include: *Terminalia brownii, Terminalia spinosa, Acacia polyacantha, Acacia tortilis, Dichrostachys, Harissonia, Tamarindus indica, Ficus, Kigelia,* and *Acacia* spp.

Bushlands from Kapoeta towards Nadabal were dominated by arid bush species with very sparse annual grass cover. Bush species include Acacia, Balanite, Cadaba, Maerua, Grewia, Combretum, Boscia, Euphorbia and Sansevieria (an indicative species of arid or dry conditions).

Species found within townships and small settlements along the road are mostly exotics. These include: *Azedirachta indica, Jatropha curcas, Tectonia grandis, Senna siamea, Ricinus communis, Parkinsonia anacantha, Ceiba pentandra, Prosopis chirensis, Carica papaya, Musa paradisiacal, Hibiscus rosachinensis* and *Mangifera indica*. The indigenous species include *Acacia nilotica, Salvadora persica, Acacia tortilis, Balanites aegyptiaca, Cordia sinensis, Kigelia africana* and *Hyphaene coriacea*.

3.4.3 Invasive Species[2]

In terms of invasive species, two of them were noted. In the wetland at Torit, water hyacinth (*Eicchonia crassipes*) was found in the waters. This invasive species is a very prolific invader of tropical inland water bodies. Along the road reserve from Nadapal to Kapoeta, the invasive mesquite (*Prosopis juliflora*) was noted to be invading the road reserve. This invasive species is a very prolific invader too and is mostly prolific on alluvial soils.



Plate A - J - 1: *Eicchornia crassipes* at Tortit wetland and *Prosopis juliflora* near Nadapal Respectively

[2] Ali Omer, Maha Kordofani, Haytham H, Gibreel L, Peter Pysek, and Mrk van Kleunen. 2021. The alien flora of Sudan and South Sudan: taxonomic and biogeographical composition. Biological Invasions, 23:2033-2045

3.4.4 Traditional Knowledge of Medicinal Plants[3]

Plants that possess therapeutic properties or exert beneficial pharmacological effects on the animal and human body are generally designated as medicinal plants. The history of the use of medicinal plants for alleviating diseases originates from the activities of the most primitive man of the remote past. Our ancestors were forced to use any natural substances that they could find to ease their suffering caused by acute and chronic illnesses, physical discomforts, wounds, injuries and even terminal illnesses. Since ancient times, plants with therapeutic properties have occupied an important place in disease treatment practices. Thus, they serve as important therapeutic agents as well as important raw materials for the manufacturing of traditional and modern medicines. They are rich sources of bioactive compounds and therefore serve as important raw materials for drug production. Table A - J - 3 contains some of these plants.

Table A - J - 3: Some important plants of South Sudan encountered in the Road Project area

Plant Species	Local Name	Part Used	Known Uses	Frequency and Range of Distribution	Conservation Status (after IUCN)
Woody/Herb Species					
Acacia mellifera		Twigs or branches	Fencing	Common	Not threatened
Acacia nilotica		Fruit	Antiseptic	Common	Not threatened
Acacia nubica				Common	Not threatened
Acacia reficiens		Twigs or branches	Fencing	Common	Not threatened
Adansonia digitatata		Fruits	Food	Not Frequent	Not threatened
Azadirachta indica	Neem	Fruits, leaves	Malaria, insecticides	Common around homesteads	Not threatened
Balanites aegyptica		Leaves	Lowering blood pressure, stomach disorders	Common	Endagered
Borassus eathiopum	African fan palm	Leaves	Thatching	Rare	Endagered
Calotropis procera		Leaves, fruit kernel	Cholera, asthma, wounds	Common	Not threatened
Dalbergia melanoxylon		Leaves, bark	Parasitic worms	Rare	Near threatened
Jatropha curcas		Leaves, seeds	Burns, retained placenta, dermatitis, biofuel	Common within homesteads	Not threatened
Khaya senegalensis	African mahogany	Leaves, roots	Diarrhea, stomach worms	Rare	Threatened/Vulnerable
Kigelia africa		Fruits	Syphilis, antibacterial, brewing alcohol	Common	Not threatened
Mangifera indica	Mango	Fruits	Food	Common within homesteads	Not threatened
Phoenix reclinata	African Wild Date Palm	Leaves	Thatching	Rare	Not threatened
Tamarindus indica		Fruits	Laxative, pneumonia	Common	Not threatened

[3] Joseph DWL, Kenneth Lado LS, Clara Stephen GL, Jada PY, James Augustino MU, Sampson AB, Yatta Samuel LN, Massimo KM, Thomas FL, and Awad HK. 2020. Diversity and Distribution of Medicinal Plants in the Republic of South Sudan. World Journal of Advanced Research and Reviews, &91): 18-31.

Plant Species	Local Name	Part Used	Known Uses	Frequency and Range of Distribution	Conservation Status (after IUCN)
Terminalia brownii		Wood, roots	Hepatitis	Common	Not threatened
Ziziphus mauritiana		Leaves, fruit	Cuts, wounds, ulcers	Common	Not threatened
Grasses					
Arundinaria alpina	Bamboo	Poles	House construction	Rare	Threatened/ Vulnerable
Hypharrhenia sp		Leaves	Thatching	Common	Not threatened

3.4.5 Fauna

In terms of fauna, very few were observed along the road corridor, even at the famous Kidepo Valley Game Reserve. Only at the Lowoyakali stream baboons were seen. More observations will be carried out during the detailed survey. However, the project area is likely rich in wildlife considering that the road crosses Kidepo Game Reserve to the east and the migration corridor of a range of ungulates that move between Bandingilo National Reserve towards the River Nile to the west. However, review of the literature show that South Sudan has a rich biodiversity of animals. The effect of wars has also rendered some area depopulated of wildlife, especially along the road corridor.

3.4.4.1 Mammalia

Juba county accommodates part of the Bandingilo National Park which is of national biodiversity importance. Like Juba County, significant parts of eastern Equatoria state is home to diverse wildlife species of South Sudan. The mountains and the hills in Eastern Central Equatoria, including Rajaf, and Oponi mountains in Lyria are home to considerable population of baboons (*Papio anubis*), Vervet monkeys (*Cercopithecus aethiops*), and macaques. Squirels (*Parazerua ochraceus*) are commonly encountered in these areas. According to the local communities, warthogs (*Phacochoerus spp*), antelopes dikdik (*Rhynchotragus kirki*) and Thomson's Gazelle *(Eudorcas thomsonii*) are commonly seen in the villages during the dry seasons. Hyenas, Egyptian mongoose (*Herpestes ichneumon*), leopards, wild cats and lions are mostly observed during the night-time as they are the common predators of domestic mammals.

3.4.4.2 Avifauna

The Central and Eastern Equatoria regions of South Sudan are integral to the larger East African savannah and woodland ecosystems, which host a diverse variety of bird species. The landscape consists of woodland savannas, open grasslands, riparian zones, and scattered wetlands that create a favorable environment for both resident and migratory bird species.

The project corridor from Rajaf in Juba to Nadapal traverses one of the most ecologically rich areas of South Sudan, supporting significant avian diversity. Avifaunal distributions were observed to be somewhat random, but nests were often found near water points and insect breeding grounds. Certain species, like tick-eaters, were seen in close association with cattle and donkeys, while weaver birds were commonly spotted near borrow pits, which had turned into permanent man-made wetlands.

Previous studies in the area have recorded notable bird species such as the Egyptian Goose (*Alopochen aegyptiacus*), Egyptian Vulture (*Neophron percnopterus*), African Fish Eagle (*Haliaeetus vocifer*), Red-necked Falcon (*Falco chicquera*), Somali Bee-eater (*Merops revoilii*), African Spoonbill (*Platalea alba*), and Pygmy Falcon (*Polihierax semitorquatus*). Additionally, other species observed include the Cattle Egret (*Bubulcus ibis*), Black Egret (*Egretta ardesiaca*), Grey Heron (*Ardea cinerea*), Rüppell's Starling (*Lamprotornis purpureus*), and Black-chested Snake Eagle (*Circaetus pectoralis*).

While no single habitat type was found to host specific bird species exclusively, the baseline survey identified various birds including Weaver Birds (*Ploceus cucullatus bohndorffi*), the Red-cheeked Cordon-bleu (*Uraeginthus bengalus*), Pied Crow (*Corvus albus*), and Helmeted Guineafowl (*Numida meleagris*). In the Kidepo Valley, notable species such as the Ring-necked Dove (*Streptopelia capicola*), Great Egret (*Ardea alba*), Red Bishop (*Euplectes orix*), and the endangered Shoebill (*Balaeniceps rex*) were also observed.

Locals reported the disappearance of certain bird species, attributing this to habitat destruction caused by activities like charcoal burning, brick-making, and firewood collection, which has increased insecurity for avian species.

Key bird species commonly found in this region include ground-dwelling birds like the Helmeted Guineafowl (*Numida meleagris*) and woodland species such as the African Harrier-hawk (*Polyboroides typus*). The woodland habitats provide essential shelter and breeding grounds for both resident and migratory birds, while wetlands serve as critical stopover points for migratory waterfowl. Some of the avifauna species images captured are presented in Plate A-J-2.



Helmeted Guineafowl (*Numida meleagris*)



African Harrier-hawk (*Polyboroides typus*)



Red Bishop (*Euplectes orix*)



Red-cheeked Cordon-bleu (*Uraeginthus bengalus*)

Plate A - J - 2: Observed Avifauna

3.4.4.3 Reptilia

Reptiles by nature are sensitive to foreign intrusions especially if intruders are at the size of a predator. For this result coupled with the risks of landmines within the vicinity of the one kilometer off road survey, the baseline information specific to reptiles are limited. Along the targeted project area, reptiles such as the gracile blind snake (*Letheobia toritensis*), unidentified chameleon species and monitor lizard were identified. Previous assessment studies have recorded red headed agama (*Agama agama*), gecko (*Lygodactylus picturatus*), savannah monitor lizard (*Veranus exanthemettic*), Nile monitor lizard (*Veranus niloticus*), rock python (*Python sebae*) and brown backed snake (*Rhamphioplus oryrhynchus*) as the common reptiles in the study area.

3.4.4.4. Insecta

In the drier areas from Torit to Nadapal, termites are very common inside termite mounds. Other insects noted include various types of butterflies, houseflies, dragon flies near water points and rivers.

3.4.4.5. Conservation Status of Fauna in the Project Area

This section presents the Conservation Status of the wild fauna based on the South Sudan Wildlife Bill 2023 and the IUCN. The South Sudan Ministry of Wildlife Conservation and Tourism categories the conservation status of wild fauna in three categories, I – Completely Protected Species, II – Specially Protected Species and III – Protected Species. The table below depicts the conservation status of the faunal species in the vicinity of the project site.

Table A - J - 4:: Conservation Status of Wild Fauna in South Sudan

Common name	Scientific name	Conservation Status South Sudan	Conservation Status IUCN
Mammalia			
Baboon	*Papio anubis*	Protected species	Least concern
Vervet monkey	*Cercopithecus aethiops*	Specially Protected species	Least concern
Squirrel	*Parazerua ochraceus*	Least Concern	Least Concern
Warthog	*Phacochoerus spp*	Protected species	Least concern
Antelopes dikdik	*Rhynchotragus kirki*	Protected species	
Thomson's Gazelle	*Eudorcas thomsonii*	Completely protected species	Least concern
Hyena	*Hyaena spp*	Least Concern	Least concern
Egyptian mongoose	*Herpestes ichneumon*	Least Concern	Least concern
Leopard	*Panthera pardus*	Completely protected species	Threatened
Wild cat	*Felis silvestris*	Protected species	Least concern
Lion	*Pantera leo*	Completely protected species	Threatened
Bohor reedbuck	*Redunca redunca*	Specially protected species	Least concern
Mongalla gazelle	*Eudorcas albonotata*	Specially protected species	Least concern
Tiang	*Damaliscus lunatus tiang*	Specially protected species	Least concern
White eared kob	*Kobus kob*	Specially protected species	Least concern
African bush elephant	*Loxodonta africana*	Completely protected species	Endangered
Buffalo	*Syncerus caffer*	Completely protected species	Least concern
Cheetah	*Acinonyx jubatus*	Completely protected species	Threatened
Giraffe	*Giraffa camelopardalis,*	Completely protected species	Threatened
Lesser kudu	*Tragelaphus imberbis*	Completely protected	Threatened
African wild dog	*Lycaon pictus*	Protected species	Endangered
Reptilia			
Gracile blind snake	*Letheobia toritensis*	Least Concern	Least concern
Chameleon	*Chamaelo sp*	Specially protected	Least concern
Monitor lizard	*Varanus or Lanthanotus*	Specially protected	Least concern
Red headed agama	*Agama agama*		Least concern

Gecko	*Lygodactylus picturatus*		Least concern
Savannah monitor lizard	*Veranus exanthemettic*	Specially protected	Least concern
Nile monitor lizard	*Veranus niloticus*	Specially protected	Least concern
Rock python	*Python sebae*	Completely protected	Near threatened
Brown backed snake	*Dendrelaphis bifrenalis*		Least concern
Avifauna			
Tick-eater or Oxpecker	*Buphagus erythrorynchus*	Least Concern	Least concern
Weaver birds	*Ploceus cucullatus bohndorffi*	Low Risk	Least concern
Egyptian Goose	*Alopochen aegyptiacus*	Specially protected	Least concern
Vulture	*Neophron percnopterus*	Completely protected	Endangered
African Fish Eagle	*Haliaeetus vocifer*	Completely protected	Least concern
Red-necked Falcon	*Falco chicquera*	Protected	Near threatended
Somali Bee-eater	*Merops revoilii*	Least Concern	Least concern
African Spoonbill	*Platalea alba*	Completely protected	Least concern
Pygmy Falcon	*Polihierax semitorquatu*	Least Concern	Least concern
Cattle Egret	*Bubulcus ibis*	Specially protected	Least concern
Black Egret	*Egretta ardesiaca*	Specially protected	Least concern
Grey Heron	*Ardea cinerea*	Completely protected	Least concern
Rüppell's Starling	*Lamprotornis purpureus*	Least Concern	Least concern
Black-chested Snake Eagle	*Circaetus pectoralis*	Completely protected	Least concern
Red-cheeked Cordon-bleu	*Uraeginthus bengalus*	Least Concern	Least concern
Pied Crow	*Corvus albus*	Least Concern	Least concern
Helmeted Guineafowl	*Numida meleagris*	Specially protected species	Least concern
Ring-necked Dove	*Streptopelia capicola*	Specially protected species	Least concern
Great Egret	*Ardea alba*	Specially protected species	Least concern
Red Bishop	*Euplectes orix*	Least Concern	Least concern
Shoebill	*Balaeniceps rex*	Completely protected	Vulnerable
Kori bustard	*Ardeotis kori*	Completely protected species	Near threatened
Secretary bird	*Sagittarius serpentarius*	Completely protected species	Near threatened

Clapperton's francolin	*Pternistis clappertoni*	Specially protected species	Least concern
Karamoja apalis	*Apalis karamojae*		Vulnerable
Ostrich		Completely protected species	Least concern
Red-throated bee-eaters	*Merops bulocki*		Least concern
Abyssinian roller	*Coracias abyssinicus*		Least concern
Abyssinian ground hornbill	*Bucorvus abyssinicus*		Least concern
Lappet faced vulture	*Torgos tracheliotos*	Completely protected species	Vulnerable
Lesser kestrel	*Falco naumanni*		Least concern
Denham's bustard	*Neotis denhami*	Completely protected species	Near threatened

3.5 Important Conservation Areas

3.5.1 Kidepo Game Reserve

The Kidepo Game Reserve is a protected area located in Ikotos and Budi counties, Eastern Equatoria State, South Sudan, Africa. The reserve has an area of 1,200km^2, located 4° 04'N and 33° 28'E on the South Sudan/Uganda border, where it forms a contiguous ecosystem with Uganda's Kidepo Valley National Park (where animals consist of over 475 bird species, including a number that are endemic to the Kidepo region e.g. rose ringed parakeets, *Clapperton's francolin* and *Karamoja a*palis. Other highlights include the ostrich, secretary bird, kori bustard, red-throated bee-eaters, the Abyssinian roller and the Abyssinian ground hornbill. Kidepo is also notable for 56 raptor species including the rare lappetfaced vulture, lesser kestrel and Denham's bustard).

Three quarters of the Kidepo Game Reserve is in Bira Payam of Ikotos County and also part of Budi County, which is inhabited by the Ketebo, Didinga and Buya. Sudan deployed some game rangers in Bira from 1976 to 1983, until civil war broke out in 1983.

The reserve includes savanna, grassland, and woodland habitats. Acacia short-grass savanna predominates in the plains. Low ranges of rocky hills are covered in scrub. The Ibakany -Toomodo and Narus plains, Lonyili Mountains, Akorou-Bira Mountain, Dongatona Mountains and Didinga Hills have areas of montane forest and shrubland.

Mammal species in the reserve include African bush elephant, African wild dog, lion, cheetah, leopard, spotted hyena, lesser kudu, African buffalo, and giraffe. The present conservation status of these and many other mammals, birds, reptiles and amphibians is not known. It is likely that due to the protracted war and many other conservation challenges the numbers of wildlife have been reduced in a similar way as those in Nimule and Southern national parks.

The reserve is an Important Bird Area. Native birds include Heuglin's spurfowl (*Pternistis icterorhynchus*), yellow-necked spurfowl (*Pternistis leucoscepus*), and dusky turtle dove (*Streptopelia lugens*).

3.5.2 Bandingilo National Park

The Bandingilo National Park is a national park located in South Sudan's Equatoria region. The park covered the erstwhile states of Central Equatoria and Eastern Equatoria. It was established in 1992. Situated in a wooded area near the White Nile River, it is over 10,000 square kilometers in size. It also contains large marshlands stretching up into Jonglei state.

The world's largest[4] annual animal migration takes place when multiple species of antelope, including Bohor reedbuck, tiang, and white-eared kob, move between Bandingilo Park and Boma National Park. In 2021 it was estimated the migration included one (1) million kob and 200,000 tiang. A 2023 survey found it may be

[4] https://www.africanparks.org/worlds-largest-land-mammal-migration-confirmed-south-sudan

the largest migration, including 5 million white-eared kob, 350,000 Mongalla gazelle, 300,000 tiang, and 160,000 bohor reedbuck. The migration happens from January to June. The animals move from Bandingilo into Boma and the Gambella National Park in Ethiopia. The movement pattern is then reversed from November to January.

The park is also home to the critically endangered species of the Nubian giraffe, Northeast African cheetah, and Northern lion. Additionally, there are African wild dog, caracal, and spotted hyena. The park supports large bird populations, estimated to be 400 species in 2021. It is Important Bird Area.

During the wet season, the grasslands are flooded. Then during dry season there is extensive burning. This helps maintain the grassland habitats

4 Potential Adverse Drivers and Impacts on Biodiversity

4.1 Adverse Drivers

During construction phase, major drivers that will affect majority of wildlife include habitat loss through deforestation, increases in charcoal burning, agricultural expansion, habitat fragmentation and degradation, and water shortages especially during the dry seasons.



Plate A - J - 3: Bags of Charcoal for sale along the road corridor and Bags of Charcoal for sale spotted along the Juba-Torit Section Respectively.

The major adverse effects after road construction are the “edge effects”. Edge effects of road construction refer to the altered environmental conditions and disruptions to wildlife populations that occur along the borders of a newly built road, impacting the surrounding ecosystem beyond the immediate construction area, often leading to changes in vegetation, animal behaviour, overall habitat quality due to factors like noise, light pollution, altered access to resources, and fragmentation of natural areas. Road edge effects consist of changes in abiotic and biotic conditions resulting from the new artificial boundaries on the vegetation that are created by a road. The edge effect is an ecological process affecting habitat patches that result from fragmentation, and it is a result of interactions between two adjacent ecosystems that are separated by an abrupt transition.

Edge effects spread out from the road or linear transport infrastructure include siltation, light pollution, noise pollution, air pollution from dust, other chemical pollutants from vehicle exhaust along with the materials used in road construction and maintenance and accidental spillage. Runoff and issues of water management are also important effects because the road will often intercept rivers and streams affecting parameters such as flow speed, silt deposition etc. causing water pollution. Another edge effect is that of invasion and spread on alien or invasive species. Roads often act as a major factor involved in invasions by alien flora and fauna. Verges and transport-related infrastructure offer disturbed habitats in which non-native species, such as Prosopis juliflora, arrive in the form of individuals, seeds and other propagules. Spread by vehicles on the road, they often become successfully established. Hence roads can act as trunk routes for these species, enabling them to constantly expand their range.

4.2 Environmental Impacts

Vegetation which is within existing road's RoW will be cleared during site preparations activities, and construction camps settings as well, in order to pave way for road's construction. The implementation of the proposed road project will inflict loss of areas that will be taken up for construction of camps and associated infrastructures. The areas that will be taken up by labour camps and associated infrastructures are composed mainly of woodland, some grassland patches, bushland and other natural habitats. The most direct impact of site preparation entailing land clearing and levelling on vegetation will be the removal of vegetation and canopy cover and hence destruction, damage and loss of wildlife habitat.

The project area includes all lands subject to direct disturbance from the project and associated infrastructure. Proposed construction would disturb large areas mainly composed of woodland, bush land, grasslands and thickets. The immediate impact area in case of the proposed development will be all areas subject to construction; areas utilized by the majority of wildlife particularly birds, reptiles, amphibians and small mammals were reported. The wildlife species will be affected because some of their microhabitats

within the proposed project areas will be damaged. Most of the impacts will be manifested during the construction phase where part of vegetation may get degraded and damaged and hence loss of fauna habitat. The predicted impacts are:

(1) **Invasive Species:** In terms of **invasive species**, two of them were noted, namely water hyacinth and mesquite. In the wetland at Torit, water hyacinth (*Eicchonia crassipes*) was found in the waters. This invasive species is a very prolific invader of tropical inland water bodies. Along the road reserve from Nadapal to Kapoeta, the invasive mesquite (*Prosopis juliflora*) as noted to be invading the road reserve. This invasive species is a very prolific invader too and is mostly prolific on alluvial soils. The invasive mesquite (*Prosopis juliflora*) may spread along the load corridor from Nadapal where it is common to the west. So will the water hyacinth (*Eicchonia crassipes*) as it may follow easy movement of population from one place to other along the road corridor.

(2) **Human-wildlife Conflicts**: This is another threat to wildlife in South Sudan. This may increase after the construction of the new road. The proximity of the road project to the communities renders it a prime area for human wildlife conflicts. Likewise, carnivores such as Lions, Leopards, Hyaenas, and Wild dogs have been reported to be responsible for livestock depredation and killing.

(3) **Illegal Hunting and Killing of Wildlife**: These pose another threat to biodiversity along the road corridor and other areas such as forest reserves. Unregulated hunting contributes to decreasing population of key species and consequently contributes to biodiversity loss. Further, poaching is often associated with bush fires as one of the hunting strategies, further degrading biodiversity.

(4) **Political Instability**: South Sudan's political instability has made it vulnerable to poaching, and the country has recently become connected to illegal international markets. For example, there has been a surge in the trafficking of pangolins for exotic bushmeat and traditional medicine markets.



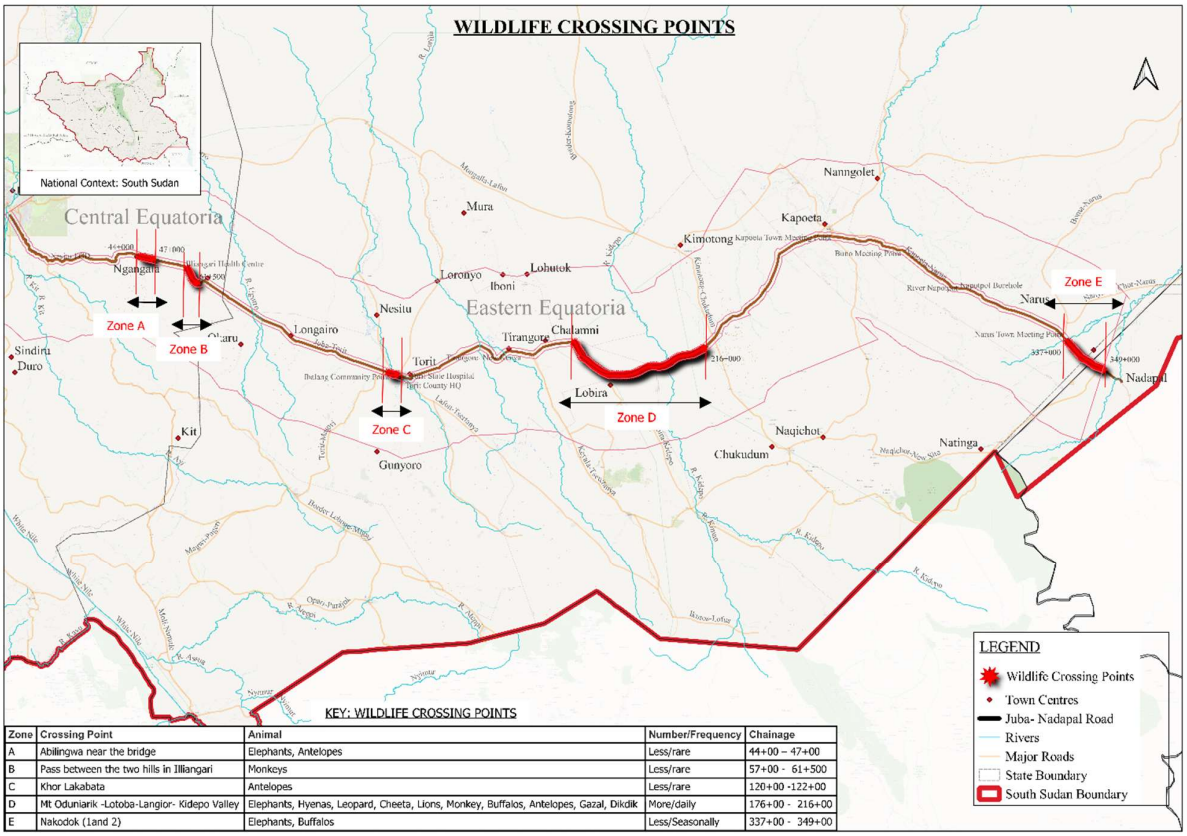
Plate A - J - 4: Poached Game Meat

(5) **Increased Wildlife Injuries and or Mortalities from Road Accidents**: The existing project corridor traverses' part of Kidepo Game Reserve and there are several wildlife corridors that are crossed in this area, as shown in Table A - J – 5.

Table A - J - 5: **Wildlife Migration Routes along Juba – Torit – Kapoeta – Nadapal Road**

#	Crossing Point/Zone	Animal	Boma	Number/Frequency
01	Abilingwa near the bridge	Elephants, Antelopes	Ngangala	Less/rare
02	Pass between the two hills in Illiangari	Monkeys	Illiangari	Less/rare
03	Khor Lakabata	Antelopes	Lakabata	Less/rare
04	Mt Oduniarik -Lotoba-Langior-Kidepo valley (Entire section between Illeu and Kidepo Valley)	Elephants, Hyenas, Leopard, Cheeta, Lions, Monkey, Buffalos, Antelopes, Gazal, Dikdik	Illiue, Lobira Kidepo	More/daily
05	Nakodok (1and 2)	Elephants, Buffalos	Nairus	Less/Seasonally

The project area is an important wildlife migration corridor. There are five (5) known wildlife crossing points, as shown in Figure A - C 2 where special attention is needed during construction.



Zone	Crossing Point	Animal	Number/Frequency	Chainage
A	Abilingwa near the bridge	Elephants, Antelopes	Less/rare	44+00 – 47+00
B	Pass between the two hills in Illiangari	Monkeys	Less/rare	57+00 - 61+500
C	Khor Lakabata	Antelopes	Less/rare	120+00 -122+00
D	Mt Oduniarik -Lotoba-Langior- Kidepo Valley	Elephants, Hyenas, Leopard, Cheeta, Lions, Monkey, Buffalos, Antelopes, Gazal, Dikdik	More/daily	176+00 - 216+00
E	Nakodok (1and 2)	Elephants, Buffalos	Less/Seasonally	337+00 - 349+00

Figure - A – J - 2: Identified wildlife crossing areas or zones

The management and mitigation measures at the wildlife points/ corridors are presented in Table A - J - 6.

***Table A - J - 6: Measures at* Wildlife Crossing Areas**

Crossing Areas/Zone. Chainage	Wildlife species spotted	Brief description of the area.	Potential implications of the road
Abilingwa near the bridge. 44+000 – 47+000	Elephants, Antelopes	African elephants and antelopes are often found in different range of habitats from savannah grassland to forests but they generally prefer plains. The area is generally flat with a hamlet in an adjacent area. The residents in the hamlet practice shifting cultivation of cereal crops. The generally woody landscape is favourable for the browsing animals. The relatively flat landscape, presence of a river and availability of forage make it a suitable migration corridor.	Avoid construction works in the area between January and June when animals cross. Avoid siting material sites, quarries and camps within this area or else seek special license with conditions from the Ministry of Wildlife and Tourism

Pass between the two hills in Illiangari. 57+000 - 61+500	Monkeys	The corridor is a pass between hills covered in trees. Monkeys, being tropical primates, thrive in hilly terrain with lots of trees. The trees act as sources of food and shelter for the primates.	Take special care of waste by avoiding careless disposal especially food waste. Avoid siting workers camp in the vicinity.
Khor Lakabata. 120+000 - 122+000.	Antelopes	The area is relatively flat, with few human settlements. There is a river that crosses the area, occasionally creating seasonal floods suitable for seasonal crop cultivation area enabling those who have settled to cultivate crops along the river banks. Most of the residents practice shifting cultivation leading to degradation of natural habitat.	Ensure all workers understand that killing of antelopes for game meat is strictly prohibited. Stop works immediately and report to the RE in the event that large herds of antelopes are spotted in the area during construction in the section. Avoid siting workers camp in the area.
Mt Oduniarik - Lotoba-Langior-Kidepo valley (Entire section between Illeu and Kidepo Valley). 176+000 - 216+000	Elephants, Hyenas, Leopard, Cheetah, Lions, Monkey, Buffalos, Antelopes, Gazal, Dikdik	The area is a wetland making it rich in species abundance due to availability of fodder for forage and trees and shrubs for the browsers. The area is also a wildlife dispersal area for animals from Kidepo Game reserve and Boma National Reserve. Migration is noted by local populations during the dry season from Boma and Bandingilo National Parks to Kidepo Game Reserve and vice versa during the start of the rainy season.	Extreme care should be taken during the works, such as minimal noise, proper site waste management. Any incident involving wildlife should be reported to the RE.
Nakodok (1 and 2)	Elephants, Buffalos	The area is located in-between Kidepo National Park in Northern Uganda and Boma National Reserve in South Sudan. Elephants often use a specified migratory route which may explain the seasonality of the elephants passing the area. The area is relatively flat making it an ideal habitat for African savannah elephants to thrive alongside buffaloes. Migration is noted by local populations during the dry season from Boma and Bandingilo National Parks to Kidepo Game Reserve and vice versa during the start of the rain season.	To the extent possible avoid construction works in the months of January to May and November to December. If it is unavoidable, then civil works should stop if an elephant is spotted. Such sitings should also be reported to the RE immediately.

Therefore, due to the uniqueness regarding the ecosystem conservation of the areas, the construction and operation activities may cause animal kills from road accidents and ecosystem disturbances from soil grabbing and vegetation clearance. After upgrading of the road, the speeding vehicles may kill or injure wildlife animals within the area. Large mammals at risk from road kills include elephants, giraffes, and antelopes. Less mobile animals including amphibians, small mammals and reptiles will be more susceptible to road kills. Birds such as the Guinea fowls are similarly at risk of road kills. The populations of many species in South Sudan have been decimated since the 1970s. For example, the elephant population declined from about 80,000 in the 1970s to less than 2,500 in 2007. It is worth noting that due to internal wars during the last 5 or so decades, no meaningful wildlife population censuses could be carried out. Therefore, reliable animal numbers and trends are missing.

(6) **Quarrying and Borrowing** involve clearing the vegetation at the sites, excavation and transportation of the material. Thus, borrowing and quarrying activities will cause habitat change, land degradation, landscape impairment (visual intrusion) and soil erosion. The cumulative effects of quarrying and borrow pits may impair wildlife movements, destroy their habitats and even trapping the animals as they move.

(7) **Increase in Plant Uses:** Many local communities depend on various plant species for food and medicines. In addition, they get honey through these plants. These communities also keep large herds of livestock. Therefore, the project may have short-term impacts on the ecosystem services for the local communities. There will be a need to conserve as much as possible these areas acting as grazing lands and also plants that have been identified to have medicinal and other ethno-botanical values.

5 Mitigation Measures and Management Controls

5.1 Brief - Impact Mitigation Measures

The mitigation measures proposed in this section are key to the success of this project. The mitigation hierarchy is key in guiding the identification, implementation and monitoring of specific actions that contribute to the main goal of this BMP, which is to implement a mitigation strategy for the project in such a way as NOT to achieve a net biodiversity loss and ecosystem services or a net gain for the critical habitats and biodiversity features it supports. The mitigation hierarchy is structured around four steps:

- Anticipate and avoid risks and impacts;
- Where avoidance is not possible, minimize or reduce risks and impacts to acceptable levels;
- Once risks and impacts have been minimized reduced, mitigate; and
- Where significant residual impacts remain, compensate for or offset them, where technically and financially feasible.

The first two steps are preventive measures, preventing adverse impact and reducing significant impact of the project on biodiversity. Restoration and offset steps are remedial measures, repairing environmental damage and compensating for residual impacts. In particular, the mitigation measures for flora and fauna have been designed to achieve net gains of those biodiversity values for which the critical habitat was designated and that the project is not anticipated to lead to a net reduction in the population of any Critically Endangered, Endangered, or restricted-range species, over a reasonable time period. In the following section, this BMP demonstrates how the mitigation hierarchy is to be applied for both flora and fauna and rests the responsibilities to Ministry of Roads and Bridges and the Contractor. Detailed mitigation measures are provided in the BMP Action plan and the Biodiversity Monitoring and Evaluation Plan.

5.2 Fauna mitigation measures

The Ministry of Roads and Bridges and the Contractor shall take into account the following measures for the better avoidance of further impacts to the areas inside and outside of conservation areas along the road corridor:

Avoid/Refrain

- Avoid habitat fragmentation inside and outside the project footprint, this will help to maintain buffer zones in between areas adjacent the proposed project area and peripheral zones. Therefore, the Contractor must avoid locating ancillary facilities at the location of critical habitats.
- Do not undertake construction activities at night to avoid disturbance to nocturnal fauna from increased noise and vibration;
- Undertake pre-clearance checks of trees to support roosting of fauna species;
- Night working and the use of artificial lighting shall not be permitted to avoid adverse impacts to priority nocturnal fauna;
- Project vehicles shall not be used at night within the project area to avoid adverse impacts to priority nocturnal fauna;
- Avoid accidental machinery and vehicle collisions with wildlife: Vehicle operation shall be restricted to daylight hours to minimize the risk of vehicle collisions with wildlife;
- Avoid spills of hydrocarbon, oil, chemicals and other hazardous materials; and
- Avoid introduction of invasive species and pests.

Minimise:

- Reduced speed limits shall be signposted to minimize the risk of accidental injury and mortality to fauna, including the construction of speed bumps;
- Design and implement Road Kill Management and Monitoring Plan (RMMP) in all sensitive habitats (identified wildlife corridors crossing the proposed road) which may include reduced speed limits, removal of roadside vegetation to reduce proximity of habitat to road; use of light coloured pavement in the road surface to improve visibility; installation of wildlife warning signs; regular monitoring and removal of road kill to prevent other scavenger animals being attracted to the road; and installation of virtual fencing;
- As mitigation measures to the environmental sensitive areas entire section between Illeu and Kidepo Valley the road will be constructed on low level embankment and use of drift structures, and box culverts in all areas streams to allow smooth movement of wildlife to cross from one side of the road to another;

- Ensure minimum noise emission from construction activities and machinery through implementation of noise control measures presented in ESIA;
- Consider, during detailed construction planning, allowance for buffer distances between construction activities and areas where protected species have been identified (including vehicle movement routes);
- Minimise preventable noise from equipment through measures such as keeping both stationary and mobile plant and equipment in good working condition (including mufflers, enclosures etc.), and avoiding leaving engines running on standby for extended periods;
- Select equipment with the lowest noise rating that meets task requirements; and
- Construction equipment not to exceed acceptable noise level.

To enhance protection and conservation of wildlife species, capacity building and training of local game scouts as well as primary and secondary school students will be conducted to offset any unforeseen net reduction in flora and fauna. In line with mitigation measures in the ESIA this project has included in its mitigation strategy the mitigation measures specific to control road kills and night game drives.

These include:

- Enforcement of monitoring measures in line with the code of conduct issues by the government and agreed with all contractors. The code of conduct requires, among other things, that "The company commits to full implementing its "Contractor's Environmental and Social Management Plan" (C-ESMP) as approved by the client".
- Enforcement of regulations governing road kills.

5.3 Flora mitigation measures

Avoid/ Refrain

In the Project area, two plant species namely Black wood (*Dalbergia melanoxylon*) and African teak (*Tectona grandis*) are listed under CITES appendices II & III respectively. Black wood (*Dalbergia melanoxylon*) is a near threatened species but is not in a critical status, while African teak (*Tectona grandis*) is an endangered species and thus needs attention according to IUCN. The rest of the plants identified are listed as of Least Concern by the IUCN. None the less, the project:

- Should avoid clearing protected species at all costs, including those listed under CITES appendix II and III, and species of particular ecological importance such as the Baobab trees (although this tree is not yet endangered);
- The location of camping sites and access road should strictly avoid further loss of any of the protected species by limiting clearance to right of way;
- Part of the road reserve that will not be required for construction purposes during site preparation stage should be left intact particularly along the wildlife corridors;
- Clearing of vegetation will be done in close collaboration with respective local government authority along the corridor; and
- Construction activities should not exceed the proposed construction boundaries by more than 15m to avoid the secondary impact of construction and increasing the areas that would require clearing and rehabilitation.

Minimise:

Efforts to reduce the amount of vegetation cleared during all phases of the project, should include the following measures:

- No new access roads should be created where a well-established road is available;
- Siting for opening of access roads and camp construction should, where possible, target open
- spaces or areas with less vegetation cover;
- Movement of exotic tree species through vehicles and other use into the KBAs should be well monitored and discouraged at all costs;
- Areas scheduled for vegetation clearance shall be demarcated and activities outside the designated areas (spillover effects) shall be strictly forbidden;
- Environmentally sensitive areas (e.g. dispersal areas, water points, wetlands, steep slopes, riparian vegetation, breeding and nesting sites) shall be clearly marked and mapped as "No Go Areas";

- Herbicide and fire shall not be permitted as a means to clear vegetation to ensure a minimal impact footprint during habitat clearance and to reduce the risk of mortality and injury to wildlife;
- Vehicle traffic shall be slowed at wildlife crossing point. This reduction in speed limit shall be signposted.

5.4 Restoration measures

The following restoration measures are proposed:

- Develop re-vegetation plans with the assistance of a local botanist and through consultation with the Department of Forestry to ensure that re-vegetation proceeds in a manner that is consistent with the management plan for the local vegetation communities to ensure that the species used and their integration, as well as the spacing of trees, are consistent with the local vegetation communities;
- Re-vegetation should cover both onsite and offsite areas that have been disturbed because of the project activities as soon as the related facilities have been decommissioned;
- Reclamation should normally be accomplished with native seeds only. These should be representative of the indigenous species present in the adjacent habitat. Possible exceptions should include use of non-native species for a temporary cover crop to out-compete weeds.

The proposed mitigation measures to minimize negative impacts on biodiversity are summarized in Table A - J – 7.

Table A - J - 7: Measures to Minimize Negative Impacts on Biodiversity

Impact	Mitigation Measures	Cost Estimate (US$)
Habitat loss	Construction and operation ▪ The extent of vegetation clearance should be monitored not to exceed proposed area's surface to be cleared; ▪ Vegetation that is removed should not be burnt but left on the ground in suitable areas to decompose (preferably in soil stockpiles areas); ▪ Physically removing or scaring away animals immediately before clearance commences. Closure Re-vegetation of bare areas using native plant species and ensuring that a mix of similar habitats as was there previously restored if possible.	500,000
Habitat fragmentation	Construction and operation ▪ Restore surrounding habitats to cleared areas to compensate habitat loss where possible; ▪ Recreate connectivity between habitat patches in the vicinity to the cleared areas where possible. Closure Recreate vegetation corridors where possible.	500,000
Vehicle collision leading to injury or mortality	▪ Provide driver awareness and training; ▪ Enforce speed limits; ▪ Report any collision, document species affected and area of occurrence.	100,000
Hydrological impacts	▪ Avoidance of stream diversion where possible; ▪ Stabilize or re-vegetate slopes to prevent erosion; ▪ Monitor freshwater habitat quality.	200,000
Water and soil pollution	Construction and operation ▪ Specific measures such as bunded above-ground fuel and chemical storage will be implemented to prevent the pollution that could arise from cement slurry, spillage of fuels and lubricants or other contamination; ▪ Treat contaminated water to attain legal limits before any discharge into the environment; ▪ Oil and fuel spillage kits will be made available in the event of leaks (from machinery or fuel tank); ▪ Bunds will be constructed around oil and fuel areas to prevent spillages; ▪ Manage waste and recycle. Closure	200,000

Impact	Mitigation Measures	Cost Estimate (US$)
	Dispose of waste in such a way that there is no contamination of the environment.	
Habitat degradation	▪ Adoption of the noise mitigation strategy set out in the noise section; ▪ Noisy construction work should be carried out during daylight hours to limit noise levels in the quieter night-time noise environment; ▪ Regular maintenance of equipment and vehicles in accordance with manufacturers specifications to prevent increases in noise emissions; ▪ Damping down or covering stockpiles of friable material in dry and windy conditions, use of water sprays to control dust on roads and working areas, covering of dusty materials; ▪ Use directional lighting, light shielding and hoods to mitigate light spill, and use motion sensors and timers to control lighting in areas that do not need to be permanently illuminated.	150,000
Induced human access and in-migration	▪ Conduct local environmental sensitization campaign; ▪ Develop Project staff conduct guidelines that would include a no hunting policy and the interdiction of transporting live or dead animals, plants or seeds in Project related vehicles; ▪ Install gates and inspect company vehicles for illegal wildlife products; ▪ Endeavour to develop alternative money generating activities.	50,000
Invasive species	▪ Develop Project staff conduct guidelines that would include a no hunting policy and the interdiction of transporting live or dead animals, plants or seeds in Project related vehicles; ▪ Install gates and inspect company vehicles for illegal fauna and flora products; ▪ Train staff to recognize key invasive species.	50,000
Critical Habitat	▪ Conduct follow-up surveys to assess the extent of Critical Habitat; ▪ Prioritize preservation and avoidance of activities in Critical Habitat; and ▪ Implement further conservation efforts to obtain a net biodiversity gain in Critical Habitat.	500,000

A list of priority ecosystem services (rated has having a value of high or critical) has been established for which the Project must design mitigation measures that aim to maintain or restore the value and functionality of the service for beneficiaries (Table A - J - 8). Due to the cross-cutting nature of ecosystem services, mitigation of impacts can also be captured in other management plans

Table A - J - 8: Mitigation Measures for Priority Ecosystem Services

Service	Sub-category	Mitigation Measure
Provisioning		
Food	Hunting	▪ Encourage sustainable agricultural, fishing, and livestock-breeding programs (e.g., as part of the Community Development Plan), as identified through needs-based assessments and community consultations that aim to diversify and increase food alternatives in the Project area through best practice techniques. ▪ Support the design and implementation of information and awareness programs regarding sustainable harvesting, agriculture, grazing, and conservation of natural resources in partnership with relevant organizations.
Food	Fishing	
Food	Agriculture	
Fuel	Firewood and Charcoal	▪ Raise awareness of alternative cooking fuel (e.g. solar oven). ▪ Use fast-growing tree species used locally as fuel-wood in re-vegetation program.
Freshwater		▪ Work with the project affected communities to support them in securing safe and sustainable water supplies.
Natural medicine	Medicinal plants	▪ Undertake appropriate interventions (e.g. nurseries), as identified in needs assessments, to replace lost resources and to harvest and replant species of local significance, particularly medicinal species.
Regulating		

Seed dispersal and pollination		▪ Ensure implementation of mitigation measures are aimed to minimize impacts on biodiversity features. ▪ Consider alternative livelihood programs that can also be beneficial for ecosystem services (e.g. bee keeping).
Regulation of natural hazard		▪ Implement vegetation rehabilitation and reforestation programs, particularly in areas that have been cleared for mining activities.
Pest control		▪ Ensure implementation of mitigation measures are aimed to minimize impacts on biodiversity features, which should ensure no alteration of the current food chain and natural pest control regulation.
Supporting		
Nutrient cycling processes		▪ Protection of soil outside work areas from damage by prohibiting the movement of construction vehicles and equipment outside designated areas. ▪ Scheduling works with high erosion potential during the dry season wherever possible. ▪ Rehabilitating all disturbed land as soon as practical after completion of works.
Soil formation processes		
Photosynthesis		
Cultural		
Spiritual values	Sacred groves	▪ Avoidance of vegetation clearance in sacred forests. ▪ Where not possible, provide alternative area or compensation for loss of cultural service in consultation with the local community.
Spiritual values	Cemetery	

6 Biodiversity Monitoring and Evaluation

6.1 Biodiversity Monitoring

The monitoring plan for the Project was developed to ensure the proper implementation and effectiveness of mitigation measures. More specifically monitoring will aim at:

- Ensuring that the Project is compliant with South Sudan and World Bank standards for emissions and discharges;
- Ensuring that the magnitude of impacts and sensitivity of receptors are verified regularly to rapidly adapt the management plan;
- Determining if the environmental, social and community health changes that are observed to be occurring are attributable to Project activities or are the result of other activities or natural variation; and
- Adopting a continual review and improvement in Project design and execution.

Table A - J - 9: Monitoring Plan (for costs see Appendix 1, Tables A-J-11 and A-J-12)

S#	Monitoring activity/indicator	Objectives	Site/Location	Methodology	Period and frequency	Implementation Responsibility		Monitoring Responsibility
						Expert	Entity	
01	Biodiversity identification, characterization and documentation	Effective project implementation	Deskwork	Checking the prepared project and technical documentation, plans and checklists, permits, consents, approvals, etc. and perform screening to assure that all pre-construction actions and measures have been implemented	Prior to the start of construction activities	Biodiversity Supervisor from Contractor and Supervising Engineer	Responsible Ministries: Ministry of Roads and Bridges (MR&B) and Ministry of Wildlife Conservation and Tourism (MWC&T)	Supervising Engineer. MR&B with support from Biodiversity Expert from MWC&T
02	Monitoring of the implementation of all mitigation measures	Proper implementation of mitigation measures	Whole alignment	Daily visual inspection of the construction activities and their compliance with EMMP (Environmental Mitigation and Monitoring Plan)	During the whole construction period. Daily inspections.	Supervisor from Contractor and Supervising Engineer	Responsible Ministries: Ministry of Roads and Bridges (MR&B) and Ministry of Wildlife Conservation and Tourism (MWC&T)	Supervising Engineer. MR&B with support from Biodiversity Expert from MWC&T
03	Monitoring of all construction the phases	Avoid degradation of critical habitats and flora and fauna	In ecologically/environmentally sensitive areas including wetlands, etc.	Daily visual inspection of the construction activities and their compliance with EMMP (Environmental Mitigation and Monitoring Plan)	During the whole construction period. Daily inspections.	Supervisor from Contractor and Supervising Engineer	Responsible Ministries: Ministry of Roads and Bridges (MR&B) and Ministry of Wildlife Conservation and Tourism (MWC&T)	Supervising Engineer. MR&B with support from Biodiversity Expert from MWC&T
04	Monitoring of the wildlife activities/movements	Prevent interruption of wildlife activities	Identified Wildlife migratory routes	Daily visual inspection of the construction activities and their compliance with EMMP	During the whole	Supervisor from Contractor and	Responsible Ministries: Ministry of Roads and	Supervising Engineer.

		including migration		(Environmental Mitigation and Monitoring Plan)	construction period. Daily inspections.	Supervising Engineer	Bridges (MR&B) and Ministry of Wildlife Conservation and Tourism (MWC&T)	MR&B with support from Biodiversity Expert from MWC&T

6.2 Indicators, Measurement and Monitoring Extent

Indicators should be used as proxies to monitor impacts on biodiversity. Using indicators is a way to balance costs and results, and they should be selected using the SMART philosophy (specific, measurable, achievable, relevant and timely). Biodiversity indicators must also be sufficiently sensitive to provide a warning of change before irreversible damage occurs – effectively they must serve to indicate where no significant change is occurring, and also where the threshold between insignificant and significant change lies. Three types of indicators should be used to monitor effectiveness of mitigation measures (Table A - J - 10).

Table A - J - 10: Type of Indicator to be Used and the Measurement to be utilized to Monitor Impacts

Indicator type	Measurement
Condition indicator	▪ Species richness and composition; and ▪ Relative abundance (i.e. encounter rate) of priority species. ▪ Species diversity and evenness
Pressure indicator	▪ Extent of vegetation clearance; and ▪ Relative abundance (i.e. encounter rate) of anthropogenic threats.
Response indicator	▪ Area re-vegetated; and ▪ Difference between condition and pressure indicators.

Monitoring should be implemented at pre-selected sampling locations within the Area of Influence of the Project and should also include sampling locations at a control site. Indeed, the collection of data at a control site will enable assessment of the amplitude and source of impacts (i.e. caused by activities along the road or due to natural variation).

6.3 Evaluation

The evaluation of the monitoring program will be on-going and as follows:

- Daily: General monitoring updates, reporting of incidents impacting biodiversity and emergency response;
- Monthly: Compilation of monitoring progress, environmental training delivered, details on any major incidents/events, general progress of the monitoring program;
- Quarterly: Summary report on quarterly biodiversity monitoring programs, review quarterly performance and apply adaptive management if required; and
- Annual: Review annual biodiversity monitoring program, prepare annual report to include evaluation results for the year against targets and biodiversity objectives.

The baseline data collected as part of biodiversity surveys will serve to assess Project impacts and efficiency of mitigation measures, as well as biodiversity gain and loss, by comparing data to be collected during the long-term monitoring to established baseline levels.

6.4 Resource allocation

The Ministry of Road and Bridges will be in charge of managing and supporting biodiversity specialists throughout the whole project life in accordance with the monitoring requirement plan. Biodiversity specialists will be under the management of Ministry of Roads and Bridges Environmental Managers, who will be made responsible, as part of their duties, to monitor biodiversity and ecological issues as outlined in this Plan.

Some materials were left at the Project's main office after the completion of baseline biodiversity surveys (e.g. camera traps and head torches) and can be used for long-term monitoring.

6.5 Responsibility

This BMP has proposed the following roles and responsibilities. This is initially during the Construction Phase and subsequently during the Operation Phase.

Table A - J - 11: Responsible Personnel

Position Title/Responsible Entity	Role and Responsibilities
MRB Environmental Manager (Responsible Ministries: Ministry of Roads and Bridges and Ministry of Wildlife Conservation and Tourism)	▪ Ensure adequate resources are available to enable implementation of the BMP; and ▪ Accountable for the overall environmental performance, including the outcomes of this BMP.
Contractor Environmental Manager and MRB Environmental Manager (Responsible Ministries: Ministry of Roads and Bridges and Ministry of Wildlife Conservation and Tourism)	▪ Ensure the day-to-day implementation of this BMP, including reporting of non-compliances with the trigger values; ▪ Ensure that all relevant records are effectively maintained on site; and ▪ Ensure employees are competent and appropriately qualified through training and awareness programs.
Contractors / Construction personnel (Responsible Ministry: Ministry of Roads and Bridges)	▪ Ensure operations are undertaken in accordance with instructions; ▪ Ensure appropriate notification and response in the event of an environmental incident; and ▪ Show due care not to cause environmental harm.
All personnel (Responsible Ministry: Ministry of Roads and Bridges)	▪ Follow direction provided by the Operations and Environmental Manager; ▪ Show due care not to cause environmental harm; and ▪ Notify Supervisor/Environmental Manager of any environmental non-compliance (during Construction Phase).

6.6 Adaptive Management

Given the complexity of predicting project impacts on biodiversity and ecosystem services over the long term, Perseus is committed to comply with the WB policies by adopting an adaptive management monitoring system. This is to ensure that mitigation actions are either demonstrated to be effective or adjusted in a timely manner, by regularly evaluating findings from monitoring programs and adapting management and mitigation responses as necessary.

The BMP will also need to be closely integrated with other management plans as actions undertaken as part of those may ultimately affect biodiversity and ecological issues.

The Ministry of Roads and Bridges will review monitoring results, annually during the construction and operation phase, with key partners and/or biodiversity specialists to ensure that biodiversity mitigation measures are still effective and sufficient. The BMP will also be updated if new regulations and/or changes to the legislative framework occur during the Project life.

7 Recommendations

Biological Diversity covers biodiversity at all levels: ecosystems, species and genetic resources. Due to the paucity of primary data on plant and animal species numbers, trends and conservation status, it is highly recommended that, to aid in proper and informed management of biodiversity in the Project area, the Government of South Sudan should carry periodic wildlife censuses, vegetation survey and inventory. This will inform which species are critically endangered, endangered, endemic and have wide or restricted ranges. Detailed ecological studies on habitat and vegetation inventories will inform the future plans for biodiversity management. Vegetation ecological studies or surveys should include vegetation indices (structure, species evenness, species diversity indices, species frequency, species coverage, and species dominance. Also, the surveys should document the rate of spread of alien invasive species found in the area, including the water hyacinth (*Eichhornia crassipe*s) and mesquite (*Prosopis juliflora*), and culturally biodiversity sensitive areas.

Not all the biodiversity hotpots of the country are surveyed, it is highly recommended that research in this field should be one of the strategic priorities, for the country to claim intellectual property right for any endemic plan or animal species which might be discovered.

The livelihood of majority of the South Sudan communities depends on the country's biodiversity (for food, medicine, etc.), flora and fauna alike. There is a need for consideration of capacity building of the local communities on biodiversity conservation and mainstreaming local knowledge in the management of the country's biodiversity. This can be strengthened by developing policies and legal frameworks for protection and management of biodiversity country wide.

Appendix 1: Detailed Biodiversity Monitoring Plan

Table A - J - 12: Detailed Monitoring Plan for the Construction and Operation Phases

Impact	Mitigation Measures	Specific Action	Indicator and Measurement	Response	Timeline			Cost Estimate (US$)
					Daily	Bi-annually	Annually	
Habitat loss (Responsible Ministry for overall supervision: Ministry of Roads and Bridges)	The extent of vegetation clearance should be monitored not to exceed proposed area's surface to be cleared.	Areas to be cleared should be clearly marked to ensure no accidental clearing occurs.	The final area cleared against the previously marked area should be verified by the Environmental Manager, Ministry of Roads and Bridges.	Non-compliance should be reported, and the cause of non-compliance be investigated.	√			500,000
		Monitor total extent of vegetation clearance.	Total extent of deforestation can be calculated and then compared to the expected extent of vegetation clearance. This can be done using a classified land use map and GIS software.	In the case that the extent of deforested area is higher than expected, further investigations into the cause and source of deforestation should be conducted.			√	
	Vegetation that is removed should not be burnt but left on the ground in suitable areas to decompose (preferably in soil stockpiles areas).	Vegetation should be removed according to best practice and left on the ground in suitable areas to decompose.	Stockpile areas are observed after vegetation clearance.	Non-compliance should be reported.	√			
	Physically removing or scaring away animals immediately before clearance commences	Develop fauna scaring system and relocation procedures.	Record taxa and number of individuals displaced or relocated, as well as fleeing direction.	Report any injuries to animals or sensitive issues (i.e. major nesting site).	√			
Habitat fragmentation (Responsible Ministry for overall	Restore surrounding habitats found in the vicinity to cleared areas to compensate habitat loss.	A vegetation trial should be conducted in areas that were previously exploited. Trials could also be conducted along the Kidepo River which	The growth rate of tree species and wildlife use of the different areas revegetated during the trial should be compared to understand which factors can lead	Vegetation trial plots should be closely monitored to understand factors leading to a successful program and parameters or tree species should be		√		100,000

Impact	Mitigation Measures	Specific Action	Indicator and Measurement	Response	Timeline			Cost Estimate (US$)
					Daily	Bi-annually	Annually	
supervision: Ministry of Roads and Bridges)		would help to attain gain in biodiversity.	to successful habitat rehabilitation.	change according to monitoring results.				
	Recreate connectivity between habitat patches in the vicinity to cleared areas where possible.	Identify, with biodiversity specialists, priority areas to be re-vegetated to connect sensitive habitat patches.	Monitoring sampling locations can be included in these areas to assess the effectiveness of such measures.	Close monitoring of these areas should be made, and further mitigation measures may be needed in cases, for example, where there is an increase in hunting in these areas by the local population or where they come to harvest wood.		√		
Vehicle collision leading to injury or mortality (Responsible Ministry for overall supervision: Ministry of Roads and Bridges)	Provide driver awareness and training.	The personnel shall undergo biodiversity management awareness training as part of the project induction program, including reconnaissance of priority species.	The number of collisions with animals should be lower compared to the number recorded during the baseline year.	If an increase in animal collision is recorded, further investigations should be made to understand its causes and respond accordingly.			√	100,000
	Enforce speed limits	Install speed bumps at predefined locations.	There should be no or significantly less collisions recorded close to the speed bumps.	Additional speed bumps may be required if other areas with increased animal collision are located during the construction and operation phases.		√		
	Report any collision, document species affected and area of occurrence.	The driver should possess a data entry log where he can record any collision with animals, its location and the species or taxa affected.	The number of collisions should not increase significantly between years.	An Increase in the number of collisions or animal injuries should be investigated.	√			
Hydrological impacts	Avoidance of stream diversion where possible.		Environmental Manager should supervise	Report non-compliance to superior.		√		200,000

Impact	Mitigation Measures	Specific Action	Indicator and Measurement	Response	Timeline			Cost Estimate (US$)
					Daily	Bi-annually	Annually	
(Responsible Ministry for overall supervision: Ministry of Roads and Bridges)	Stabilize or re-vegetate slopes to prevent erosion.	Properly implement Soil and Water Management Plans. Scheduling works with high erosion potential during the dry season wherever possible.	operations to ensure compliance with the different management plans and proposed activities schedule.					
	Monitor freshwater habitat quality.	Undertake regular freshwater aquatic monitoring survey programme at pre-defined sampling locations, and in addition include control areas outside of the Project site.	Measure biodiversity indicators and compare them to baseline values	Review results of monitoring program every quarter to ensure that any impacts on the freshwater ecosystem are recorded soon enough to implement appropriate complementary mitigation measures.		√		
Water and soil pollution Responsible Ministry for overall supervision: Ministry of Roads and Bridges)	▪ Specific measures such as bunded above-ground fuel and chemical storage will be implemented to prevent the pollution that could arise from cement slurry, spillage of fuels and lubricants or other contamination; ▪ Treat contaminated water to attain legal limits before any discharge into the environment; ▪ Oil and fuel spillage kits will be made available in the event of leaks (from machinery or fuel tank). ▪ Bunds will be constructed around oil and fuel areas to prevent spillages. ▪ Manage waste and recycle.	▪ Follow the Water and Soil Management Plans closely, especially in relation to the management of potential pollution risks. ▪ Ensure proper recycling and waste management facilities are implemented, and that employees are trained to properly use them.	Monitor and record specificity of any water treated and/or discharge in the environment.	In the event of accidental spill or environmental pollution, proceed to a review of the management plans and pollution prevention installations/measures taken	√			200,000

Impact	Mitigation Measures	Specific Action	Indicator and Measurement	Response	Timeline			Cost Estimate (US$)
					Daily	Bi-annually	Annually	
Habitat degradation (Responsible Ministry for overall supervision: Ministry of Roads and Bridges)	▪ Adoption of the noise mitigation strategy set out in the noise section; ▪ Noisy construction work should be carried out during daylight hours to limit noise levels in the quieter nighttime noise environment. ▪ Regular maintenance of equipment and Vehicles in Accordance with manufacturer's specifications to prevent increases in noise emissions. ▪ Damping down or covering stockpiles of friable material in dry and windy conditions, use of water sprays to control dust on roads and working areas, covering of dusty materials. ▪ Use directional lighting, light shielding and hoods to mitigate light spill, and use motion sensors and timers to control lighting in areas that do not need to be permanently illuminated.	Follow the Noise Management Plan. Limit blasting to Daylight hours. Damping down or covering stockpiles of friable material in dry and windy conditions, use of water sprays to control dust on roads and working areas, covering of dusty materials.	Environmental Manager should supervise operations to ensure compliance with the different management plans and proposed activities schedule.	Report non-compliance to superior	√			150,000
Induced human access and trafficking (Responsible Ministry for overall supervision: Ministry of Roads and Bridges)	▪ Develop Project staff conduct guidelines that would include a no hunting policy and the prohibition of transporting live or dead animals, plants and/or seeds in Project related vehicles.	All staff working on the project will receive environmental induction which will include common environmental issues to inform staff on the importance of biodiversity as well as highlighting habitats	Environmental training should be given every year to ensure that the personnel are following guidelines, and that they are up-to-date with regulations.	One warning may be allowed for non-compliance, but in case of repeated offense, a fine should be imposed.			√	50,000

Impact	Mitigation Measures	Specific Action	Indicator and Measurement	Response	Timeline			Cost Estimate (US$)
					Daily	Bi-annually	Annually	
	▪ Install gates and inspect company vehicles for illegal wildlife products	and species, sites of particular importance and bushmeat hunting restrictions.						
	▪ Conduct local environmental sensitization campaign. ▪ Support alternative money generating activities.	An environmental awareness campaign should be conducted in the villages. Based on the needs identified by the local population during socioeconomic surveys, support projects that would provide alternative revenue to the local population and workers that moved to the area.	Monitor biodiversity at selected sampling locations to ensure no significant diminution of their populations. Monitoring of the selected alternative livelihood projects should be implemented to ensure that these projects are working and that there is not an increase in other activities, such as deforestation for agriculture and increase in hunting.	Review results of the biodiversity monitoring program and adapt mitigation measures accordingly. Certain alternative livelihood projects may not be successful and thus, several different types of projects should be considered to ensure some level of success			√	
Invasive species and pathogens (Responsible Ministry for overall supervision: Ministry of Roads and Bridges)	▪ Develop Project staff conduct guidelines that would include the prohibition of transporting live or dead animals, plants and/or seeds in Project related vehicles. ▪ Provide Project staff with a hygiene and vaccination campaign. ▪ Train staff to recognize key invasive species.	The personnel shall undergo biodiversity management awareness training as part of the project induction program, including reconnaissance of invasive species.	Induction should be given every two years to ensure that the personnel are up-to-date, with the guidelines that were implemented.	Follow the company's Disciplinary Procedure for any non-compliant activities.			√	50,000
	Install gates and inspect company vehicles for illegal fauna and flora products.	Guards positioned at the gates should be trained to inspect company vehicles for illegal fauna and flora products	Guards should confiscate any illegal fauna or flora products found in project vehicles and report the incident to their superior	The driver of the vehicle should be disciplined if illegal wildlife or plant products are found in his vehicle	√			

Impact	Mitigation Measures	Specific Action	Indicator and Measurement	Response	Timeline			Cost Estimate (US$)
					Daily	Bi-annually	Annually	
Critical Habitat (Responsible Ministry for overall supervision: Ministry of Roads and Bridges)	Conduct follow-up surveys to assess the extent of Critical Habitat	▪ Consider conducting complementary baseline fish surveys by adding sampling locations along the Kidepo River as well as surveying fisherman's catch. ▪ Conduct follow-up amphibian surveys in habitat likely to harbour threatened species	Obtain complete and representative baseline levels.			√		500,000
	Prioritize preservation and avoidance of activities in Critical Habitat.	Identify critical habitat extent and make a map indicating priority conservation areas.	▪ Particular attention should be given to these areas and if at all possible, no activities should be conducted there. ▪ Biodiversity monitoring should be conducted in these areas on priority species to determine if there is an increase in their population.	Avoidance of activities in predefined conservation areas should be monitored daily, and monitoring results should be reviewed annually, and further actions can be implemented if necessary.	√			
	Implement further conservation efforts to obtain a net biodiversity gain in Critical Habitat	Further conservation actions should be developed with the inputs of biodiversity specialists to ensure a net gain in Critical Habitat.	Biodiversity monitoring can also be implemented at these locations to assess biodiversity gain.	If no biodiversity gain is observed, different strategies should be proposed.			√	

Table A - J - 13: Detailed Monitoring Plan for the Closure Phase of the Project

Impact	Mitigation Measures	Specific Action	Indicator and Measurement	Response	Cost Estimate (US$)
Habitat loss (Responsible Ministry for overall supervision: Ministry of Roads and Bridges)	Re-vegetation of bare areas using native plant species and ensuring that a mix of similar habitats as was there previously restored if possible.	Rehabilitating all disturbed land as soon as possible after completion of mining activities (according to the Closure Plan). Results from the re-vegetation trials should guide rehabilitation. Results of biodiversity monitoring program can be used to identify areas where habitat connectivity would benefit the fauna populations.	Monitoring of these areas should be conducted to ensure that the rehabilitation and revegetation programs are effective.	The rehabilitation and revegetation programs can be adjusted according to monitoring results.	100,000
Habitat fragmentation (Responsible Ministry for overall supervision: Ministry of Roads and Bridges)	Recreate vegetation corridors where possible.				
Water and soil pollution (Responsible Ministry for overall supervision: Ministry of Roads and Bridges)	Dispose of waste such that there is no contamination into the environment.	Follow the Water Management Plan.	Freshwater aquatic monitoring should continue throughout the closure phase.	Further remediation should be discussed if poor water quality is still found at the site.	100,000
Induced human access and immigration (Responsible Ministry for overall supervision: Ministry of Roads and Bridges)	Support alternative livelihood activities.	Based on the needs identified by the local population during socioeconomic surveys, support projects that would provide alternative revenue to the local population and workers that moved to the area.	Monitoring of the selected alternative livelihood projects should be implemented to ensure that these projects are working and that there is not an increase in other activities, such as deforestation for agriculture and increase in hunting.	Certain alternative livelihood projects may not be successful and thus, several different types of projects should be considered to ensure some level of success.	50,000

Appendix K: Traffic Management Plan

Republic of South Sudan
Ministry of Roads and Bridges

SOUTH SUDAN CONNECTIVITY FOR GROWTH PROJECT

Environmental and Social Impact Assessment (ESIA) for the Upgrading of Juba - Torit - Kapoeta - Nadapal Road (354.05Km) to Paved (Asphalt) Standard



Appendix K - Traffic Management Plan

Revision	Purpose description	Originated	Checked	Reviewed	Authorized	Date
1.0	Issued to Client	GKM	TOO	LKN	MKG	25/10/2024
2.0	Revised - Client & WB Comments	GKM	TOO	LKN	MKG	29/11/2024

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List of Abbreviations

ESMP	Environmental and Social Management Plan
PM	Project Manager
TMP	Traffic Management Plan

1. Introduction

1.1. Purpose

This document has been prepared to ensure maintenance of traffic flow during the construction phase of the project road. The plan details the responsibilities of traffic management personnel, construction sequencing, announcements, use of traffic control devices and other activities aimed at minimizing traffic disruption during the construction period. The plan ensures that both vehicular and pedestrian traffic can move appropriately within the roadway during the construction period.

1.2. Principles

The Traffic Management Plan (TMP) principles and vision as developed are geared to ensure:

- The provision of a safe environment for road users and construction workers.
- Any negative impact on road users and asset operation is kept to a minimum.
- Access is maintained for the local community, transport operators, commercial developments; and road users and local communities are regularly informed in relation to changed traffic conditions; and
- Warning of changes to normal traffic flow conditions.

1.3. Objectives of Traffic Management Plan

The key road safety and traffic management objectives of this traffic management plan are as follows:

- Provision of a safe environment for road users through the installation of a high standard traffic controls, which effectively warn, inform, guide and that comply with the best practice.
- Minimize disruption to traffic operation, congestion and delays to all road users and access to adjoining properties
- Ensure that needs of road users; motorists, pedestrians, cyclists, public transport vehicles are accommodated at and through the works
- Provide protection for workers, visitors, and the public from traffic hazards that may arise because of construction activity.
- Ensuring road users are given due consideration during all phases of the Project works.
- Maximize the safety for the workers, by isolating work areas from traffic flows, applying low exposure work methods, education and the installation of appropriate traffic signs and control.
- Maintain the project road and surrounding road network functionality.
- Minimize heavy vehicle movements in peak traffic while applying every effort to implement haulage at night.
- Plan and phase construction works to effectively minimize road occupancy, avoid potential impacts and minimize conflict points on the existing road network.
- Implement traffic control operations that minimize delays to road users.
- Limit obstructions and restrictions, and when required provide alternatives to maintain access for local population, public transport operators (motorbikes, matatus and buses) including over dimension load movements (heavy transit trucks) and commercial developments.
- Implement and maintain environmental controls (wash bays, rumble grates, load covers, etc) to suppress dust and prevent debris deposits on the road network.
- Actively liaise with key stakeholders to ensure they are informed about proposed changes to the road network by attending regular scheduled or ad hoc stakeholders' meetings.
- Enable road users, transport operators and local communities to plan their journeys by providing them with timely and accurate changed traffic condition information.
- Plan works to allow for effective emergency response; and
- Effective management of complaints in raised by local Community and Stakeholders.

1.4. Targets

The key road safety and traffic management targets are as follows:

- To avoid roadwork related crashes during construction.
- Minimize impact to the effective and efficient operation of the road.
- Achieve an outstanding result in all functional areas; and
- Implement traffic management that raises the industry standard.

2. Responsibility for Traffic Management and Implementation

2.1. General

To ensure that the Traffic Management Plan (TMP) is executed, the contractor should at a minimum have a competent team of personnel for implementing the plan. Key construction personnel and their traffic management related responsibilities are described below.

2.2. Traffic Management Organization Chart

Formal lines of communication between project personnel are as shown on the project organization chart below. These can be supplemented by informal lines of communication to facilitate efficiency and effectiveness of the management team. The organogram shows the key project personnel. Other actors and their responsibility is described herein.

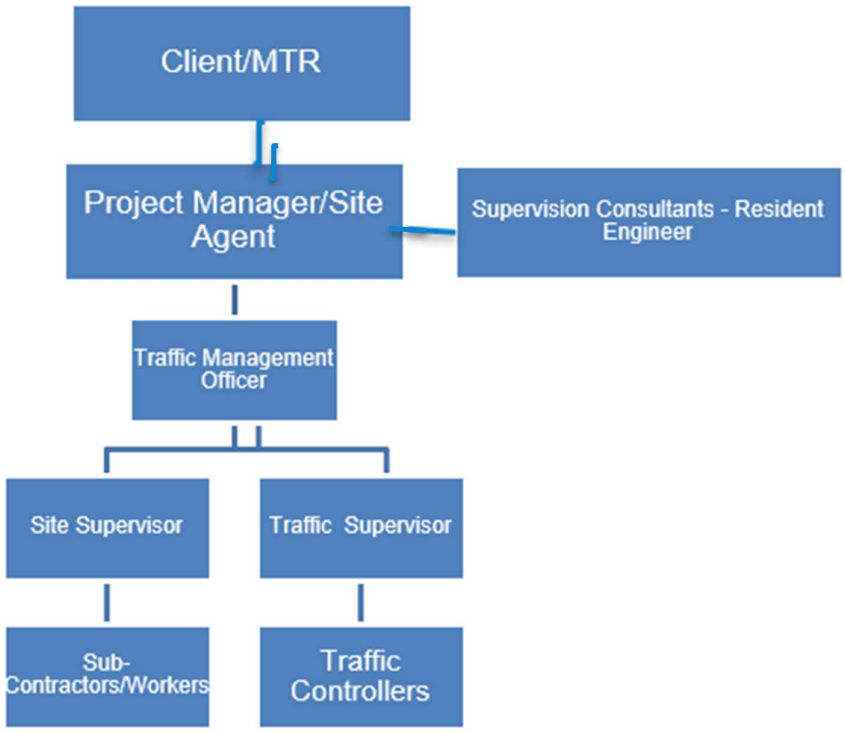


Figure 2-1: Traffic Management Organization chart

2.3. Project /Client Engineer

The client's project Engineer will

- Ensure that a tailored traffic management plan is prepared and authorised prior to the contractor commencing works at the site
- Provide necessary liaison and introductions between the contractor and the government agencies including the National police, county and state governments as well as the national government.
- Liaising and maintaining a productive relationship with the contractor, the supervision consultant as well as representatives of national, states and county governments, emergency service agencies, and other stakeholders on all traffic and incident related issues
- Ensuring that all traffic incidents are addressed and close out report generated, and all issues are closed out with the relevant government agencies as well as the communities.

2.4. Supervision consultant/ Resident engineer

The resident engineer shall

- Liaise with the contractor and the client in ensuring that the traffic management plan addresses all the envisioned traffic issues along and around the project area
- Review, comment and approve the Traffic management plan prepared by the contractor
- Monitoring the implementation of the traffic management plan and evaluating the on-going effectiveness of traffic management activities of the project and where found necessary instruct for updating of the plan to address emerging issues
- Liaising and maintaining a productive relationship with the Employer, the contractor , national, states and county governments, emergency service agencies, and other stakeholders on all traffic and incident related issues.
- Maintain a record of all traffic related issues and review on monthly on their close out including root cause analysis and corrective actions.
- Carryout a road safety assessment of the proposed traffic management plan from time to time to ensure that any proposed intervention does not pose risk to road users.

2.5. Project Manager/site Agent

The project manager will:

- Oversee the entire traffic control and management.
- Liaison with the local authorities.
- Ensures all traffic control measures in this TMP are in force and maintained in accordance with plan.
- Ensures effective communication and consultation with the concerned stakeholders is always maintained including prompt address of complaints.
- Ensure inspections of the traffic controls are undertaken in accordance with the TMP and results recorded.
- Supporting construction staff in the planning and coordination of traffic management activities in timely and efficient manner.
- Managing engagement with key stakeholders.
- Ensuring all traffic management measures are planned, implemented and maintained in accordance with relevant stakeholder requirements.
- Liaising and maintaining a productive relationship with the Employer and its Representative on site, national, states and county governments, emergency service agencies, and other stakeholders on all traffic and incident related issues.
- Preparing, in consultation with the Construction Team, the Construction Traffic Phasing Plans.
- Assisting the Design Team to facilitate delivery of Temporary Works Drawings, in accordance with the relevant standards.
- Monitoring and evaluating the on-going effectiveness of traffic management activities of the project, including road user delays and where necessary implement corrective actions to rectify any deficiencies.
- Investigating traffic related incidents /hazards, identifying preventative measures and managing the implementation of actions to mitigate, future occurrences.
- Managing the Project's road safety audit and inspection process, implement corrective actions and maintain detailed records.
- Assisting with the dissemination of changed traffic conditions information to potentially affected parties, including road users, local communities and transport operators.

2.6. Traffic Management Officer

The traffic management officer will:

- Day-to-day review of feedback from field inspections, worksite personnel and members of the public, and take action to amend the traffic control measures
- Support the construction staff in the planning and coordination of traffic management activities in timely and efficient manner.
- Assist with the planning, development, implementation, revisions, and approvals of the Traffic Management Plans.
- Assist to ensure all traffic management measures are planned, implemented and maintained in accordance with best practice, including all relevant safety regulations and standards.

- Monitor and evaluate the on-going effectiveness of traffic management activities of the project, including road user delays and support the traffic team to implement corrective actions to rectify any deficiencies.
- Assist in conducting road safety inspections, implement corrective actions and maintain detailed records.
- Assist with investigating traffic related incidents / hazards, identifying preventative measures and managing the implementation of actions to mitigate future occurrences.
- Conduct field surveillance of the road network, with the aim to identify unusual congestion, incidents, non-conforming traffic control and unsafe road conditions.
- Actively participate in the response to incidents/ hazards, and task incident management teams accordingly, to make the site safe.
- Coordinate all traffic management activities.
- Design and issue the required speed limit authorizations to the traffic control crew / or Subcontractors.
- Implement the speed limit authorizations
- Liaise with the Project Manager (PM) to ensure lane closure and speed limit authorizations have been obtained.
- Under the guidance of the PM, proactively implement mitigation measures to address unsafe road conditions, and unusual traffic congestion.
- Conduct pre-start inspections and regular night/weekly/weekend inspections of traffic controls and assists with audits and where necessary instruct the rectification of deficiencies.
- Ensure records are kept for incidents, and when traffic controls are in operation, including the installation and removal of regulatory signage, daily/weekly inspections and audits.

2.7. Traffic Supervisors

The contractor should incorporate well trained and experienced overall traffic Supervisors to be deployed at site to ensure smooth traffic flows by providing proper signage at proper location with proper wording that deliver the correct message to the road users. The candidate will be equipped with all necessary tools to enable him/her to be reachable all the time. The traffic Supervisor shall be responsible of undertaking the following: -

- Instruct workers on the relevant safety standards, including the correct wearing of high visibility safety vests (reflective jackets), safety boots, and other equipment as required.
- ensure that that the public is getting the right message from TMP and do risk assessment so that any potential hazard is eliminated before an incident occurs.
- Ensure traffic control measures are implemented and maintained in accordance with the TMP
- Submit the required inspection and evaluation reports to the traffic management officer
- Render assistance to road users and stakeholders when incidents arising out of the work affect the performance or the safety of road users and workers
- Work in conjunction with relevant authorities especially the national police and the state and county government officers executing their duties of traffic management.
- Conduct field surveillance of the road network, with the aim to identify unusual congestion, incidents, non-conforming traffic control and unsafe road conditions.
- Manage the day-to-day operations and workload of the traffic control team.
- Plan and manage the installation of short term and long-term road signage.
- Manage the implementation of traffic control lay outs ensuring adequate number of staff and equipment are on-site.
- Manage the implementation of barrier relocation and all traffic related exercises.
- In conjunction with the Traffic Management Officer, investigate traffic related incidents / hazards, identify preventative measures and manage the implementation, of actions to mitigate, future occurrences.
- Organize repairs, maintenance, purchase and/or replacement of all traffic control equipment and vehicles.
- Manage the maintenance of all traffic control devices, line marking, signage, delineation and other equipment or areas as required.
- Assist with the development and improvement of traffic control plans.
- Liaise with Traffic Management Officer and leading hands to ensure all works are carried out with the correct traffic control in a safe and timely manner.
- Ensure the OH&S needs of all staff; especially traffic control teams' members are met.
- Manage the delivery of materials and entry of vehicles to site on a day-to-day basis; this includes providing traffic control as required.
- Ensure the yard, workshops and associated depots and storage areas/containers are maintained to a high standard of cleanliness and safety.
- Attend and action items raised at Safety, Construction and other relevant Team Meetings in a timely manner.

- Manage and ensure the safe bicycle, motorbikes, buses, and trucks/tippers movements and clean implementation of contra-flow operations.

2.8. Traffic Controllers

Traffic Controllers shall have the responsibility of the following:

- Ensuring the traffic management devices are set out in accordance with the TMP.
- Be available to always attend the site at short notice to manage variations, contingencies and to take overall responsibility for traffic management.
- Set up traffic sign boards and control passage of traffic.
- Install and remove traffic control, including speed zones, in strict accordance with a TMP.
- Carry out maintenance of all traffic control devices, line marking, signage, delineation and other equipment or areas as required.
- Aid as directed at incident sites, including direction from emergency services, e.g. Police.
- Install and maintain short term road signage.
- Relocate, repair and maintain traffic control equipment.
- Organize and maintain the yard, workshops and associated depots and storage areas/containers to a high standard of cleanliness and safety.
- Adhere to all OH&S policies, guidelines and requirements of the Project.
- Implement corrective actions and undertake duties as directed by the Site Supervisors.
- Support construction staff in the planning, coordinating and monitoring of traffic management activities in timely and efficient manner.
- Assist with the planning, development, implementation, and revisions of Traffic Management Plans.
- Assist the Project Manager ensure that all traffic management measures are planned, implemented and maintained in accordance with best practice, including all relevant safety regulations and standards.
- Conduct field surveillance of the road network, with the aim to identify unusual congestion, incidents, non-conforming traffic control and unsafe road conditions.
- Liaise with construction staff and traffic control teams, in the planning, coordination, and monitoring of traffic operations, and to facilitate the implementation of corrective actions.
- Prepare necessary reports and maintain incident records and inspections logs.
- Action items raised at Safety, Construction and other relevant Team Meetings in a timely manner.
- Manage, maintain and ensure the safe and clean implementation of contra-flow operations.

2.9. Labours/Workers/Traffic Management Personnel

The Construction Team will be responsible for all construction activities; key construction personnel and their traffic management related responsibilities are described below

Workers shall:

- Correctly wear high visibility vests, in addition to other protective equipment required (e.g. footwear, eye protection, helmet, sun protection etc.) at all the time while on site.
- Comply with the requirements of the TMP and ensure no activity is undertaken that will endanger the safety of other workers or the public.
- Enter and leave the site by approved routes and in accordance with safe work practice.

2.10. Traffic Police

The project team and indeed other actors will work closely with the police (traffic department) in the implementation and monitoring of the traffic management plan. The traffic police will be key in assisting project in enforcement of the measures contained in this plan.

2.11. Local Administration

The local administration, especially at lower levels will have a key role in supporting the project team in sensitizing/ awareness creation on road safety.

3. Traffic and Road Safety Risks

3.1. Traffic and Road Safety Risks

The potential traffic and road safety risks from project activities (on public roads; access roads; project sites) include:

(i) Injuries and property damage from use of project vehicles in project sites/auxiliary facilities, access roads and public roads;
(ii) Risks related to operation of project machinery and equipment's e.g. striking/contact with energized cables; and
(iii) Risks to public traffic using the project road e.g. collision with project vehicles and machinery; fall into excavation, collision with project barriers such as jersey barriers installed in the active sites etc.

3.2. Management Measures

The necessary precautions to safeguard the safety at the construction site as outlined below.

3.2.1. General Precaution

The following general precautions shall be observed:

- All the signs and delineators shall be always maintained in a clean and brightly painted condition.
- Adequate lighting shall be in place for proper visibility at the site.
- Adequate arrangement shall be put in place to keep the construction site dust free by sprinkling water whenever it is necessary.

3.2.2. Safety of Workmen

The contractor shall ensure:

- Workmen will be trained in use of tools and plant.
- Protective gear will be provided to workers and their use will be mandatory.
- First aid training to be provided to all workers and enough safety kits will be available at the site.
- Workers controlling traffic will always wear fluorescent yellow jackets with reflective stripes.

3.2.3. Safety of Road Users

The following shall be observed towards safety of road users:

- Machinery will be parked at appropriate places with red flags and red lights on.
- Only minimum quantity of material required for one operation will be stockpiled/stored on the road.
- The public will properly be informed through posters on areas of road work.
- All road users will be properly guided by trained traffic controllers in addition to road signs to ensure their safe passage through the works.

3.2.4. Emergency Measures

The contractor shall constitute an emergency team to solve emergency accidents and eliminate unsafe factors. The team will be led by one leader and equipped with essential plant. Sign boards with emergency contact information will be erected during period of traffic closure.

3.2.5. Safety and Amenity of roads users and public

Measure that should be considered to deliver public safety include.

- Separation between public and the works through the use of approved safety barriers, haul roads, side tracks staging works and roadside furniture.
- Limiting working hours of works that could pose substantial impact on road users and the public
- Minimising disruption during peak traffic periods such public holidays.
- Providing and maintaining public access to affected properties, farms and agricultural crossings/tracks, and recreational areas.

- Implementation of visual barriers to reduce potential distraction of road users; and
- Community consultation and notification to keep road users and the public up to date regarding traffic management measures or restrictions.

The contractor shall prepare a construction method statement and the vehicle management plan for specific areas that require work access restrictions to maintain public access.

3.2.6. Site Access

Vehicle Management Plans

The vehicle management plan will provide details of the layout within the worksites and the site compound area including.

- Movement of construction and other vehicles within the work site and the site compound area and the associated signage
- Movement of vehicles on adjacent publicly accessible roads e.g. haulage of spoil from and to excavation site across the road to a stockpile.
- The location of access to parking areas
- Pedestrian routes
- Access paths to workshops, sheds offices etc
- Security point locations including boom gates where required.

Site Compound Traffic Management

Traffic Management at these site compounds will be developed to accommodate expected vehicle movements required based on the location, requirements and layout of each respective compound. The requirements of each compound will be assessed on an ongoing basis due to the changing nature of the project, such as:

- Opening of haul routes causing reduction of traffic going to and coming from the existing Highway alignment.
- Increasing number of workforces as the project works progress.
- Changing vehicle capacities during the project as different stages of the work site open up and have different vehicle movement requirements.

Where temporary works are required for safe ingress and egress within the compounds, they will be designed implemented to minimise effects on existing traffic flows.

3.2.7. Public Transport

The contractor shall liaise with public transport services throughout the project to minimise potential impacts on these services.

Management of other potential impacts will be assessed on an ongoing basis in conjunction with affected stakeholders. Key consideration will be given to the effects of traffic switches as a result of the staging required for the Project.

3.3. Training

The contractor will identify training needs to inform preparation of a training plan geared towards improving traffic safety within the project. The assessment and training plan will include:

- Assessing skills competence (traffic safety management) among project workers.
- Targeted training modules to equip workers with required traffic safety.

3.4. Traffic Management Plan

Table 3 - 1: TMP Management Plan

Aspect	Potential Risk/ Impact	Mitigation Measures	Responsibility	Timing	Cost Estimate (USD)
Traffic and Road Safety Risks related to project activities (on public roads; access roads; project sites).	▪ Accident incidents (knocking/hitting workers and pedestrians; collision with vehicles/machinery and/or project barriers; fall into excavations) ▪ Injury and/or fatalities from traffic incidents ▪ Property damage	▪ Preparation of safe driving/ machinery operation procedures ▪ Training & awareness creation for workers and community members. ▪ Use of precaution/ safety traffic signage ▪ Training and deployment of project traffic marshals ▪ Traffic control at active sections and diversions ▪ Watering dusty sections (poor visibility from airborne dust) ▪ Regular servicing and maintenance for project vehicles and machinery ▪ Speed reduction measures at active construction sections.	Contractor	Construction	3,000,000

3.5. Traffic Monitoring Plan

Table 3 - 2: TMP Monitoring Plan

Potential Risk/ Impact	Mitigation Measures	Monitoring Indicators	Responsibility	Timing/ Phase			Implementation Cost (USD)
				Daily	*Quarterly*	*Annual*	
▪ Accident incidents (knocking/hitting workers and pedestrians; collision with vehicles/machinery and/or project barriers; fall into excavations) ▪ Injury and/or fatalities from traffic incidents ▪ Property damage	▪ Preparation of safe driving/ machinery operation procedures ▪ Training & awareness creation for workers and community members. ▪ Use of precaution/ safety traffic signage ▪ Training and deployment of project traffic marshals ▪ Traffic control at active sections and diversions ▪ Watering dusty sections (poor visibility from airborne dust) ▪ Regular servicing and maintenance for project vehicles and machinery ▪ Speed reduction measures at active construction sections.	▪ Safe driving/ machinery operation procedures. ▪ Installed signage ▪ Training & awareness creation records/reports ▪ Trained & deployed marshals ▪ Watering logs ▪ Maintenance/ servicing records ▪ Implemented speed control measures	Contractor Client Representative Traffic Police Local Administration	√	√	√	4,000,000

4. Components of the Construction Zone

4.1. Introduction

The new road construction will need to be done in an environment that avoids inconvenience to existing traffic as far as practically possible by guiding the drivers and pedestrians in a clear and positive way. The contractor should ensure that a secure construction zone is laid out and legal permits are obtained from the authorities (Ministry of Road and Bridges, National Government as well as the respective state and county Governments, and the local police etc.) before any works begins. The traffic management strategies employed at the construction site shall ensure that traffic safety is an integral and high priority element. This will be done by avoiding inconvenience to traffic as far as practically possible and by guiding the drivers in a clear and positive way.

Routine inspections of traffic control elements and traffic operations should be carried out so that care and attention to road safety is never slack during the progress of the project.

The various components of the construction zones are illustrated in the figure below and described in the following sections.

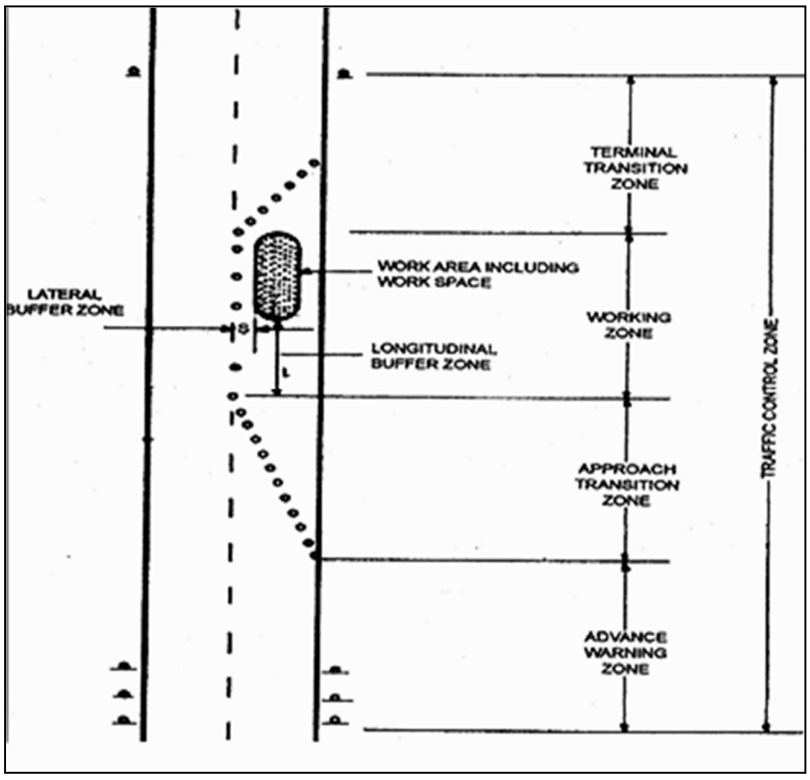


Figure 4-1: Components of the Construction Zone

4.2. Traffic Control Zone

This is an area of the road which is affected by the works, and which affects traffic flow and road users. This area includes those areas of carriage way in advance of the actual work site which are required for advance warning of the hazard as well as safety zones, the transition zones and the working zone itself.

4.3. Advance Warning Control Zone

This is an area that warns road user of the approaching hazard and to prepare them for the change in driving conditions. This is very essential because it shows:

- The presence of hazard through the Road Works ahead sign, accompanied by the distance to hazard.
- Any changes affecting traffic arrangements (such as reduction in the number of lanes and/or in speed limit) within the traffic control zone.
- The type of hazard and the length of restriction.
- Advance 'Diversion Ahead' Sign.

4.4. Approach Transition Zone

This is an area in which the traffic is guided into the altered traffic flow pattern around the working zone. This zone is very crucial as well because most of the movements involved at this point are merging/turning movements and the anticipated traffic conflicts must be managed efficiently.

4.5. Working Zone

This is where the actual construction is being undertaken. It contains the work area and a working space, as well as lateral and longitudinal buffer to create the safety to protect both the workforce from wayward vehicles entering the area of actual work and the road users from construction equipment.

4.6. Terminal Transition Zone

This is normally a short distance to clear the work area and to return to normal traffic lanes. It has a sign indicating the end of works.

4.7. Traffic Switching Arrangements and Procedure

General

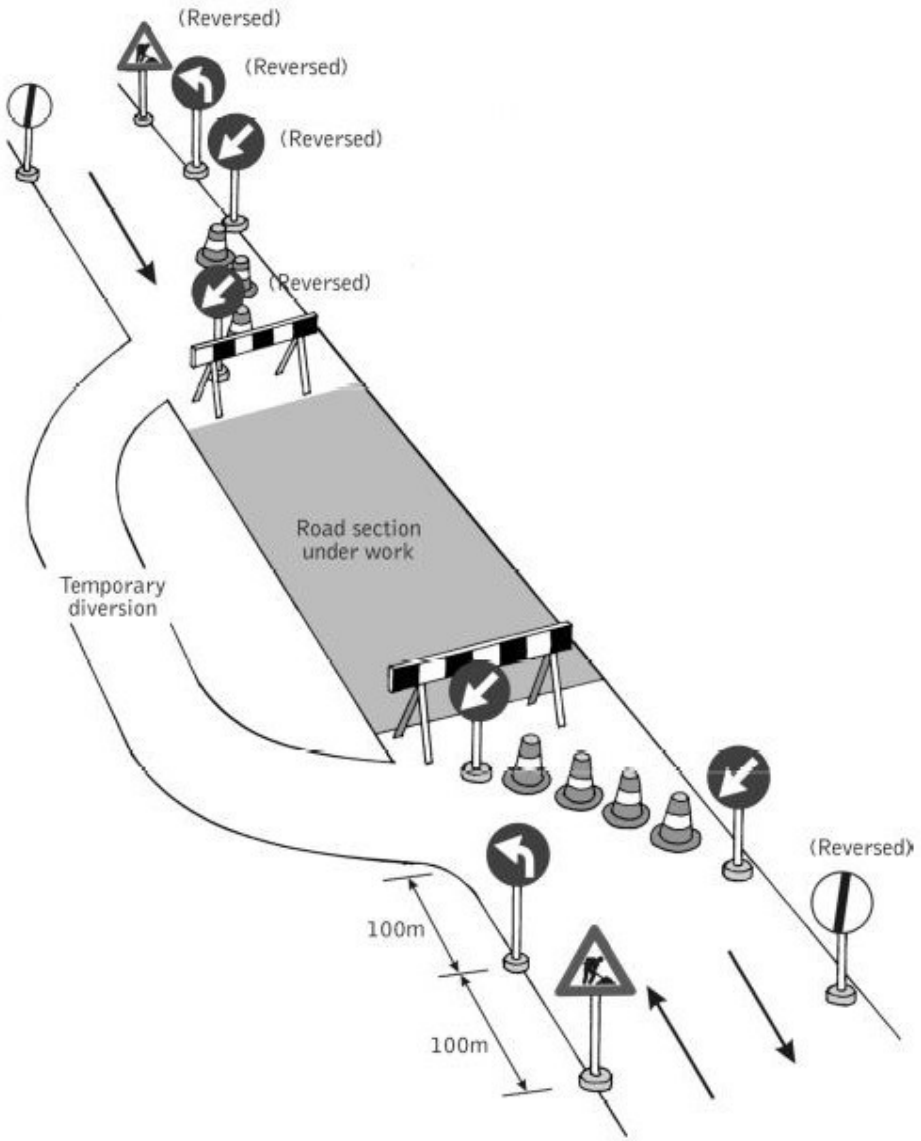
Traffic switches will be required to be carried out during the staged delivery of the Project. Multiple traffic switches will be required across the Project with varying impacts on the through traffic, local traffic, public transport, school buses, bicyclists and pedestrians.

The Project team will develop and implement a procedure for managing traffic switches if it is needed. Specific Traffic Staging Plans and accompanying Traffic control plan will be required to be developed for each traffic switch. In doing so, the Project team will:

- Comply with Specification to ensure that the design of any temporary works associated with the traffic switch
- Comply with the Standard and Guide to Traffic Engineering Practice to ensure the temporary traffic control devices used are appropriate for the traffic switch;
- Ensure the road lane capacity is not impacted where-ever practicable;
- Obtain all necessary national and local government approvals;
- Inform the public through the processes described in the Community Communications Strategy;
- Tool-box the traffic switch with all staff, labour and subcontract resources to ensure a clear understanding of individual and team responsibilities during the day/night of the traffic switch;
- Brief the emergency services agencies about the proposed traffic switch, including the police, ambulance, fire brigade, rural fire brigade, bus operators and any affected service authorities;
- Carry out an independent safety audit on the proposed traffic switch noting that all signposting, pavement marking, safety barriers and portable or temporary traffic signals must be completed before the opening of temporary roadways to traffic or after opening temporary roadway to traffic providing that its done within 24 hours after opening, the latter will benefit the auditor from seeing the switch in operation with traffic using it;

4.8. Temporary Roadways and Detours Designing Temporary Roadways and Detours

Where temporary roadways and detours, or adjustments to existing lane configuration and geometry, are required as part of the traffic staging, they will be designed in accordance with the relevant design standards and in accordance to project Specification and Traffic Control at Worksites Manual. Typical deviations arrangements are presented here-below:



5. Traffic Control Devices

5.1. Introduction

These are equipment and installations over and, on the road, which individually and collectively perform very crucial functions which include but not limited to;

- Warning road user.
- Informing road user.
- Guiding road user.
- Protecting the road user etc.

The contractor will be required to ensure that for a traffic control device to be effective it should;

- Fulfil the intended need.
- Command attention and respect of road users.
- Convey the message in a simple and clear manner
- Have adequate conspicuity both in day and night among others.

5.2. Signs

The road construction and maintenance signs fall into three major categories namely, regulatory signs, warning signs and direction/guidance signs and all these shall be provided by the contractor at the site with clearly visible messages.

5.3. Sign Locations

The following guidelines are proposed for siting or locating the signs at the road construction site.

Table 5-1: Road sign positioning guidelines

Av. Speed km/h	Distance of first sign in advance of the first channelizing device m	Size of warning sign (mm)	Minimum number of signs in advance of the hazard
Under 50	100	600	3
51-60	100-300	750	3
61-80	120-300	900	3 or 4
81-100	300-500	1200	4
Over 100	1000	1200 to 1500	4

Source: Manual for uniform traffic control devices

5.4. Delineators

The delineators are the elements of a total system of traffic control and have two distinct purpose;

- To delineate and guide the driver to and along a safe path
- As a taper: to move traffic from one lane to another

The channelizing devices such as cones and traffic cylinders are recommended to be placed in or adjacent to the roadway to control the flow of traffic. These devices to be used should be retro-reflective.

5.5. Flagmen/women

These are trained personnel who help in controlling traffic at the road construction site. They perform their duties with the help of reflective jackets, hand signalling devices such as flags and sign paddles. The

background colour of “**STOP”** to be red and its shape shall be octagonal. The word STOP to be written in white in the middle of the sign as shown below:



Figure 5-1: An illustration of the "STOP" sign to be used by flagmen/women

5.6. Traffic Signs Installation

To compliment the above-mentioned measures, road construction and maintenance signs, including regulatory signs, warning signs and direction/guidance signs with clearly visible message should be installed over and, on the road, so as to direct vehicles and pedestrian to pass through the working zone safely. The detailed installation of signs is shown as the following pictures.

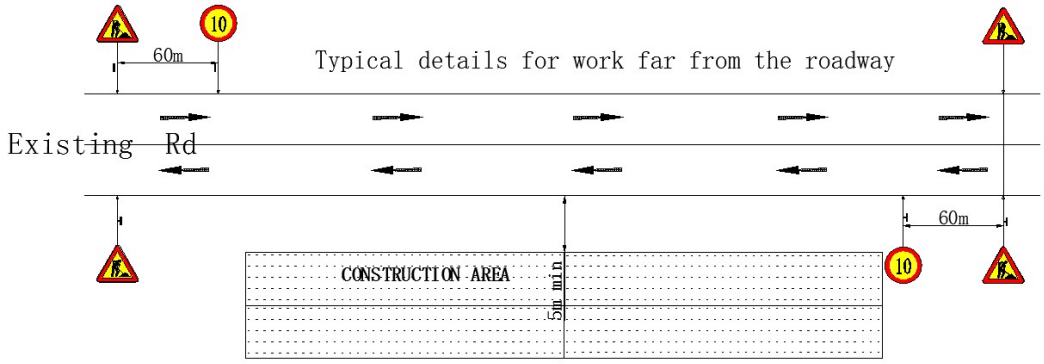


Figure 5-2: Typical details for work far from the roadway

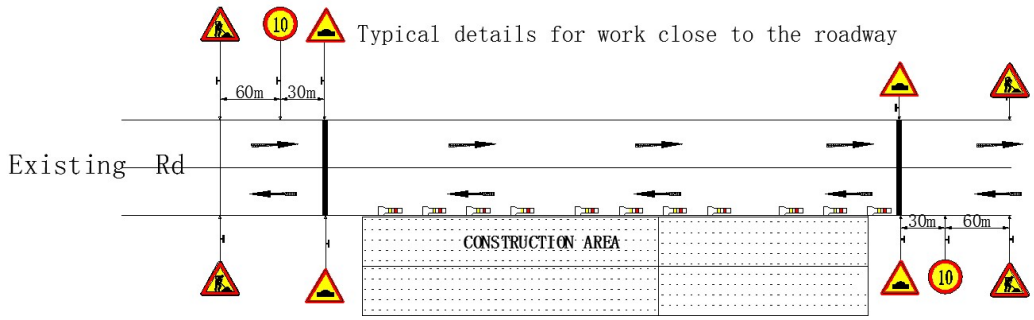


Figure 5-3: Typical details for work close to the roadway

Further, an emergency team should be arranged for dealing with any accidents that might be occurring on site. Warning tape should be adopted around any accident site to prevent the other vehicles from derivative damages.

5.7. The Special Traffic Management Plan for Day Shift and Night Shift

Day and night shift arrangements are illustrated below.

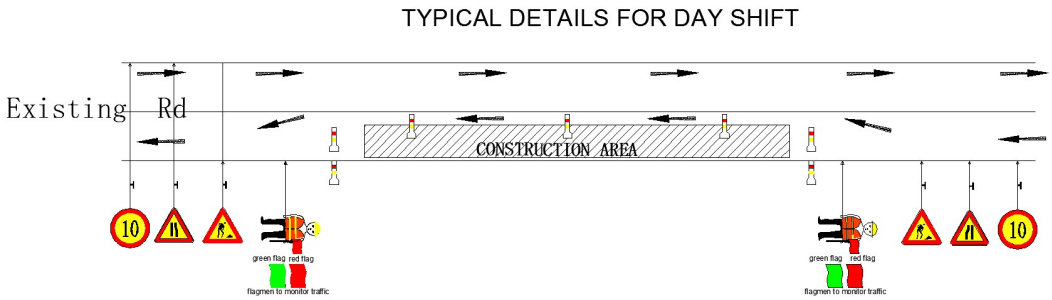


Figure 5-4: Typical arrangement during the day

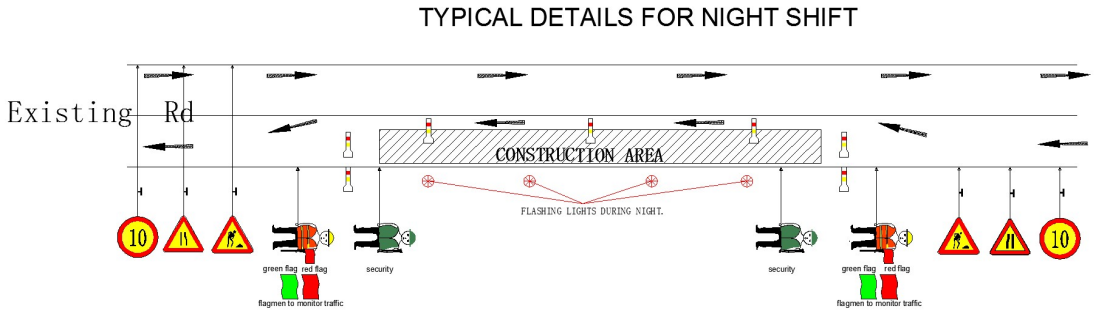


Figure 5-5: Typical signage arrangement during the night

6. Emergency Measures

It is recommended that the contractor should build up an emergency team to solve emergency accidents and eliminate unsafe factors. The team will be led by one leader and equipped with essential equipment. Sign boards with emergency contact information will be erected during close period of traffic.

This should be developed as part of the project's emergency preparedness and response arrangements e.g. basis of other plans such as occupational health & safety and community health & safety plans.

Appendix L: Chance Find Procedures

Republic of South Sudan
Ministry of Roads and Bridges

SOUTH SUDAN CONNECTIVITY FOR GROWTH PROJECT

Environmental and Social Impact Assessment (ESIA) for the Upgrading of Juba - Torit - Kapoeta - Nadapal Road (354.05km) to Paved (Asphalt) Standard



Appendix L - Chance Finds Procedure

Revision	Purpose description	Originated	Checked	Reviewed	Authorized	Date
1.0	Issued to Client	BM	ARK/TO	LKN	MKG	25/10/2024
2.0	Revised - Client & WB Comments	BM	TO	LKN	MKG	29/11/2024

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List of Abbreviations

CFP	Chance Find Procedure
ESIA	Environmental Social Impact Assessment
ESMP	Environmental and Social Management Plan
ESMS	Environmental and Social Management System
IFC	International Financial Corporation
PS	Performance Standard
UNESCO	United Nations Educational, Scientific and Cultural Organization

1 Introduction

1.1 Project and Procedure Overview

This Chance Find Procedure (CFP) is an outcome of the Environmental and Social Impact Assessment (ESIA) for the Upgrading of Juba - Torit - Kapoeta - Nadapal Road to Paved (Asphalt) Standard. The CFP forms part of the Project's Environmental and Social Management Plan (ESMP) and will be implemented through the Project's Environmental and Social Management System (ESMS).

1.2 Basis of the CFP

The Chance Find Procedure is developed in line with the 1972 United Nations Educational, Scientific and Cultural Organization (UNESCO) Convention Concerning the Protection of the World Cultural and Natural Heritage (1972) and the International Finance Corporation (IFC) Performance Standard (PS) 8 on Cultural Heritage (2012). PS 8 recognizes the importance of cultural heritage for current and future generations, and it is consistent with the Convention Concerning the Protection of the World Cultural and Natural Heritage. The PS8 aims to ensure that clients protect cultural heritage during their project activities. In addition, the requirements of PS 8 on the projects use of cultural heritage are based in part on standards set by the Convention on Biological Diversity. Cultural heritage represents irreplaceable sources of life and inspiration and must be safeguarded.

1.3 Objectives of the Chance Find Procedure

The objectives of the CFP are to:

(i) protect cultural heritage from adverse impacts of project activities and support its preservation; and

(ii) promote the equitable sharing of benefits from the use of cultural heritage.

Cultural heritage refers to:

- Tangible forms of cultural heritage such as tangible moveable or immoveable objects, property, sites, structures or groups of structures having archaeological, paleontological, historical, cultural, artistic and religious values
- Unique natural features or tangible objects that embody cultural values such as sacred groves, rocks, lakes, waterfalls
- Certain instances of intangible forms of culture that are proposed to be used for commercial purposes such as cultural knowledge, innovations, and practices of communities embodying traditional lifestyles.

1.4 Requirements and Application

The requirements of PS 8 apply to cultural heritage regardless of whether it has been legally protected or not or previously been disturbed. The PS 8 requirements do not apply to cultural heritage of indigenous peoples as they are adequately covered in a separate performance standard.

This document specifies requirements and procedures for dealing with any chance finds including instructions for temporary stoppage of work pending further investigation; notification of discoveries to the client or supervising engineer/authority as appropriate; interim find protection and prevention measures; chain of custody instructions for movable finds; expert verification; and record keeping.

The procedures are included as standard provisions in construction contracts to ensure the protection of cultural heritage. The procedures include steps to follow whenever new archaeological/paleontological remains, antiquities or any other object of cultural or archaeological importance are encountered during construction. The Chance Finds Report Form (included herein) should be immediately filled out for all chance finds.

2 General Guidelines

Any archaeological or heritage site discoveries during road works or excavations must be reported to the client or client representative and treated as an incident. The supervising Consultant acting as the interface manager will notify the client (Ministry of Roads and Bridges) and record the incident. Excavation of locations with previously recorded prehistoric sites should be avoided.

Where this is unavoidable, discussions must be held with the relevant Ministry (in this case Ministry of Culture Museum and Cultural Heritage) in order to undertake pre-construction excavation to conduct a salvage operation; or assign an archaeologist to log discoveries as construction proceeds. The Contractor or other entity discovering a potentially significant site or artefact will initiate the following actions:

(i) Stop work in the immediate area and take digital photographs to record the find.

(ii) Install temporary site protection measures (e.g. delineate a 'no-go' area using warning tape, stakes and signage / deploy worker and give instructions to prevent access or further disturbance) and take all reasonable steps to avoid any further disturbance or damage from excavation, vibration, plant or machinery.

(iii) Inform site supervisor/foreman.

(iv) Inform all relevant staff /Contractor personnel of the chance find and whether access to work area or along the right-of-way is being restricted.

(v) Strictly enforce any no-go area needed to protect the site.

(vi) Notify supervising consultant, who will advise on any additional measures such as deployment of security guards and consultation or a visit by an archaeologist or other heritage specialist. In the event of the latter, the specialist/archaeologist will be responsible for evaluating whether the chance find needs to be classified as cultural heritage and if so, whether it is isolated or part of a larger site or feature. The Ministry of Roads and Bridges will notify the Ministry of Culture Museum and Cultural Heritage and relevant authorities.

(vii) Artefacts are to be left in place for recording by the heritage specialist/archaeologist. The finds are not disturbed or moved as their setting is as important as the artefact/fossil.

(viii) If materials are to be collected, they will be placed in bags and labelled by the specialist /archaeologist and forwarded to the authorities in a manner that ensures the integrity of the 'chain of custody'.

(ix) Project personnel are not permitted to take or keep artefacts as personal possessions as that may be criminal, misconduct or unacceptable behaviour.

(x) Any damage, accidental or otherwise, will be investigated by the site foreman, supervising consultant and/or the Ministry of Culture Museum and Cultural Heritage and/or Ministry of Roads and Bridges and the details recorded in an Incident Report and, if necessary, an Incident (Chance Find) Investigation Report.

(xi) Appropriate mitigation / treatment strategies will be developed according to the specific circumstances of each Find and, as appropriate, take account of the degree of cultural importance of the Find.

(xii) Stakeholder engagement may be needed with affected communities to determine the correct mitigation actions or, if applicable, suitable compensation (e.g. reburial costs). Site treatment scenarios may include:

- Preservation in place through avoidance or specialized construction techniques, and/or
- Rescue excavations to remove, record and relocate in advance of further construction work if avoidance is not possible.

(xiii) If the Chance Find is an isolated artefact/site or is not classified as cultural heritage, supervising consultant and/or Ministry of Roads and Bridges must approve the removal of site protection

measures and activity can resume only with consultation and approval of the Ministry of Culture Museum and Cultural Heritage or other local authorities.

(xiv) If the heritage specialist and/or archaeologist confirms the Chance Find to be cultural heritage he/she will inform Ministry of Roads and Bridges and initiate discussions about the handling process.

(xv) If a Chance Find is a verified cultural heritage site, a final Chance Finds report is prepared once required treatment has been completed.

(xvi) While required treatment is ongoing, the Ministry of Roads and Bridges will coordinate with the relevant staff / contractor, keeping them informed as to status and schedule of investigations / actions, and informing them when activities may resume.

(xvii) The projects grievance redress procedure will apply to any stakeholder complaints relating to cultural heritage and chance finds.

(xviii) Chance Find recording shall include the following:

- Incident Notification.
- Incident Report.
- Incident (Chance Find) Investigation Report – e.g. detailing corrective actions, with digital images, maps and plans showing any locations that are no-go, limited access or present risks of further chance finds.

(xix) The Ministry of Roads and Bridges/Supervising Consultant shall collate data and report Chance Finds and related activities monthly during construction phase in accordance with the Project's monitoring and reporting programme.

(xx) The action taken and outcome will be recorded in the Environmental and Social issues register.

Where historical remains, antiquity or any other object of cultural or archaeological importance are unexpectedly discovered during construction in a location not previously recorded as an archaeological /cultural site, the following procedures should be applied:

(a) The responsible archaeologist should decide on procedures to be carried out depending on the nature of the discovery. The significance and importance of the object will be assessed according to various criteria relevant to cultural heritage including aesthetic, historic, scientific or research, social and economic values.

(b) A decision is then made on how to handle the case based on the assessment above. This can include changes in the project layout (in cases where objects cannot be moved), conservation, preservation, restoration or salvage.

(c) Construction work can resume only when the decision concerning the safeguard of the heritage is fully executed.

In all cases where such objects are found, the Chance Finds Report/Form presented in Section 3 should be filled in.

3 Chance Finds Report/Form

Chance Find Report				
Date **(----/---- / 20----)**	**Time** **(----:----)**	**Site Name**	**GPS Coordinates** **(Northing)**	**GPS Coordinates** **(Easting)**
Description of Find				
Proximity to Contractor Activity				
Sensitivity				
Vulnerability/ Integrity				
Recommended Action Description				

Site Checklist	**Yes / No**	**Comment**
Responsible persons notified		
Coordinates verified		
Site Marked		
Site Secured		
Photograph(s)		
Impacts Assessed		
Actions Agreed		

Authorized Instruction		
Ministry of Culture Museum and Cultural Heritage Representative	Position	Signed and Date
Name		
Contractor / Project Manager		Signed and Date
Name		
Ministry of Roads and Bridges Representative		Signed and Date
Name		

Appendix M: Stakeholders Engagement Plan

Republic of South Sudan
Ministry of Roads and Bridges

SOUTH SUDAN CONNECTIVITY FOR GROWTH PROJECT

Environmental and Social Impact Assessment (ESIA) for the Upgrading of Juba - Torit - Kapoeta - Nadapal Road (354.05Km) to Paved (Asphalt) Standard



Appendix M - Stakeholder Engagement Plan

Document History

Revision	Purpose description	Originated	Checked	Reviewed	Authorized	Date
1.0	Issued to Client	BM	ARK/TO	LKN	MKG	25/10/2024
2.0	Revised - Client & WB Comments	BM	TO	LKN	MKG	29/11/2024

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List of Abbreviations

CSO	Civil Society Organization
ESIA	Environmental and Social Impact Assessment
ESMP	Environmental Social Management Plan
HHEA	Howard Humphreys East Africa Ltd
IDA	International Development Association
MRB	Ministry of Roads and Bridges
PLWD	Persons Living with Disability
PSV	Public Service Vehicle
SEP	Stakeholder Engagement Plan

1 Introduction

1.1 Purpose and Objective

This Stakeholder Engagement Programme (SEP) was prepared during the scoping process to guide in the identification, mapping and analysis of stakeholder's engagement and consultation during the ESIA study (note the proponent is preparing a SEP for the project and this SEP only guides the consultation and engagement for the ESIA study). The aim was to ensure the project stakeholders were identified and adequate consultation with the beneficial and affected groups as well as vulnerable groups within the study area was undertaken. The objective is to ensure the relevant stakeholders views and concerns are well considered and incorporated during the project design and implementation and to develop a sense of ownership. The SEP has been provided as part of the ESMP to help guide any future stakeholder engagements that may be undertaken under the Juba-Torit-Kapoeta-Nadapal road project.

1.2 Principles of Stakeholder Engagement

The principles of stakeholder engagement are as discussed below:

i. **Open & Transparent:** Stakeholder Engagement will be done in an open and transparent manner that ensures that the feedback is considered and responded to.
ii. **Accessible:** Project information will be made easily accessible to the stakeholders throughout the life cycle of the project in a manner appropriate to the nature of their interests and the potential environmental and social risks and impacts.
iii. **Timely & Understandable:** Consultations will begin early in the project and the information provided to the stakeholders will be in the simplest form to ensure they understand the project.
iv. **Exhaustive**: Public consultation will be exhaustively carried out in the vicinity of all the relevant stakeholders with the attention of affected and vulnerable groups residing all along the main road alignments and other pertinent ancillary activities.
v. **Culturally appropriate**: The consultations will be conducted in relevant local language (s) that is understandable to stakeholders. Culturally appropriate engagement would also observe local norms, beliefs, practices etc.
vi. **Inclusive**: All stakeholders will be involved during the consultation process and the Consultant will describe the approach and methodology as well as engage the relevant government administrative units to assist in the organization and implement different public and stakeholder consultations. The team will consider and respond to feedback.
vii. **Continuous process**: Stakeholder engagement will be done on an ongoing basis throughout the different phases of the project as risks and impacts arise.
viii. **Just process**: The process shall be free of external manipulation, interference, coercion, discrimination, and intimidation.
ix. **Documentation**: The stakeholder engagement process shall be documented where minutes of the meeting shall be prepared, and questionnaires filled. Photographs during the meetings shall be taken with the consent of the attendees and will be shared in the ESIA report.

1.3 Need for Stakeholder Engagement

Stakeholder engagement is crucial for the success of the Juba-Torit-Kapoeta-Nadapal Road. Here are the key reasons stakeholder engagement is important:

i. **Informed Decision-Making**
   - Diverse Perspectives: Engaging stakeholders brings in a variety of perspectives, which can lead to more informed and balanced decisions.
   - Expertise: Stakeholders often have specialized knowledge or experience that can enhance the quality of decisions.
ii. **Increased Buy-In and Support**
   - Ownership: When stakeholders are involved in the process, they are more likely to feel a sense of ownership and commitment to the outcomes.
   - Trust Building: Continuous engagement builds trust, making it easier to gain support for initiatives.
iii. **Risk Management**
   - Early Identification of Issues: Engaging stakeholders early helps identify potential risks and challenges that might not be evident to the core team.

- Mitigation Strategies: Stakeholders can contribute to the development of effective risk mitigation strategies.

iv. **Enhanced Communication**
   - Clarity and Transparency: Regular engagement ensures that stakeholders are well-informed about progress, challenges, and decisions, reducing the risk of misunderstandings.
   - Feedback Loops: It establishes channels for feedback, allowing for adjustments and improvements in real-time.

v. **Resource Optimization**
   - Alignment of Goals: Understanding stakeholder priorities helps in aligning resources more effectively, ensuring that efforts are focused on the most critical areas.
   - Leverage of Resources: Stakeholders might offer resources, whether in terms of funding, expertise, or networks, that can be crucial for project success.

vi. **Sustainability**
   - Long-Term Success: Projects or initiatives that have stakeholder support are more likely to be sustainable in the long term, as they reflect the needs and interests of those involved.
   - Adaptability: Engaged stakeholders can help in adapting strategies to changing circumstances, ensuring long-term viability.

vii. **Compliance and Accountability**
   - Regulatory Compliance: Engaging stakeholders such as regulators or community representatives ensures that projects adhere to relevant laws and regulations.
   - Accountability: Ongoing engagement fosters a culture of accountability, as stakeholders hold the project team responsible for delivering on commitments.

viii. **Social License to Operate**
   - Community Support: Particularly in projects affecting communities, stakeholder engagement is essential for gaining a "social license" to operate, meaning the ongoing approval or acceptance of the project by the community.
   - Conflict Resolution: Proactive engagement can help identify and resolve conflicts before they escalate, ensuring smoother project implementation.

Overall, stakeholder engagement is a fundamental aspect of successful project management, organizational growth, and community relations. It ensures that diverse interests are considered, risks are managed, and support is garnered, leading to better outcomes for all parties involved.

1.4 Objectives of SEP

The overall objective of the ESIA study SEP was to establish how the various relevant stakeholders will interact throughout the design phase (including ESIA Study) of the project. The key objectives of the SEP can be summarised as follows:

- Provide guidance for stakeholder engagement such that it meets the standards of International Best Practice
- Identify key stakeholders that are affected, and/or able to influence the Project and its activities.
- Identify the most effective methods, timing and structures through which to share project information, and to ensure regular, accessible, transparent and appropriate consultation.
- Develop a stakeholders engagement process that provides stakeholders with an opportunity to influence project planning and design.
- Establish formal grievance/resolution mechanisms.
- Define roles and responsibilities for the implementation of the SEP.
- Define reporting and monitoring measures to ensure the effectiveness of the SEP and periodical reviews of the SEP based on findings.

2 Stakeholder Identification and Analysis

2.1 Stakeholder Identification

The relevant stakeholders identified for consultation during the ESIA Study are as indicated below:

Table 2-1: Identified stakeholders

Stakeholder Category	Relevant Stakeholders
Financier	International Development Association (IDA)-Financier
National Government	Ministry of Roads and Bridges Ministry of Transport Ministry of Environment and Forestry Ministry of Wildlife Conservation and Tourism Ministry of Health Ministry of Gender, Child, & Social Welfare Ministry of Youth, Culture & Sports Ministry of Water Resources & Irrigation Ministry of General Education and Instruction
State and Local Government	Governors -Central and Eastern Equatoria states County Commissioners/Mayors/Members of Parliament Payam Administrators Boma Chiefs
Institutions	Learning Institutions Health Institutions Religious institutions
Interested Parties	Civil Society Organizations (CSOs) Business Community Persons Living with Disability (PLWD) Public Service Vehicles (PSV) Drivers, Rickshaw and Motorbike Operators within the transport sector
Human settlements along the road corridor	Rajaf, Nesitu Village/Nesitu Checkpoint, Army detachment village/Jebel Malok, Korgana, Ngangala, Ngulere, Illiangari, Lirya town, Kudo, Lofri, Lakabata, Ibalang, Nyong, Torit town Abalwa, Tirangore, New Kenya, Hiyala town, Illeu, Lobira, Camp 15, Loriyok, Kapoeta Town Loweriyang, Army detachment settlement, Buno, Lowoyakali, Napotpot, Narus town, Nadapal.

2.2 Stakeholder Mapping

Stakeholder mapping is critical as it helps the project management team to identify the various stakeholders needs and understand which of the identified needs to be closely managed, which stakeholders need to be kept informed and monitored during the various project phases. The identified stakeholders have been mapped into two categories: primary and secondary stakeholders. Primary stakeholders are those who have direct influence over the project while secondary stakeholders are those who have an interest in the proposed project.

Table 2-2: Stakeholder Mapping

Primary Stakeholders	Secondary Stakeholders
International Development Association (IDA)-Financier	Civil Society Organizations
National & State Government Ministries ▪ Ministry of Roads and Bridges (Client) ▪ Ministry of Transport ▪ Ministry of Environment and Forestry ▪ Ministry of Wildlife, Conservation and Tourism	National and State Government Ministries ▪ Ministry of Health ▪ Ministry of Gender, Child, & Social Welfare ▪ Ministry of Youth, Culture & Sports ▪ Ministry of Water Resources & Irrigation

	▪ Ministry of General Education and Instruction
▪ State and Local Government ▪ Governors -Central and Eastern Equatoria states ▪ County Commissioners/Mayors/Members of Parliament ▪ Payam Administrators ▪ Boma Chiefs	Opinion leaders
Human settlements along the road corridor ▪ Rajaf, Nesitu Village/Nesitu Checkpoint, Army detachment village/Jebel Malok, Korgana, Ngangala, Ngulere, Liangare, Liria town, Kudo, Lofriha, Lakabata, Torit town ▪ Tirangore, New Kenya, Hiyala town, Illeu, Lobira, Camp 15, Loriyok, ▪ Loweriyang, Army detachment settlement, Buno, Lowoyakali, Napotpot, Lolim, Narus town, Nadapal. Other Road Users (Public Service vehicles Truck drivers, and business owners)	Institutions ▪ Education ▪ Health ▪ Religious institutions

2.3 Stakeholder Analysis

The stakeholder groups who are likely to be affected and/or are interested in the implementation of the road project have been identified above. The proposed communication methods and medium of engagement for each group are outlined in Table 2-3.

Table 2-3: Stakeholder Analysis

Stakeholder/s	Proposed Communication Method	Responsibility	Timing/ Frequency
Client: Ministry of Roads and Bridges & Ministry of Transport	Official correspondence and meetings (Emails, phone calls)	HHEA ESIA Team	Throughout the Project period.
Other Government Ministries ▪ Ministry of Environment and Forestry ▪ Ministry of Wildlife, Conservation and Tourism	Courtesy calls/letters/physical and/or virtual meetings	MRB HHEA ESIA Team	When undertaking first and second round of stakeholder consultations.
State and Local Government ▪ Governors -Central and Eastern Equatoria states ▪ County Commissioners/Mayors/Members of Parliament ▪ Payam Administrators & Boma Chiefs	Regular communication through phone, physical and/or virtual meetings	MRB HHEA ESIA team	When undertaking first and second round of stakeholder consultations
Civil Society Organizations	Physical Meeting to create awareness and obtain project feedback	MRB HHEA ESIA team	When undertaking first and second round of stakeholder consultations.
Institutions ▪ Education ▪ Health ▪ Religious Institutions ▪ Financial Institutions	Physical Meeting to create awareness and obtain project feedback	MRB HHEA ESIA team	When undertaking first and second round of stakeholder consultations.

Stakeholder/s	Proposed Communication Method	Responsibility	Timing/ Frequency
Human Settlements adjacent to the road corridor	Public meetings to create awareness about the proposed project and potential impacts	MRB HHEA ESIA team	When undertaking stakeholder consultations.
Vulnerable People (such as disabled persons	Face to face meeting to create project awareness and obtain concerns and views regarding the project.	HHEA ESIA team	When undertaking stakeholder consultations
Other Road Users (e.g. Public Service vehicles, Truck drivers, and business owners)	Public meetings to create awareness about the proposed project and potential impacts	MRB HHEA ESIA team	When undertaking first and second round of stakeholder consultations.

2.4 Consultation Methods

The Consultant employed the following methods when engaging the different categories of stakeholders.

- Courtesy calls
- Key Informant Interviews
- Socio-economic Survey
- Focused Group Discussions
- Public Meetings.

3 Stakeholder Consultation Programme

The program for stakeholder consultation during the ESIA studies is provided in Table 3-1 below. The Consultant worked in two groups that allowed them to undertake meetings simultaneously across different bomas/villages. The MRB team had representation in each group during the meetings. This was informed by the limited time available for preparation of the ESIA report, but the team was able to engage all the targeted stakeholders and obtained adequate and meaningful feedback across the entire road corridor.

Table 3-1: Stakeholder Consultation program implemented during ESIA Studies

Date	Team	Payam	Boma	Type of Engagement	Time	Target Group	Number Engaged		
							Male	Female	Total
2/9/2024	A & B			KII		Central Equatoria State Ministry of Health, Ministry of Gender, Child & Social welfare Ministry of Culture, Youth & Sports			
3/9/2024	B			KII		Ministry of Education, Ministry of Water, Resources & Irrigation			
		Rajaf	Cess point (Rajaf-Nesitu)	KII	2:00pm	Truck drivers	10	0	10
		Lokirili	Kudwo (Nesitu Village)	Public Meeting	10:00am	Local community	17	17	34
4/9/2024	B	Liriya	Ngangala	Public Meeting	2:00pm	Local community	25	4	29
	A	Liriya	Ngulere	FGD	1:00pm	Local community	18	1	19
		Liriya	Ngulere	KII	12:00pm	Ngulere Primary School			
		Liriya	Illiangari	Public Meeting	2:45pm	Local community	36	7	43
		Liriya	Illiangari	KII	2:30PM	Illiangari health centre			
5/9/2024	B	Liriya	Lirya	Public meeting	10:30am	Local community	27	0	27
		Chahari	Lofiri	Public Meeting	1:30pm	Local community	34	67	101
		Chahari	Lakabata (Obule Village)	FGD	3:30pm	Local community	36	22	58
	A		Torit town	KII	8:30am-10:30pm	County Commissioner, Mayor, Ministry of Environment (EES), Ministry of Wildlife (EES)			
			Torit town	FGD	11:00am	Boda Boda operators	22	1	23
			Torit town	FGD	11:50am	PSV and truck drivers	19	1	20
			Torit town-Ibalang Boma	FGD	2:20pm	Opinion leaders	12	1	13
			Torit town	KII	4:00pm	Torit State hospital			
6/9/2024	A	Hiyala	Abalwa	FGD	9:30am	Opinion leaders	17	3	20
			Torit town	KII	11:00am-1:00pm	Dr. John Garang Memorial Sec School and Torit East Day secondary school			
			Torit town	FGD	3:00pm	Business Community	17	6	23
	B		Kudo	Public Meeting	10:00am	Local community	46	20	66
			Torit Town-Nyong Boma	Public Meeting	2:00pm	Local community	24	12	36
	A	Hiyala	Tirangore, Harforere, Mura-Hatiha	Public meeting	10:00am	Local community	67	4	71
7/9/2024		Hiyala	Illeu	Public meeting	2:00pm	Local community	33	1	34

Date	Team	Payam	Boma	Type of Engagement	Time	Target Group	Number Engaged		
							Male	Female	Total
	B	Hiyala	Hiyala	Public Meeting	9:00am	Local community	24	5	29
		Loriyok	Lobira	Public Meeting			30	4	34
9/9/2024	B	Loriyok	Loriyok	Public Meeting	10:00am	Local community	84	32	116
			Loriyok	FGD	12:30pm -1:30pm	Women representatives	1	26	27
			Camp 15	KII		Army base camp			
	A		Kapoeta Town	KII	8:30am-9:30am	Mayor-Kapoeta Municipal, County Commissioner-Kapoeta South County			
			Kapoeta Town	Public Meeting	10:00am	Local community	14	13	27
			Kapoeta Town	FGD	1:30pm	CSOs	7	3	10
			Kapoeta Town	FGD	2:50pm	PLWD	15	4	19
			Kapoeta Town	FGD	3:30pm	Business Community	13	1	14
			Kapoeta Town	FGD	5:00PM	Women representatives	14	2	16
10/9/2024	A	Katodori	Buno	FGD	12:00pm	Local community	20	1	21
			Napotpot	Public meeting	9:00am	Local community	48	8	56
	B	Narus	Lowoyakali	Public meeting	10:00am	Local community	40	44	84
11/9/2024	A		Narus town	Public Meeting	10:00am	Local community	22	23	45
			Narus town	KII		Member of Parliament, Executive Director			
			Nadapal	Public Meeting	10:00am	Local Community	53	33	86
	B		Nadapal	KII	2:00pm	Immigration Offices-South Sudan & Kenya Side			

3.1 Feedback from the Consultation Approach

The Courtesy calls and Key Informant Interviews were smooth. The key stakeholders requested for an official letter of introduction to introduce the consultant and the project.

The socio-economic survey was conducted by administering questionnaires to the households directly with the assistance of enumerators in other areas. The Consultant had to administer the questionnaires in hard copy because of the limited time for the project and lack of smartphones among the enumerators especially in the rural areas that had poor or no network coverage.

During the community meetings, language barrier was a major challenge, but the Consultant obtained a translator at each boma for the meeting who helped in relaying the project information in the local dialect. It was also observed that in most meetings, the women were not in attendance and where they would be attending, they would hardly make any contributions. Delving into the matter, the Consultant discovered that as per their culture, the men were the dominant decision makers and therefore, the women were shy to share their opinions where men were required to speak. In future, it would be best to have focused group discussions for the women to obtain their feedback in a setting where they can speak freely.

3.2 Feedback from the Public

The feedback from public engagements is summarized in Table 3-2.

Table 3-2 Public feedback matrix

Issue/Concern Raised	Stakeholder Feedback
Employment Opportunities	During the construction phase, the communities requested to be offered job opportunities. The casual positions should be given to the locals as well as the technical positions as the communities have learned youths. However, the contactor needs to develop a good criterion for allocation of job opportunities across each community as it can be a potential source of conflict among the locals.
Road Safety	Road signages need to be erected at critical points such as near learning institutions. Speeds needs to be regulated by placing speed bumps near the human settlements, market centres and the towns. The local communities including the livestock owners need awareness on road safety, signages and the designated animal crossing points to reduce the risk of accidents.
Bridges	The design of the bridges should meet the international standards and be informed of the hydrological assessment of the local area. During rainy season, people and vehicles get stranded for hours and days along the bridges as its risky to cross the full rivers. Some of the trucks that attempt to cross the rivers end up being carried away resulting in huge losses. Many lives have been lost during the rainy season.
Insecurity	The poor road condition has encouraged robberies among the travellers and hijacking of vehicles. The tarmacking of the road will help address the insecurity incidences along the Juba-Torit-Kapoeta-Nadapal Road.
Cultural Practices	In all villages where meetings were conducted, they reported that before construction commences, the elders or traditional leaders need to perform an animal sacrifice to prevent any bad occurrences such as accidents during construction. A similar animal sacrifice also needs to be undertaken at the borrow pits where the contractor will be sourcing construction material. Trees are the main meeting venue for community meetings. They provide natural shade. Every boma has dedicated trees for meetings. They are the peoples a*mang'at* or parliament. All community issues and decisions are presented, discussed, resolved or decisions taken under trees. Therefore, trees hold special cultural significance to all communities in the project area. Every year on January 1st all the Lokoya ethnic group members converge at Ngulere town to welcome and celebrate New Year Ehumwa Ceremony is also conducted annually by the Lotuko community every 5th of September at the Imuahali Mountain (located within the vicinity of the road project). The ceremony is conducted to prepare for the planting season and protect

Issue/Concern Raised	Stakeholder Feedback
	the community members from any diseases and misfortunes. It is mandatory for th Lotuko community to attend the ceremony, therefore, during construction, the contractor will be required to give them permission to attend the ceremony.
Grievances	Grievances that arise within the respective communities are reported to the community committees that comprise of elders, men, women, and youth representative. The issues that the committee is unable to resolve are reported to the Boma chief and if need be they involve the police officers or senior authority such as the payam or mayor's office.
Animal crossing points	The communities located along the road corridor are mainly pastoralists with large herds of cattle, goat and sheep. The locals asked the designer to ensure they put animal crossing points by taking into consideration the location of the water points to reduce the need to cross the road. Speed bumps should also be placed to prevent accidents associated with animal crossings.
Corporate Social Responsibility	The community requested the contractor to give back to the community through implementing different projects along the road corridor. For instance, the Napotpot community indicated that they experience water scarcity, and they have a water borehole that was drilled and needs to be cemented to enable the community access water. The Tirangore Boma requested for construction of a health facility. The Illiangari & Kudwo Boma indicated that the contractor should consider building permanent camp sites such that after decommissioning of the camp sites, they are reverted back to the community to use as police stations, schools, etc.
Borrow pits	During construction, the contractor can source construction material from the project area. However, some communities indicated that the material would be available at a fee. Other communities such as the Ngulere community indicated that they would be willing to enter into an agreement with the contractor where he utilizes the materials in exchange for what the community will request.
Compensation	The communities indicated that they prefer being compensated for the losses they are likely to suffer such as buildings and trees such as mango and tamarinds. During past road clearance activity, the communities encountered huge losses and despite being promised compensation, they never received any funds.
Legacy of past projects	The community emphasised that the issues they faced with the past contractor should not be encountered during construction. The complaints they raised have never been addressed to date. The road levels were raised too high resulting in poor drainage and flooding of shops located near the road.

3.3 Incorporation of Feedback and Disclosure

The stakeholders feedback informed the analysis of impacts and development of mitigation measures. The study will hold disclosure sessions (meetings) with selected stakeholders to discuss their views and influence on the project design and implementation.

Appendix N: Grievance Redress Mechanism

Republic of South Sudan

Ministry of Roads and Bridges

TRANSPORT SECTOR DEVELOPMENT PROJECT

Environmental and Social Impact Assessment (ESIA) for the Upgrading of Juba - Torit - Kapoeta - Nadapal Road (354.05Km) to Paved (Asphalt) Standard



Appendix N - Grievance Redress Mechanism (GRM)

Revision	Purpose description	Originated	Checked	Reviewed	Authorized	Date
1.0	Issued to Client	BM	ARK/TO	LKN	MKG	25/10/2024
2.0	Revised - Client & WB Comments	BM	TOO	LKN	MKG	29/11/2024

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List of Abbreviations

CBO	Community Based Organization
CLO	Community Liaison Officer
CSO	Civil Society Organization
ESIA	Environmental & Social Impact Assessment
GM	Grievance Mechanism
GRC	Grievance Redress Committee
GRM	Grievance Redress Mechanism
ID	Identity Card
NGO	Non-Government Organization
PAP	Project Affected Person
PGRC	Payam Grievance Redress Committee ()
PIU	Project Implementation Unit
PLWDs	Persons Living with Disability
RAP	Resettlement Action Plan

1 Introduction

1.1 Background

A fundamental principle of any project implementation is to prevent or minimise grievances rather than going through a redress process. This can be achieved through commitment to a human rights-based approach towards displacement and resettlement, thoughtful project design, ensuring full participation and consultation of the Stakeholders and establishing extensive communication and coordination between the affected communities, and the project. However, and despite proactive stakeholder engagement, this does not always preclude grievances from arising, given the involuntariness of displacement and the inconvenience that accompanies it.

Involuntary displacement and resettlement are therefore prone to grievances, which if not handled swiftly can significantly delay the successful completion of the project.

1.2 Need for a GRM

The Grievance Redress Mechanism (GRM) provides opportunities for the stakeholders to air and articulate their queries, concerns, issues, complaints, dissatisfaction or sense of injustice or unfairness, and seek to have these resolved amicably, and in the shortest time possible. Any stakeholder should be able to file a grievance for any difficult decision, practice or activity, arising from land acquisition, relocation, compensation, or any other topic related to the project. A GRM is a mechanism, or set of procedures and processes, or organizational systems and resources, to be used to hear, address and resolve issues and complaints related to project implementation (which can include entitlements, mitigation measures and other arising issues), in a timely manner for project success. The stakeholder input handled through these systems and procedures may be called grievances, complaints, feedback, or any other functionally relevant terminology or concept.

1.3 Potential Grievances

Some of the possible grievances that can be anticipated or are most likely to occur during project implementation (e.g. from land acquisition process; workers welfare issues; use/interaction with community and their resources etc) may include:

- Misidentification and/or omission of genuine assets and PAPs from the PAP and Asset register.
- Errors committed in the recording of PAPs details concerning property and valuation.
- Disputes or contestations over the ownership of valued assets/property; Two or more people claiming an asset or business (owner and the operator are different persons).
- Disputes over parcel limits, either between the affected person and the Project or between two neighbours.
- Disputes over valuation of affected assets, including disagreement over the proposed entitlements or unit applied.
- Conflicts and disputes over plot/parcel boundaries, or even inter-state, inter-county, inter-payam or inter-boma boundary competing claims, the first being between the PAP and the project, or PAP and their neighbour.
- Infighting between families due to succession, divorce, fights over right to inheritance, lack of spousal consultation in the disposal of assets or compensation funds.
- Disagreements over ownership shares of joint property or assets.
- Disagreements over the classification of assets to be acquired, for instance, classification of private versus public land.
- Disagreements on modes of payment e.g. whether cash or in-kind.
- Disagreement over resettlement measures or sites, for instance on the citing of the site, type of assistance offered, loss/decrease of business or income due to relocation, etc.
- Interruption of community social or other services and infrastructure e.g. water, access to pastures
- Damage to un-expropriated assets such as land, crops, and trees during acquisition.
- Illegal entry by project machinery or staff into private property.
- Nuisance caused by project equipment/machinery/personnel.
- Project staff interference in patterns of community life.

1.4 Objectives of a GRM

Primarily, GRMs are designed as a conduit for soliciting inquiries, inviting suggestions, and increasing community participation in a project. To the extent that projects can achieve success on these dimensions, an effective GRM mechanism can be useful in various ways:

- Generating public and stakeholder awareness about the project and its objectives.
- Increasing stakeholder involvement in the project.
- Improving project outcomes: through timely resolution of issues and problems, GRMs can contribute to timely achievement of project objectives such as timely acquisition and resettlement to enable project completion on time.
- Providing feedback to different levels of the project-on-project performance such as providing project staff with practical suggestions/feedback.
- Acting as an early warning mechanism, GRMs can identify and resolve implementation problems in a timely and cost-effective manner: They help teams identify problems before they become more severe and/or widespread, before they escalate, thereby preserving project funds and its reputation, and avoiding time-consuming disputes.
- Acts as a useful risk management tool.
- Building community-project relations, through creating and maintaining trust with affected persons and community stakeholders, thus enhancing the project's legitimacy among stakeholders.
- Allowing staff involved in project implementation to be more accountable, transparent and responsive to PAPs.
- Deterring or curbing fraud and corruption.

The scope of this GRM is for the ESIA study under the Technical Assistance. The project is developing a separate GRM and the contractor shall develop a GRM for the construction of the road project.

1.5 Guiding Principles for an Effective Grievance Redress Mechanism

Several guiding principles should drive the design of an effective GRM. GRMs that involve these principles are more likely to provide effective resolution of grievances.

Principle	Adherence to the Project
Start early in the project cycle: GRM (or at least the lowest level institution at PAP level should be put in place as early as possible, and later modified as the need arises.	▪ Form Payam Grievance Redress Committee (PGRC) at all Payam.
Accessible and straightforward: should be accessible to diverse members of the community, with multiple points of entry and access.	▪ The procedures and mechanisms are simple and easily understandable. ▪
Should be known to all intended to use it	▪ Elimination of barriers such as cost in the project-based mechanism ▪ Sensitization of communities in the area of influence on the grievance procedure and how to access it recommended for RAP.
Legitimate: Enabling trust from the stakeholders intended to use it	▪ Elected by the by PAPs in a meeting, to enable trust and acceptance.
Participatory and Inclusive: developed in a participatory manner and includes representatives from the main actors/categories relevant to the project/area	▪ Membership drawn from main groups among the PAPs relevant in a specific case, including gender consideration, PWDs, CSOs, religious included ▪ All key categories of PAPs, local leadership and Government included.
Contextualization and appropriateness (e.g. Cultural and Context-Sensitive): need to be localized to ensure its appropriate to the local context, keeping in line with local structures; incorporates context-specific cultural attributes as well as traditional mechanisms for raising and resolving issues.	▪ Committee not too big or small. ▪ An effort to incorporate context-specific factors e.g. traditional leaders, men, women, and youth. ▪ Government administration e.g. Payam Chief, Sultan or assistant incorporated. ▪ Other institutions with authority and function as dispute resolution centres incorporated e.g. Imams, pastors

Responsive, Timely, and Efficient: Should be responsive to the needs of all complainants, and resolutions should be reached in the soonest time possible to discourage lengthy suits that are time-wasting.	▪ Short response periods recommended to the GRM. ▪ Regular feedback to all who raise grievances is recommended. ▪ Training of the committees is recommended to ensure effective action. ▪ Lengthy administrative and legal procedures should be avoided and resorted to as the last option.
Transparency/Confidentiality: Users must be informed how they can access the mechanism. All complaints should be handled fairly and impartially, confidential (on sensitive issues / where complainant prefers anonymity and the committee members should act independently of any external influence while concerned parties can air their views and complaints without fear of reprimand;	▪ General sensitization on the GRM needed (some minimal level of sensitization recommended during community and PAPs meetings. ▪ Clear and known procedures with an indicative timeframe for each stage and clarity on the types of process and outcome incorporated. ▪ Confidentiality of the dialogue between parties and of individuals' identities should be provided where necessary. ▪ Use of a representative / unique serialization can be adopted for grievance tracking purposes.
Formalized: the mechanism needs to be formally established, predictable and well known, and not ad hoc. It needs rules for addressing grievances, holds regular meetings/deliberations on specific and well-known days to discuss the issues laid out and expected timetable for key process milestones is essential.	▪ Official activation of the PGRC. ▪ PGRC recommended and community already informed of the same. ▪ Set timelines and procedures established. ▪ Documentation, e.g. through minutes integrated into the proposed mechanism procedures.
Appropriate Protection: The mechanism should prevent retribution and should not impede access to other remedies.	▪ Sensitization to include that complainants will not be targeted with reprisal. ▪ Legal recourse provided for in the GRM as a valid grievance redress option course.

The process seeks to rebuild and maintain relationships between the affected parties and the project which is not only to the PAPs but also the project since it will avoid delays that can derail the project implementation for an extended period.

It does not negate the rights of any PAP, thus consistent with international best practices and standards, and should not restrict access to other redress mechanisms. Legal means for dispute resolution, therefore, remain open and available to the PAPs and all stakeholders when the need arises. Finally, it is vital that the process enables continuous learning and is flexible enough to allow modifications and improvements from emerging lessons. Therefore, regular review and acting upon grievances data and trends is essential.

2 The Grievance Mechanism

The World Bank's ESS 10 requires the provision of a Grievance Mechanism (GM) to ensure the project-affected communities have an avenue to raise their concerns and receive appropriate response. The proposed grievance mechanism embraces a community-based and participatory mechanism which offers a safe platform for conflict mediation in the community.

2.1 Grievance Channels

The channels for launching complaints are as provided in Table 2-1.

Table 2-1: Grievance Channels

Channel	Details
In-person	Complainants can launch their complaints in person to the Boma chief.
Letter	The Undersecretary Ministry of Roads and Bridges Airport Road, Ministerial Complex P.O Box 149 Juba - South Sudan
Email	Email: jobsmrb023@gmail.com
Phone Calls	Telephone numbers for offices/project officials.

2.2 Grievance Redress Mechanism

The Consultant proposes a three-tier grievance redress mechanism for addressing grievances that may arise during the planning phase of the road project. The three tiers are as discussed below:

2.2.1 Grievance Redress Committee (GRC)

The committee will comprise of the Boma Chief, at least 2 representatives from MRB (Engineer, Environmentalist and/or Social Risk Manager), five representatives from the local committee (male, female, religious leaders, persons living with disability, and a youth), representative from the Consultant's ESIA team. The committee will be resolving the grievances raised at the community level. They will meet to discuss and agree on an amicable resolution of grievances raised. Possible criteria for electing GRC members.

- Be primarily affected by the road project i.e. a PAP.
- Must be over 18 years
- Be of sound mind and character.
- Be a fulltime resident in the Boma area
- Must include representatives for PAPs, Village managers / community leaders, men, women, youth, religious and People Living with Disability, CBO / NGO and Elderly
- Be willing and available to serve as a member on a voluntary basis.
- Be elected by community members in a community meeting apart from the Chief.
- The Chief presides over the election.

2.2.2 Mediation Committee

If the complainant is not satisfied with the resolution made by the GRC, they are allowed to appeal at the mediation committee level. The committee shall be chaired by the Payam administrator who will work alongside the boma chiefs. Other committee members shall include at least 2 representatives from MRB (Engineer, Environmentalist and/or Social Risk Manager), five representatives from the local committee (male, female, religious leaders, persons living with disability, and a youth), representative from the Consultant's ESIA team. The committee must have a quorum of at least 4 people comprising of at least one representative from the four groups during the mediation meeting. Decisions will be reached by simple majority. The committee will acknowledge receipt of complaints within two weeks and will strive to resolve each complaint within two months.

2.2.3 Court of Law

If the complainant is still not satisfied by the decision of the mediation committee, they are free to seek redress from the relevant court of law as provided under the Judiciary of the Southern Sudan arm of the government.

2.3 Grievance Redress Service

The local community can also submit their complaints directly to World Bank through the Grievance Redress Service. The Bank reviews and addresses any complaints launched promptly. The complaints must be submitted in writing and addressed to the GRS by either of the following methods:

- Online, access the https://wbgcmsgrs.powerappsportals.com/en-US/new-complaint/
- By Email to grievances@worldbank.org
- By letter or by hand delivery to the World Bank Headquarters or any World Bank Country Office

The information to include in a complaint must:

- Identify the project subject of the complaint
- Clearly state the project's adverse impact(s)
- Identify the individual(s) submitting the complaint
- Specify if the complaint is submitted by a representative of the person (s) or community affected by the project
- If the complaint is submitted by a representative, include the name, signature, contact details and written proof of authority of the representative.

2.4 Grievance Redress System

Once a complaint has been launched, the Community Liaison Officer will be required to fill the complaint in a grievance form in and forward it to the Ministry of Roads and Bridges (MRB). MRB will appoint one of their staff to serve as a grievance officer. They will record the grievance in the grievance log in English, (sample attached in Appendix A: Grievance Log Form). The procedure for managing the grievances upon receipt by the grievance officer is as illustrated in Figure 2-1.

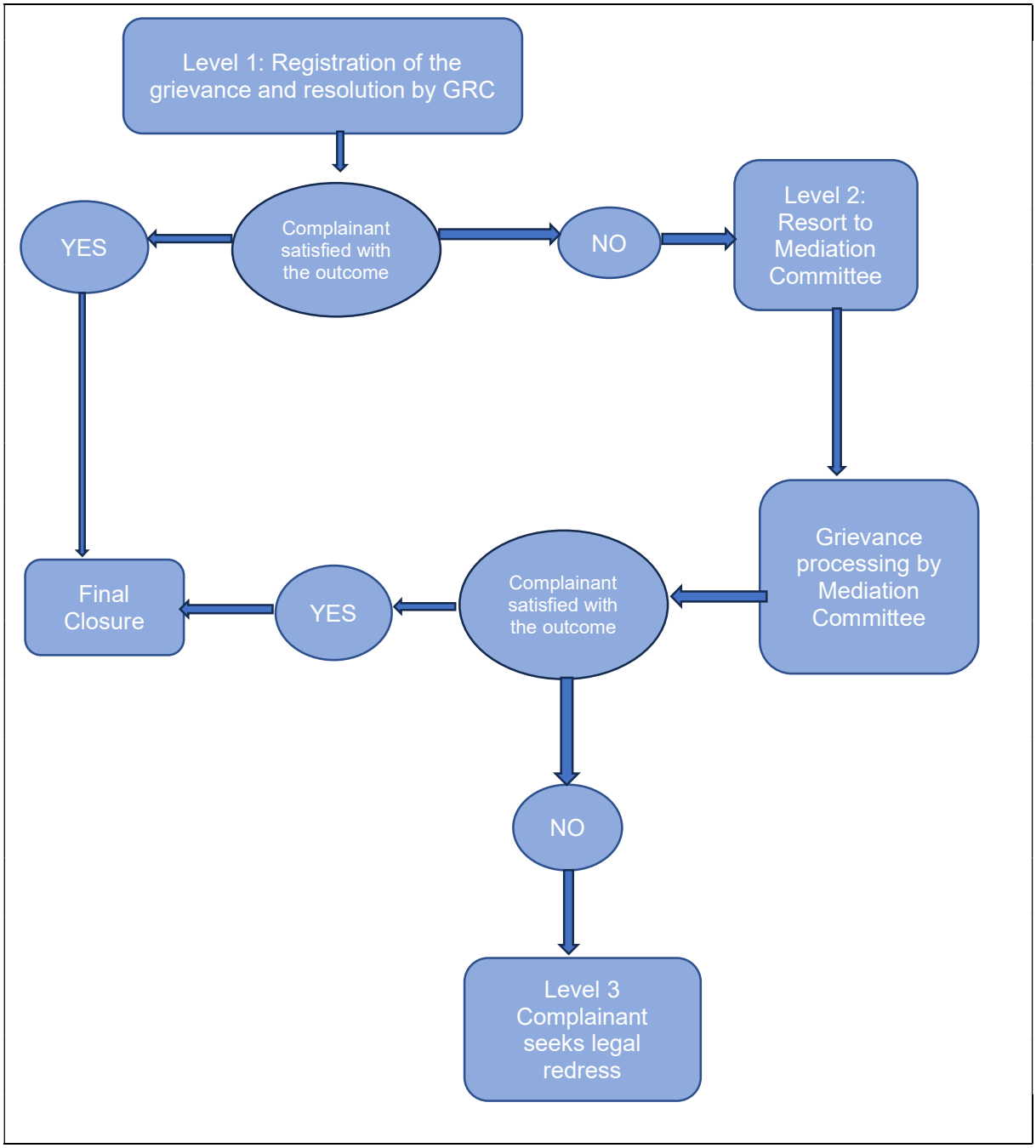


Figure 2-1: Grievance Redress Flowchart

2.5 Grievance Redress: Process, Procedures and Timelines

Grievance procedures may be invoked at any time, depending on the complaint. No person or community should experience any further impact until any complaints he/she has are satisfactorily resolved, following the proposed procedures below:

2.5.1 Grievance uptake: Receipt and Lodge/Register

The community level grievance redress procedure shall start with registration of the grievances with the Project CLO on site or with the PGRC. The CLO should convene a meeting with PGRC, invite the aggrieved party to the meeting and present the grievance to the committee for hearing. The PGRC should

acknowledge receipt of the complaints and grievances within two weeks and strive to resolve the matter within one month. The GRC shall ensure that grievances reported to it are dealt with in a fair, consistent and timely manner, in accordance with the agreed timelines and resolution modes. Each GRC shall be encouraged to resolve matters objectively and to escalate to the Project PIU any disputes that they are not able to resolve within established timelines. The GRC strive to eliminate unreasonable or illegitimate claims/complaints which may be driven by other factors that are not genuine, or project related, and satisfy legitimate claimants by reconciling the aggrieved PAP(s) either with one another, or with PIU as the case may be.

The Community Liaison Officer (CLO) should be the link between the GRC and the Project. If the GRC is unable to satisfy the claimant, then the matter will be escalated to Mediation Committee through the CLO or directly by the claimant. Being a support to the GRC, the CLO in agreement with the GRC shall escalate the unresolved complaints to the mediation committee, with documentation about the issue, how it has been dealt with by the GRC as well as the reason for the stalemate.

The CLO then logs the grievance into the grievance log or register giving each case a unique number, date complaint was lodged, complainant (if not a sensitive issue), nature of complaint, and in later stages action taken, or not taken, with reasons for the latter. As per the grievance register the CLO should ensure incident reporting while handling sensitive cases such as GBV and anonymous reporting for those who choose to report anonymously. The use of unique assigned number should guide in tracking the grievances. Ideally, the use of the CLO ensures a centralized logging and tracking system – very essential for accountability.

2.5.2 Processing: Acknowledge, Assess and Assign

A written acknowledgment of receipt of the grievance shall be sent to the aggrieved person within 5 days, having been signed by the chairperson of the committee, and showing that the grievance has been received, will be logged and reviewed for eligibility, and if eligible, will generate an investigation. This is key for accountability and shows the complainant the committee takes him/her and the grievance seriously.

The committee sits and first assesses the eligibility of the issue for the GRM mechanism, since various types of grievances will be lodged and not all will be handled by the GRC. Grievances not related to the project nor eliciting an immediate response are referred to the right process or organisation. Such may include complaints constituting criminal activity and violence. For eligible complaints, these shall be categorized as

a) comments, suggestions, or queries.
b) complaints to be handled by GRC
c) complaints to be referred directly to PIU and other parties.

Some e.g. (a) above may only require an immediate clarification or a simple explanation, while for (b) type of complaints, may be assigned priority for investigation. In each, the action required is written down in the grievance registry.

Not all complaints shall be handled through a GRM. For example, grievances that alleges corruption, coercion, or significant and systematic violations of rights and/ or policies will be referred to organizational accountability mechanisms or administrative or judicial bodies for formal investigation, rather than to CRM.

2.5.3 Verification and Investigation

The GRC will hold a meeting on the grievance and may work in consultation with the aggrieved person. In this step, they will also gather information on the grievance and decide on the corrective action within 10 days. The proposed action will be lodged in the register.

2.5.4 Develop and Communicate Response

The GRC will inform the complainant – through a meeting, followed by a summarised written communication of the decision and resolution – of the results of investigations and the actions proposed, seeking to seek agreement on the response. The actions can be:

- Direct action to resolve the complaint;
- Further assessment and engagement with the complainant and/or involving other actors to jointly determine the best way to resolve the complaint.

Two possible scenarios could result from this meeting:

(i) The aggrieved party accepts the proposed corrective action: A written agreement is developed, detailing the time frame for implementing the corrective action as well as responsible party. This is signed by the GRC chairperson or CLO and the aggrieved party, and the corrective action commences. The acceptance is also lodged in the log, and later the completion date will be lodged

after verification that recommended action was undertaken by the PGRC or concerned party.

(ii) The aggrieved party rejects the proposed corrective: The aggrieved party rejects the proposed corrective action it is referred to PIU as per procedure.

2.5.5 Closeout or Refer the Grievance

Where the response has been successful, the secretary of the committee and CLO should document the satisfactory resolution in the grievance resolution form. It is best practice to have the complaint countersign to show their satisfaction with the response. The grievance is then indicated as closed.

2.6 Monitoring, Evaluation and Providing Feedback

At all levels, regular progress monitoring of grievances filed, their status and actions taken and recommendations/resolution will be constantly undertaken. The PIU is individually responsible for monitoring and tracking grievances, assessing the extent to which progress is being made to resolve them, and generate quarterly reports. These reports and data/lessons generated shall be used to make policy and/or process changes to minimize similar grievances in the future or to adapt the GRM to correct or remove inefficiencies.

At all levels, keeping of documentation shall be ensured, including the grievance registers, grievance forms. Every meeting shall have written minutes.

2.7 Sensitization and Capacity Building

To create demand for the GRM mechanism, thus avoidance of escalation of issues to court, project proponent and contractor staff working on the project will be sensitized to the GRM.
In addition, Project Proponent should undertake the following:

2.7.1 Sensitization of the PAPs on the Grievance Mechanism and its Procedures

The effective working and use of the GRC depends on the awareness of its existence. Therefore, PAPs need to understand and support the purpose of the project GRM.

Communication methods and materials shall include meetings, project website, bulletin boards in strategic sites (for instance at the chief's office) brochures summarizing the GRM process, and where possible be translated into the local languages as resources permit. Messages which need to be reinforced continually may include:

- The project-based GRM is cost-free: there are no financial charges for PAPs to access or have the committees hear a dispute; however, PAPs not happy with the project-based GRM process will be free to seek legal redress. This means they will be expected to bear the costs associated with legal redress through courts.
- The GRM is open to all.
- There exist mechanisms to escalate an issue if one committee is not able to address it satisfactorily.
- There is no retribution for complainants such as they are not punished.
- The types of grievances that can be submitted.
- The procedures to lodge a complaint and timeframes;
- Confidentiality can be assured where needed; and
- The project welcomes suggestions, recommendations, and grievances as they help improve the project's policies and systems.

2.7.2 Capacity Building of the GRC

Members of the GRC shall undergo training, e.g. on best practices in resettlement, grievance redress, monitoring, and evaluation to enable them to be more effective in their work. The capacities of the Committee members will also need to be built around issues of conflict identification, conflict information analysis, and conflict resolution. This exercise should include detailed terms of reference for the committees. A GRC implementation budget shall be prepared.

2.7.3 Phasing out of Committees after Project Completion

After completion of the Project, the project Proponent will hold official phasing out ceremonies to acknowledge the committees and indicate the end of their terms of reference. Part of the appreciation, in this case, could include certificates of recognition.

2.7.4 Client Commitment to Grievance Redress: Process, Procedures and Timelines

The success of procedures and activities will depend on the Project Proponent's commitment towards ensuring the effectiveness and efficiency of the system shall require:

- Regular monitoring,
- Commitment to learning and adapting systems; and
- Provision of sufficient budgets and tools (e.g., grievance registers, forms, files, facilitation fees) to cover their operation and implementation of functions.
- Continuous capacity building of the committees.

Appendix A: Grievance Log Form - Sample

Form 1 - Grievance Inquiry Form	
Reference:	**Date received:**
Complainant/ site details: Name:	
National Identity (*Attach copy of ID)***:**	
Address:	
Telephone/ other contact details:	
Payam/Boma/Village	
Specific Details of Grievance (*the nature and facts of the grievance: who was involved, when did it occur, where did it occur, what happened, why is it a grievance*)	
Remedy sought (*What action needs to be taken to resolve the grievance*)	
Disposition of the grievance (*what happened*)	
Follow up actions (*any follow up required*)	
Form filled by:	
Name:	
Location/ Organization:	
Signature & Stamp	**Date:**

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