ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA) STUDY REPORT

FOR

PROPOSED WASTE OIL (SLOP OIL)/SLUDGE HANDLING FACILITY ON PLOT L.R NO. MBOLOLO/TAUSA/4990 IKANGA AREA, TAITA TAVETA COUNTY

Project proponent:

SEAHORSE INTERNATIONAL LOGISTICS LIMITED
P.O BOX 16620-00620
NAIROBI

GPS Coordinates

3º20′48.81″S & 38º31′42.05″E

May 2025

ESIA; Proposed Waste Oil (slop oil)/Sludge Handling Facility for Seahorse International Logistics Limited

DOCUMENT AUTHENTIFICATION

EIA/EA EXPERTS

This report has been prepared in pursuant to the Environmental Management and Coordination Act Cap.387 of the Laws of Kenya. We hereby certify that this study report was prepared on the information provided by the proponent, consulted stakeholders as well as that collected from other primary and secondary sources and on the best understanding and interpretation of the facts by the environmental experts. It is issued without any prejudice.

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PROJECT PROPONENT

Signed for and on behalf of

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NAIROBI

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Date 13/06/2025

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EXECUTIVE SUMMARY

This Environmental and Social Impact Assessment (ESIA) report documents the findings of a study of the proposed Waste Oil/Sludge Handling Facility to be situated on Plot number MBOLOLO/TAUSA/4990 Ikanga area, along/off Mombasa-Nairobi Highway, Voi Sub County within Taita Taveta by Seahorse International Logistics Limited herein referred to as the proponent. The proponent, Seahorse International Logistics Limited, proposes to set up Waste Oil/Sludge Handling Facility pursuant to Section 58 of the Environmental Management and Coordination Act Cap. 387 of the Laws of Kenya and Environmental (Impact Assessment and Audit) (Amendment) Regulations, 2019, the proponent has contracted a team of Environmental experts (consultants) licensed by National Environment Management Authority (NEMA), to prepare an Environmental and Social Impact Assessment (ESIA) Study Report for the proposed project. In addition to compliance with the law, the output of the ESIA process will provide a baseline of the environmental and social conditions of the project area to enable future monitoring of the environmental performance of the proposed project.

The proponent has proposed to set up waste oil (slop oil)/sludge handling facility with enhanced health and safety mechanisms and without compromising environment and public health with prospects of future expansion. Currently, the proposed project site has two overhead oil storage tanks and associated amenities that are part of the operations of the facility since the site had ongoing operations before client commenced on undertaking an environmental assessment for the project. The proposed project will be set up on a piece of land of approximately 0.80Ha out of the total approximately 2.0Ha piece of land. The geo-reference points of the site are Latitude **3º20′48.81″S** & Longitude **38º31′42.05″E** at an elevation of 2030ft above sea level.

The methodology for preparing the ESIA study report was guided by the Environmental (Impact Assessment and Audit) (Amendment) Regulations, 2019. Project site visits were undertaken in November 2024 for purposes of area reconnaissance survey, assessing the baseline and environmental risks associated with the proposed project as well as applicable environmental safeguards and standards. An environmental screening was conducted by the environmental experts in compliance with Environmental (Impact Assessment and Audit) (Amendment) Regulations, 2019 criterion. The issues considered by the experts included; ecological and socio-economic issues, landscape changes, land use character and water use and requirements. Data collection methods included literature review of relevant documents, observations during site visits and photography. The stakeholder engagement strategy included stakeholder consultative meeting that was conducted at the project site with Project Affected Parties (PAPs).

The proposed project will involve the construction and subsequent operation of a waste oil (slop oil)/sludge handling facility. The facility will comprise of three (3) oil storage tanks with a capacity of 40,000 Ltrs each (40m3), loading and offloading area, oil/water interceptor, office block and sanitation facilities. The tanks will be mounted on concrete slabs above a paved ground (2ft high) with a drain to channel the oil sludge into the oil/water interceptor. At the interceptor, oil will be separated from water. The end product is furnace oil which will be sold off to industrial clients for further use. Currently, the project site has two storage tanks with the capacities of 40,000Ltrs and 30,000Ltrs respectively. water tank with capacity of 10,000Litrs, ground block that will be renovated to be used as office site, changing room and storeroom, the whole project site is enclosed by a perimeter wall with one gate entrance. The project proponent intends to upgrade the existing proposed project site to acceptable national environmental and safety standards.
The proposed project is necessitated by the ever-increasing waste generation from industrialization and other development activities within Taita Taveta County, other neighboring counties and whole country at large and the implementation of Environmental Management and Co-ordination (Waste Management) Regulations, 2024; Legal Notice 178/2024 in addition to the need to cope and comply with other regulatory framework.

The documented findings of this ESIA study report demonstrate that the proposed project is expected to have both positive and negative environmental and social impacts to the community and other Project Affected Parties (PAPs). Anticipated positive impacts include; provision of effective and sustainable waste management services in compliance with Environmental Management and Co-ordination (Waste Management) Regulations, 2024, creation of employment opportunities and generation of revenue to the Taita Taveta County Government and Central government through payment of operational permits/licenses. Alongside the positive impacts, several environmental and social constrains will arise at different phases of the project implementation stages.

During project construction phase, the main environmental issues will include environmental risks of sourcing raw materials, water demand and effluent generation, solid waste generation and management, occupational safety and health risks, air and noise pollution. During operational phase, the main environmental concerns include waste oil leaks and spills, oil sludge management, fire risks and emergencies, occupational safety and health risks, air and noise pollution, water demand and effluent generation, solid waste generation and management, traffic congestion and energy demand.

There are potential safety and health risks associated with operations of the proposed waste oil (slop oil)/sludge handling facility. These include dermal contact with waste oil and inhalation of vapors during

handling of such products, accidental falls, musculoskeletal injuries and general exhaustion. All these risks have potential to cause injuries, permanent disability or even death and hence the management should be committed to ensuring safety and health of workers and visitors at the facility. The proposed mitigation measures include developing and implementing a safety and health policy, and emergency response plan for the facility, sensitizing employees to adhere to work procedures to minimize accidents, providing adequate and appropriate Personal Protective Equipment (PPEs) to workers and enforcing on their use and displaying precautionary signages at appropriate sections within the facility. Additionally, the proponent should conduct first aid training among the workers, provide well-stocked first aid kit, conduct annual occupational safety and health audits and comply with the provisions of the Occupational Safety and Health Act.

Waste oil/sludge handing facilities can be a potential source of air pollution. The main sources of emissions to air include evaporative losses of volatile organic compounds (VOCs) of waste oil from storage, particularly during bulk deliveries. Other sources include exhaust fumes from the waste oil delivery tankers. On the other hand, noise pollution will emanate from vehicular movement in and out of the facility. The proponent should sensitize the drivers to avoid unnecessary hooting and running of vehicle engines and comply with the provisions of the Environmental Management and Coordination (Air Quality) Regulations, 2024 and (Noise and Excessive Vibration Pollution) (Control) Regulations, 2009 during facility operations.

The facility will generate different types of solid wastes i.e. from the office comprising of mainly paper from administrative activities, glass and plastics for office supplies; and from the used oil operations of the facility in the form of rags, used seals and packaging materials. Poor disposal of solid waste degrades environmental quality. Adequate measures should be put in place to ensure that oil contaminated wastes are not mixed with regular wastes. The proposed mitigation measures include provision of adequate solid waste collection bins with a capacity for segregation within the facility, sensitizing workers on proper waste management and procuring a sizeable central solid waste collection bin with chambers to accommodate separated waste. The proponent should also contract a NEMA licensed waste handler for disposal solid wastes at designated locations in compliance with Environmental Management and Co-ordination (Waste Management) Regulations, 2024; Legal Notice 178/2024 and Environmental Management and Coordination (Management of Toxic and Hazardous Chemicals and Materials) Regulations, 2024.

The operations of the proposed project will require water supply for both sanitations, drinking and cleaning purposes. Domestic water use will be generated as effluent from sanitation facilities and will be managed trough onsite septic tank. Additionally, wastewater will be generated at the interceptor during the separation

process of the sludge. The proponent should create awareness among the staff on water conservation, monitor the quality of domestic effluent discharge the interceptor to ascertain conformity to the set standards for discharge into the environment. The project proponent will be required to apply for and obtain an Effluent Discharge License (EDL) from the Authority in compliance with the Environmental Management and Co-ordination (Water Quality) Regulations, 2024 Legal Notice 177/2024.

Decommissioning is the last phase of project life. It involves terminating project activities and operations and rehabilitating site to or close to its original state. Decommissioning of the proposed project can be necessitated by the following reasons; closure by government agencies due to non-compliance with environmental and health regulations, an order by a court of law due to non-compliance with existing regulations and natural calamities. Major environmental and social concerns at this phase will be economic decline, waste generation and safety and health risks. The proponent should prepare and submit decommissioning audit report to the Authority for approval before decommissioning process.

Conclusion

The proposed project is considered important and beneficial to the economy as it will ensure safe management of used oil/sludge, provide raw materials to used oil recycling facilities, promote socio-economic growth of the area through employment creation and revenue generation to the relevant government agencies. This study report proposes comprehensive mitigation measures for the negative anticipated impacts during the entire project cycle and improves the environmental performance of the proposed project. It is on this basis that we recommend that the proposed project be allowed to proceed alongside conditions which will ensure compliance with the relevant environmental legislations and standards

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ABBREVIATIONS AND ACRONYMS

EA	Environmental Audit
EDL	Effluent Discharge License
ESIA	Environmental and Social Impact Assessment
EHS	Environmental Health and Safety
EIA	Environmental Impact Assessment
EMCA	Environmental Management and Coordination Act
EMP	Environmental Management Plan
EMS	Environmental Management System
EPRA	Energy and Petroleum Regulatory Authority
ERC	Energy Regulatory Commission
ILO	International Labour Organization
ESMP	Environmental and Social Impact Plan
GBV	Gender Based Violence
GHGs	Green House Gases
GPS	Geographical Positioning System
HIV/AIDS	Human immunodeficiency virus/ acquired immunodeficiency syndrome
NCA	National Construction Authority
NCCAP	National Climate Change Action Plan
NEMA	National Environmental Management Authority
OHS	Occupational Health & Safety
PAPs	Project Affected Parties
PPE	Personal Protective Equipment
PWDs	People Living Disabilities
SEA	Sexual Exploitation and Abuse
SOPs	Standard Operating Procedures
SHE	Safety Health and Environment
STI	Sexually Transmitted Infections
WIBA	Work Injury Benefits Act
WRUA	Water Resource Users Association
WRA	Water Resource Authority
WSP	Water Service Providers
WWDA	Water Works Development Agencies

CHAPTER 1: INTRODUCTION

1.1 Background Information

Waste management is an integral part of industrial development in Kenya and all over the world. Without this, all the development activities would be detrimental to the environment and to life in general. Waste management in the Kenya has been assumed to be managed by the National Environmental Management Authority (NEMA) and the County governments. However, the National Environmental Management Authority has had private entities/companies to help in the collection, transfer of wastes to designated areas and waste management through other means in compliance with set regulations and standards.

The world demand for lubricant oil is about 41.35 million metric tons. The regional distribution indicates that Africa consumes only 2.068 million metric tons of the global lubricant consumption. Kenya consumes about 0.007 million metric tons of lubricating oils (PIEA, Kenya 2013). These lubricating oils become degraded after use due to presence of contaminants hence not fit for its intended use and require to be disposed. Improper storage, handling, transportation, treatment and disposal of the waste oils results in negative environmental impacts and public health hazards. It is in this regard that Seahorse International Logistics Limited is proposing to set up Waste Oil/Sludge Handling Facility on Plot number MBOLOLO/TAUSA/4990 Ikanga area, along/off Mombasa-Nairobi Highway, Voi Sub County within Taita Taveta County.

Seahorse International Logistics Limited intends to operate waste oil/sludge handling facility in compliance with existing waste management regulations and other applicable laws. The proponent intends to operate the facility with enhanced safety and health measures and without compromising environment and public health.

1.2 Project Location

Proposed project site is located on Plot number MBOLOLO/TAUSA/4990 Ikanga area, along/off Mombasa-Nairobi Highway, Voi Sub County within Taita Taveta County. The proposed project will be set up on a piece of land of approximately 0.80Ha out of the total approximately 2.0Ha piece of land. The geo-reference points of the site are Latitude **3º20′48.81″S** & Longitude **38º31′42.05″E** at an elevation of 2030ft above sea level.

Figure 1.1: Location Map (Source: Google map 2025)

Figure 1.2: The project site entrance gate (Source, Site visit/photography)

Figure 1.3: he existing storage tanks at the facility (Source, Site visit/photography)

Fig 1.4: The existing permanent block at the facility (Source, Site visit/photography)

1.3 Project Neighborhood

The plots neighboring the proposed project site are composed farming land and few commercial establishments adjacent to the main Highway (Mombasa-Nairobi Highway). The proposed site lies on a flat ground covered with natural growing grass, shrubs, and trees.

Fig 1.5: Immediate neighborhood to the project site (Source, Site visit/photography)

1.4 Project objective

The overall objective of the proposed project is to set up & operate a waste oil (slop oil)/sludge handling facility in line with the Environmental Management and Co-ordination (Waste Management) Regulations, 2024; Legal Notice 178/2024 and Technical Guidelines on the Management of Used Oil and Oil Sludge in Kenya, 2016

1.5 Project Justification

Managing waste properly is essential for building sustainable and livable cities, but it remains a challenge for many developing countries and cities. The proposed project will improve public health and livelihoods by reducing improper waste management mechanisms through poor handling and disposal of waste oil/sludge leading to environmental degradation. In Kenya, management of wastes (both hazardous & non-hazardous) is regulated under the Environmental Management and Co-ordination Act (Waste Management) Regulations, 2024 and other related regulations. These regulations establish an order of preference for the management of wastes to enhance environmental protection. A number of waste generation facilities in the country lack proper waste management systems thus opting for open dumping or even illegal disposal and dumping. However, this is not safe thus the urgency to establish quality and functional waste oil (slope oil)/sludge handling facility within Taita Taveta County and its environs. Operation of the proposed project will thus foster proper management and handling of waste oil/sludge within Taita Taveta County and the surrounding environs.

1.6 Scope and criteria

The study has been conducted to evaluate the environmental impacts of the proposed waste oil 9slope oil)/sludge handling facility. Upon evaluation, recommendations are made on the accentuation of positive impacts and the mitigation of negative ones. The scope for the assessment dwelled on impacts the project will have on the following parameters:

- Physical environment
- Socio-cultural environment
- Land use
- Socio-economic aspects
- Flora and fauna
- Occupational safety & health issues

1.7 Assessment methodology

This ESIA study is based on proposed project site visits, literature review and discussions with the project proponent, engineers, quantity surveyors and consultation with the stakeholders through public participation with Project Affected Parties (PAPs). The project proponent provided all details relevant to the proposed project. While preparing the ESIA study report, care has been taken to identify the potential negative impacts and their mitigation measures in terms of:

- Impacts due to project location;
- Impacts from project design and during construction; and
- Impacts during the operation of the project

For the purpose of the assessment and preparation of the study report, the following approaches and methodologies were employed:

1) Desktop studies which involved review and analysis of literature for acquisition of secondary data;
2) Environmental screening, in which the project was identified as among those requiring ESIA under second schedule of Environmental (Impact Assessment and Audit) (Amendment) Regulations, 2019, the proposed project is classified as a High Risk Project.
3) Environmental scoping that provided the key environmental issues to be investigated in relation to implementation of the proposed project;
4) Physical inspection of the site and surrounding areas;
5) Consultation involving key stakeholders for collection of primary data through public meeting and questionnaires administration
6) Identification of potential impacts and preparing an ESMP;
7) Confirmation and sharing of findings with the project proponent;
8) Reporting assessment findings

1.8 Stakeholder Identification, Analysis and Engagement Plan

a) Stakeholder Identification

Stakeholders represent individuals or groups that hold a stake in the project, either because they will be impacted by the project or because they have a vested interest in it. A public consultation/engagement process is very important in gauging the sentiments of a variety of stakeholders. Besides the fact that this is a regulatory requirement under the Environmental (Impact Assessment and Audit) (Amendment) Regulations, 2019, it is an excellent opportunity to offer the public an opportunity to ventilate their concerns and probably give recommendations concerning the proposed project in the specific area.

The stakeholders' categories identified in this proposed project included the following Project Affected Parties;

- Local communities/immediate neighbors
- Local Administration (Area chief; Mbololo Location)
- Government agencies
- Community Based Organizations (CBO's)

Each of the stakeholders above had different requirements, different interests, different levels of influence, and different expectations towards the project. A project proponent's challenging role is to align these expectations, engage the stakeholders, and promote acceptance of the project in totality.

b) Stakeholder Analysis

After the identification of the stakeholders, they were analysed by the environmental consultants on who they really were, their level of interest, what power they had, what their expectations were, and if they seemed favourable or against the proposed project. This was done through a power-interest matrix, where each stakeholder was plotted in the matrix based on their level of power to impact the project and their level of interest. In any project, all stakeholders are equal, but some are more equal than others.

Depending on power and interest of the stakeholder, different strategies apply to manage their engagement:

- **Keep them satisfied**

Stakeholders in this group have little interest in the project but high power to continue or stop. Examples of such stakeholders include the local communities which forms the larger group. The best engagement strategy is to meet their needs and keep them satisfied, which can mean invite them for project updates meetings occasionally or ensure that their communication requirements are being met.

- **Minimal effort**

Stakeholders who have little power and little interest in the project are the least important and require minimal effort from the project manager. However, they should not be totally overlooked.

- **Engage closely**

Stakeholders with a high level of power and a high level of interest are the most important stakeholders. This will include the lead and government agencies interested in the proposed project.

- **Keep them informed**

These are the stakeholders with low power but highly interested in the project. These are stakeholders to whom you need to show consideration, such as the project end-users and whom you should keep informed regularly on the project status.

In consideration of the above stakeholder engagement plan, public consultative meetings for the proposed project were conducted at the proposed project site on 27th, 29th and 30th May 2025. (*See attached meeting minutes*)

1.9 Terms of reference

The terms of reference for the proposed project represents NEMA approved terms of reference report vide reference number **NEMA/TOR/5/2/846** that was submitted to the Authority prior to the commencement of this study report. The approved terms of reference define the objectives and scope of the ESIA as follows:

- Assess the baseline environmental conditions in the project area, such as biological, physical and socio-economic environment;
- Study the potential positive and negative impacts of implementing the proposed project in the society living within the influence of the project including, but not limited to, sound handling of waste oil/sludge, job creation and improvement in the livelihood within the local community.
- Assess the potential environmental and social impacts of the project and suggest suitable mitigation measures for the adverse impacts;
- Study the project conditions and requirements in terms of location, implementation and operation requirements;
- Study negative impacts arising from the proposed project for example public safety and health and rehabilitation of the affected environment.
- Prepare an Environmental and Social Management Plan (ESMP) for implementation and monitoring of mitigation measures along with budgetary estimates.

CHAPTER 2: BASELINE INFORMATION ON PROJECT AREA

2.1 Introduction

This chapter presents a status report on the situation of the proposed project within the context of Taita Taveta County as a whole. The environmental baseline offers both the present and future status of the environment. It takes into account changes which might be occasioned by natural and anthropogenic activities. Baseline information provides a basis to ascertain the implication of the development process and determine the mitigation measures to be undertaken or suitable to ameliorate the identified impacts. The baseline survey was done through literature review, site visits and baseline environmental monitoring within the proposed project area.

2.2 Administrative location and size

Taita Taveta County is one of the six counties located in the coastal region and is approximately 200km North West of the coastal city of Mombasa and 360km South East of Nairobi the capital City of Kenya. The county covers an area of 17,084. lKm2 with 10,649.9 Km2 (62.3 per cent) being within Tsavo East and Tsavo West National Parks. The county borders Kitui, Makueni and Tana River Counties to the north; Kilifi and Kwale Counties to the east; Kajiado County to the north-west and the Republic of Tanzania to the South. The county lies between longitude 37°36zeast and 30°14/east and latitude 2°46/s/south and 4° 10 south.

Taita Taveta County is divided into various administrative and political units crucial for management of the County and also service delivery to the public. In terms of political units, the County has four constituencies namely; Wundanyi, Mwatate, Voi and Taveta. These are further divided into electoral wards, otherwise referred to as County assembly areas.

2.3 Location

The proponent has proposed to set up and operate Waste Oil/Sludge Handling Facility on Plot Number MBOLOLO/TAUSA/4990 Ikanga area, along/off Mombasa-Nairobi Highway, Voi Sub County within Taita Taveta County. The proposed project will be set up on a piece of land of approximately 0.80Ha out of the total approximately 2.0Ha piece of land. The geo-reference points of the site are Latitude **3º20′48.81″S** & Longitude **38º31′42.05″E at an elevation of 2030ft above sea level.**

2.4 Climatic conditions

Taita Taveta County is mainly dry, with the exception of Taita Hills which are considerably wet. The south-easterly winds influence climate in the area, whereby hilly areas have ideal conditions for moisture condensation which then results in relief rainfall. The County experiences two rainy seasons - the long rains

between the months of March and May; and the short rains between October and December. Rainfall distribution is uneven, with the highlands receiving higher rainfall than the lowland areas. During long rains, on average the highlands record 265 mm while the lowlands record 157 mm whereas during short rains, annual rainfall is 1,200 mm and 341 mm for highlands and lowlands respectively. The annual mean rainfall is 650 mm. The average temperature in the County is 23°C, with temperatures getting as low as 18.2°C in the hilly areas (Taita, Mwambirwa and Sagalla), while on lower zones, temperatures rise to about 25°C.

2.4.1 Rainfall

The rainfall pattern is characterized by two distinct long and short seasons corresponding to changes in the monsoon winds. The long rains occur in April - June with an average of average 1,040 mm and correspond to the South Eastern Monsoon winds. The short rains start towards the end of October lasting until December and correspond to the comparatively dry North Eastern Monsoons, averaging 240mm. The annual average rainfall for the county is 640mm.

2.4.2 Temperature

The annual mean temperature in the county is 27.90C with a minimum of 22.70C and a maximum of 33.10C. The hottest month is February with a maximum average of 33.10C while the lowest temperature is in July with a minimum average of 22.70C. Average humidity at noon is about 65 per cent.

2.5 Physical and Topographic Features

Taita Taveta County is classified into three major topographical zones, namely:

(i) Upper zone – which comprises Mwambirwa, Taita and Sagalla hills regions with altitudes ranging from 304 meters to 2, 208 meters above sea level. The zone is suitable for horticultural farming.

(ii) Lower zone – which includes plains where the national parks, mines and ranches are found.

(iii) Volcanic foothills zone – which covers the Taveta region with underground water and springs sourcing from Mt. Kilimanjaro.

2.6 Ecological Conditions

Ecological zones in Taita Taveta County are based on climatic conditions and relief. There are 8 Agro-ecological zones in Taita Taveta namely:

- LH2- wheat/maize- pyrethrum zone. This part is very steep and has shallow soils and it must remain forested for cloud catching and water conservation.

- UM3- marginal coffee zone. This is the main part of the Taita Hills.
- UM4- maize-sunflower zone. This downward zone is dominated by steep slopes so there is not much space for maize and sunflower.
- LM4- marginal cotton zone. This is also a downward zone dominated by steep slopes and with less space for cotton.
- LM5- lower midland livestock- millet zone. This is the foothill zone and it is normally too dry for maize but there is some scope for very early maturing new millet varieties.
- LM6- lower midland ranching zone. This is also a foothill zone for ranching.
- IL5- inner lowland livestock- millet zone. This livestock-millet zone can improve the agricultural possibilities by run-off catching methods also called rainwater harvesting.
- IL6- inner lowland ranching zone. This is the other green mountainous area of uncultivated thorn bush and is smaller and less elevated but locally important, like the Kasigau or Sagala Hills.

The Taita Hills which form the highlands cover approximately 1,000 km2 and rise to a maximum elevation of 2,208 meters above sea level (Vuria Peak). The Taita Hills forests, commonly referred to as the "Cloud Mountain Forests", harbour several endemic plant species.

2.7 Population Density and Distribution

There is a marked variation in population density in the county with Mwatate and Wundanyi sub-counties having the highest densities while Voi and Taveta sub-counties have the least densities. The county's 2019 population density stands at 20 persons per square kilometer.

2.8 Land Use Systems

Taita-Taveta county covers an area of 17,083.9 km2, of which 62% or 11,100 km2 is within Tsavo East and Tsavo West National Parks. The remaining 5,876 km2 consists of smallscale farms, ranches, sisal estates, water bodies (such as Lakes Chala and Jipe in Taveta and Mzima springs), and the hilltop forests.

The lowland areas of the county outside the national parks are farms, ranches, estates, and wildlife sanctuaries which receive an average of 440 mm of rain per annum whereas the highlands receive up to 1900 mm. Altitudes range from 500 m above sea level to almost 2300 m at the highest point in the county of Vuria Peak. The county has approximately 25 ranches for cattle grazing. The three operating sisal estates in the county are Teita Sisal Estate, Voi Sisal Estate and Taveta Sisal Estate.

2.9 Physical Infrastructure

Physical infrastructure is considered vital because the standard of living of the people in the County and the performance of the major sectors are greatly influenced by the existence, access, distribution and utilization of the physical infrastructure. Adequate and efficient physical infrastructure has a direct bearing on the production of goods and services in the County. It facilitates and promotes investment, thus creating more jobs, raises income for the people and through taxation increase the County government

2.9.1 Roads

There is a total of 127 km classified roads and 221.46 km unclassified roads. The County is well served with electricity with virtually all economic and high potential areas having access to power network. The proposed project site is located off Mombasa-Nairobi Highway,

2.9.2 Communication Network

The County has a well-developed communication network with a total network of 31,481 telephone lines and six telephone exchanges; the County is connected to the rest of the country and the outside world. In general, there is a General Post Office (GPO) located within the County with branches in sub counties.

2.10 Socio-economic Infrastructure

2.10.1 Employment level

Taita Taveta County like many other Counties in the coast region has been hit by the problem of unemployment. This has been exacerbated by the rising population growth. Employment is generally generated in manufacturing, building and construction, trade restaurants and hotels, transport and communication finance, insurance, real estate and business services, and community, social and personal services of these major activities account for over 40% of the total labour force engaged in wage employment. However, there is still potential of growth in the manufacturing, transport and communication sectors in the district, though more employment opportunities will be generated in the informal sector.

CHAPTER 3: POLICY, INSTITUTIONAL & LEGAL FRAMEWORK

3.1 Introduction

The relevant legislation which the project must comply with is intended to ensure project's sensitivity to environmental concerns, public safety, public health and physical planning regulations. Kenya has a policy, legal and administrative framework for guiding it in environmental management. Under the framework, NEMA is responsible for ensuring that EIAs/ESIAs are carried out for new projects and EAs on existing facilities as per the provisions of Environmental (Impact Assessment and Audit) (Amendment) Regulations, 2019. ESIAs are carried out in order to identify positive and negative impacts associated with projects with a view to taking advantage of the positive impacts and developing mitigation measures for the negative ones. The legal and institutional frameworks provide important safeguards for protection and conservation of fragile environments and vulnerable communities and enhance the implementation of the Environmental and Social Management Plans. Under this section, the ESIA study report will therefore review the applicable sets of laws, management principles and institutions that require level of environmental compliance for the Proposed Waste Oil/Sludge Handling Facility

This chapter will discuss the following aspects in relation to the proposed project;

- Policy Framework
- Environmental Management Principles and Guidelines
- Institutional Framework
- Legal Framework
- International Conventions and Treaties

3.2 Policy Framework

3.2.1 *National Environment Policy, 2013*

The National Policy aims to provide a framework for an integrated approach to sustainable management of Kenya's environment and natural resources. In particular, it proposes to strengthen;

- Legal and institutional framework for good governance
- Integrate environmental management with economic growth, poverty reduction and improving livelihoods
- Research and capacity development
- Promote new environment management tools
- Promote collaboration and cooperation and partnerships in environment management

- Promote domestication, co-ordination and maximization of benefit from Strategic Multilateral Environment Agreements

National Environment Policy also elaborates on environmental quality and health and the need to ensure a clean and health environment for all.

3.2.2 *The National Land Policy, 2009*

The National Land Policy guides the country towards efficient, sustainable and equitable use of land for prosperity and posterity. The Mission of the Policy aims at promoting positive land reforms for the improvement of the livelihoods of Kenyans through the establishment of accountable and transparent laws, institutions and systems dealing with land. The overall objective of the Policy is to secure rights over land and provide for sustainable growth, investment and the reduction of poverty in line with the Government's overall development objectives. Specifically, the policy offers a framework of policies and laws designed to ensure the maintenance of a system of land administration and management that will provide:

- All citizens with the opportunity to access and beneficially occupy and use land
- Economically viable, socially equitable and environmentally sustainable allocation and use of land
- Efficient, effective and economical operation of land markets
- Efficient and effective utilization of land and land-based resources
- Efficient and transparent land dispute resolution mechanisms.

Sustainable land use practices are key to the provision of food security and attainment of food self-sufficiency.

3.2.3 *The National Energy and Petroleum Policy, 2018*

Energy is a critical component in the economy, standard of living and national security of a country. The level and the intensity of energy use in a country is a key indicator of economic growth and development. The Kenya Vision 2030 identified energy as one of the infrastructure enablers of its socio-economic pillar. Sustainable, competitive, affordable and reliable energy for all citizens is a key factor in realization of the Vision.

This Policy aims to ensure sustainable, adequate, affordable, competitive, secure and reliable supply of energy at the least cost geared to meet national and county needs while protecting and conserving the environment. It has twenty objectives that include but not limited to providing an environment conducive for the development and provision of energy services and ensuring that prudent environmental, social, health and safety considerations, as well as issues of climate change are factored in energy and petroleum sector developments.

3.3 Environmental Management Principles & Guidelines

The project proponent and the contractor/project engineer are expected under law and best practice to consider and exercise all the principles and tenets of environmental management. These principles are as discussed below:

3.3.1 *The Principle of Sustainability*

The principle of sustainability requires that natural resources should be utilized in a way and at a rate that does not lead to the long-term decline of natural resources, thereby maintaining its potential to meet the needs and aspirations of present and future generations. It strives for equity in the allocation of the benefits of development and decries short-term resource exploitation which does not consider the long-term costs of such exploitation. In the course of implementing the proposed project, the project proponent/manager is strongly advised to use resources sustainably and source materials from suppliers that have been identified as employing/ practicing sustainable resources use.

3.3.2 *The Principle of Intergenerational Equity*

The principle of sustainability should be examined together with that of intergenerational equity, which focuses on future generations as a rightful beneficiary of environmental protection. Essentially, the principle of intergenerational equity advocates for fairness, so that present generations do not leave future generations worse off by the choices they make today regarding development. Operations and activities undertaken at all the stages of the proposed project ought to be designed to embrace the rationale of intergeneration equity in resources use both natural and man-made resources. Besides, intra-generation equity should be observed whereby various resources users in the current generation should not have their resources use ability compromised by the proposed project.

3.3.3 *The Principle of Prevention*

The principle of prevention states that protection of the environment is best achieved by preventing environmental harm in the first place rather than relying on remedies or compensation for such harm after it has occurred. The reasoning behind this principle is that prevention is less costly than allowing environmental damage to occur and then taking mitigation measures. The project proponent is duty bound under EMCA Cap 387 to undertake all the preventive and viable measures to protect the environment in the course of implementing the project, upon commissioning the project through to decommissioning of the project.

3.3.4 *The Precautionary Principle*

The precautionary principle recognizes the limitations of science, as it is not always able to accurately predict the likely environmental impacts of resource utilization. It calls for precaution in the making of environmental decisions where there is scientific uncertainty. Accordingly, it is closely related to the principle of prevention and can be viewed as the application of the principle of prevention where the scientific understanding of a specific environmental threat is not complete. The precautionary principle thus requires that all reasonable measures must be taken to prevent the possible deleterious environmental consequences of development activities. Further, it demands that scientific uncertainty should not be used as a reason for not taking cost effective measures to prevent environmental harm. The project proponent should undertake all the necessary precautionary measures in the course of implementing the proposed project.

3.3.5 *The Polluter Pays Principle*

The polluter pays principle requires that polluters of natural resources should bear the full environmental and social costs of their activities. It seeks to internalize environmental externalities by ensuring that the full environmental and social costs of resource utilization are reflected in the ultimate market price for the products of such utilization. Since environmentally harmful products will tend to cost more, this principle promotes efficient and sustainable resource allocation as consumers are likely to prefer the cheaper fewer polluting substitutes of such products. This principle dictates that when undertaking a project or running institution, if damage is caused to private properties or even public utilities such as roads or public goods such as water bodies, measures to compensate the affected should be instituted immediately.

3.3.6 *The Principle of Public Participation*

The principle of public participation seeks to ensure environmental democracy and requires that the public, especially local communities should participate in the environment and development decisions that affect their lives. It requires that the public should have appropriate access to information concerning the environment that is held by public authorities and should be given an opportunity to participate in decision-making processes. This principle calls for public participation in the development of policies, plans and processes for the management of the environment. Public participation ensures that:

- The process is open and transparent;

- Provides valuable sources of information on key impacts, potential mitigation measures and possible alternatives;
- Ensures that a project meets the community's needs;
- Ensures that a project is legitimate and it is a way of ensuring that conflicts can be addressed before NEMA makes a decision;
- Assists in informed decision making
- Promotes better implementation of projects once NEMA has made a decision;
- Enlightens the community on the opportunities and benefits that could arise from a project;

In compliance to this principle, public consultation meetings were conducted at the project site with the Project Affected Parties (PAPs) to give their views regarding the proposed project.

3.3.7 *The Cultural and Social Principle*

The Cultural and Social Principle is traditionally applied by many communities in Kenya for the management of the environment or natural resources in so far as the same are relevant and are not repugnant to justice and morality or inconsistent with any written law. Since time immemorial many communities have lived sustainably in various ecosystems in Kenya. It against this setup that existed where resources utilization though devoid of sophisticated/ complicated technologies guaranteed health environment that the current development should borrow leave from. It is therefore important for the proponent to factor in local/ traditional environment management systems in the course of implementing the project.

3.3.8 *The Principle of International Co-operation*

The Principle of International Co-operation applies in the management of environmental resources shared by two or more states. Environmental impacts do not respect national or international boundaries and as such are trans-boundary. This principle ensures that international relations and understanding are upheld and therefore management of environmental concerns arising from a project/ action across two jurisdictions can be managed. However, the proposed project does not have far reaching impacts across national boundaries. (trans-boundary impacts)

3.4 Legal Framework

The key national laws that govern the management of environment resources in the country in relation to the proposed project have been discussed in the following paragraphs. The relevant legislation which the

proposed project must comply with is intended to ensure project's sensitivity to environmental concerns, public safety, public health and physical planning regulations.

3.4.1 The Constitution of Kenya, 2010

The Constitution of Kenya 2010 is the supreme law of the land. Any other law that is inconsistent with the Constitution is null and void to the extent of its inconsistency. Under Chapter IV, article 42 provides for the right to a clean and healthy environment for all. Further, Chapter V of the Constitution deals with Land and Environment. Specifically, Part 2 elaborates on the following components regarding the protection of the environment.

- Enforcement of environmental rights
- Obligations in respect of the environment
- Agreements relating to natural resources
- Legislation relating to the environment

Relevance to the proposed project

- Under the Constitution the proponent is entitled to carry out the project within legal limits and a fair administrative decision-making process from NEMA and other State organs. On the other hand, he is required to ensure:
    - That the development is carried out in an ecologically, economically and socially sustainable manner;
    - That the right to a clean and healthy environment for all is upheld in all phases of the development
    - That all the applicable provisions of the Constitution are observed at all times.
    - The proponent should ensure that construction and operations of the facility do not infringe on the right to a clean and healthy environment for all

3.4.2 The Environmental Management and Co-ordination Act (EMCA) Cap. 387 of the Laws of Kenya

The Act is the framework environmental law and aims to improve the legal and administrative coordination of the diverse sectoral initiatives in the field of environment so as to enhance the national capacity for its effective management. The Act harmonizes the sector specific legislations touching on the environment in a

manner designed to ensure greater protection of the environment in line with the National Environment Policy, 2013.

Relevance to the proposed project

- Section 58 of the Act requires proponents of a development likely to have deleterious effects on the environment to prepare and submit an EIA report to NEMA for consideration for decision making. This ESIA study report is prepared to comply with the provisions of this section.

The relevant Regulations under EMCA that are relevant to the proposed project are discussed below;

a) The Environmental (Impact Assessment and Audit) (Amendment) Regulations, 2019

These Environmental (Impact Assessment and Audit) Regulations, 2003 were amended in by deleting regulation 7. The EIA/EA Regulations are meant to ensure the implementation of Sec. 58 of EMCA. It makes it illegal for anyone to undertake developments without an EIA license and stipulates the ways in which environmental experts should conduct the Environment Impact Assessment and Audits reports in conformity to the requirement stated. It is concise in its report content requirements, processes of public participation, licensing procedures, inspections and any possible offences and penalties under the Act.

Relevance to the proposed project

- The proponent is preparing this ESIA report for submission to the Authority for licensing/approval prior to commencement of the project.

b) Environmental Management and Coordination (Waste Management) Regulations, 2024

These regulations are meant to provide a framework for the management of waste and abatement of pollution in line with the constitutional and statutory guarantees of ensuring clean, safe and sustainable environment for all persons. The Regulation provides for guidance, procedures and standards for environmental governance to ensure compliance in the waste management sector.

These regulations define the responsibilities of waste generators and define the duties and requirements for transportation and disposal of waste. The regulations provide for mitigation of pollution and handling of hazardous and toxic wastes. The regulations require a waste generator to dispose waste only to a designated waste receptacle. The proponent shall adhere to the regulations during the project implementation.

Relevance to the proposed project

- Seek license to operate/own waste disposal site and ensure that vehicles delivering wastes are licensed in compliance with these regulations
- Ensure hazardous wastes are disposed off in the manner prescribed
- Ensure that tracking documents for the waste are used and kept for future inspection if needed

c) Environmental Management and Coordination (Air Quality) Regulations, 2024

These regulations are meant to provide for the prevention, control and abatement of air pollution to ensure clean and healthy ambient air. This is an improvement of the 2014 Regulations and introduces various improvements including emission testing from mobile sources.

Relevance to the proposed project

- The activities of the proposed project will have a potential to pollute the air from construction works and operational activities.
- The proponent should undertake quarterly air quality monitoring and provide workers with appropriate PPEs.

d) Environmental Management and Coordination (Water Quality) Regulations, 2024

These regulations are meant to provide for the prevention of land and water pollution by establishing standards for waste water management to ensure clean and healthy water resources as well as provision of standards for water for different uses. The eleventh schedule on EDL fees for controlled facilities has been enhanced. The proposed project proponent will adhere to the provision of these regulations during facility operations.

Relevance to the proposed project

- The proponent should implement measures to prevent water pollution from construction activities, effluent discharge and oil spills at operational phase.
- The proponent should apply for and obtain an Effluent Discharge License from NEMA during the operation phase of the proposed project in compliance with these regulations

e) Environmental Management and Coordination (Noise and Excessive Vibrations Pollution) (Control) Regulations, 2009

These regulations prohibit any person to cause unreasonable, unnecessary or unusual noise which annoys, disturbs, injures or endangers the comfort, repose, health or safety of others and the environment. Part 11 section 6 (1) provides that no person shall cause noise from any source which exceeds any sound level as set out in the First Schedule of the regulations. The proposed project will comply with this regulation to reduce the possibility of adverse noise impacts to human health in the project area.

Relevance to the proposed project

- Ensure compliance with the set noise level limits for the site especially during construction and occupational phases. The proponent should ensure that employees are not exposed to noise levels above 85 dB (A) and in such cases provide suitable personnel protection equipment (ear protective devices).

f) Environmental Management and Coordination (Management of Toxic and Hazardous Chemicals and Materials) Regulations, 2024

These regulations are meant to ensure protection of human health and environment from adverse effects of toxic and hazardous industrial chemicals and materials and reduce risks posed by chemicals and provide for the sound management of chemicals. These regulations also ensure the free movement of chemical products. The project proponent will adhere to the provision of these regulations.

3.4.3 Technical Guidelines on the Management of Used Oil and Oil Sludge in Kenya, 2016

These guidelines were developed to promote safe management of used oil in Kenya. The guidelines will contribute to reduction of pollution because they provide direction on safe management of waste oil and sludge. In particular, they expound on the requirements stipulated in Environmental Management and Coordination (Waste Management) Regulations, 2024 on management of hazardous waste. The proposed project proponent will adhere to these regulations in operating the facility.

Relevance to the proposed project

The proponent should comply with the following Guidelines for Used Oil/Sludge Transfer Stations;

- **Requirement for the site**

- Every person intending to establish a transfer station shall undertake an Environmental Impact Assessment (EIA) and obtain EIA license before commencement of construction works
- The facilities shall undertake annual Environmental Audits

- All transfer stations must obtain an operational license issued under the Waste Management Regulation to own or operate a transfer station from the Authority
- All used oil from transfer stations shall be transferred to licensed recycling facilities
- A transfer station shall not process the used oil in any way except dewatering
- All transfer stations shall be provided with adequate and functional oil interceptors and other pollution control measures e.g. spillage control kit
- At each site the operator is to have a minimum amount of storage capacity of $90M^3$ on site to allow for discharge from the largest capacity of a vehicle that may be received, in the event of a contaminated load
- The loading and offloading area must have paved surfaces with an impervious material to prevent any spills from contaminating the soil
- The offloading and loading area should be bunded and must equal or exceed the volume of the largest compartment of any vehicle to be discharged
- All transfer stations shall provide valid physical addresses, contact details, telephone numbers, email contacts and GPS coordinates of their locations
- All transfer stations should have in place an Emergency Response Plan (spill control equipment, a fire control plan, an evacuation plan) in case of incidents, spillages, fires, explosions etc
- The transfer stations shall only sell used oil to licensed recycling facilities and energy recovery users
- All used oil to and from a transfer station shall be transported by licensed used oil transportation vehicles
- The transfer station shall have a waste management plan and
- Establish a complaint management system (twenty-four (24) hour complaint contact telephone number) and ensure verbal response is provided to the complainant within two (2) hours.

- **Tank farm**

- All oil tanks shall meet the KS 200: Part 1: 2002 on specifications for storage tanks for petroleum industry
- All oil tanks shall be bunded appropriately with a bund wall of size stipulated under the KS 1967:2006
- All tanks are to be made from steel
- All tanks compartments should be padlocked when not in use
- All tanks are to be bunded. The bund must equal or exceed the volume of the largest tank in that bunded area

- The bunded area must be paved with concrete or asphalt, not soil, clay or gravel
- All tanks are to be inspected on a regular basis for worthiness in accordance with KS 1938
- All tanks are to have some method to determine the volume in each tank
- All tank maintenance is to be recorded and kept for five years and
- Haulage of 5% must be left when the tank is full

3.4.4 The Climate Change Act, 2016

This is an Act of Parliament to provide for a regulatory framework for enhanced response to climate change; to provide for mechanism and measures to achieve low carbon climate development, and for connected purposes. The Act provides a regulatory framework for the development, management, implementation and regulation of mechanisms to enhance climate change resilience and low carbon development for the sustainable development of Kenya. It provides for mainstreaming of climate change responses into development planning, decision making and implementation as well as resilience and adaptation in all governance sectors.

The Act also stipulates the climate change response measures and actions; this includes the formation of National Climate Change Action Plan. The National Climate Change Action Plan shall be presented for approval by the Council.

The National Climate Change Action Plan shall prescribe measures and mechanisms that will include guiding the county toward the achievement of low carbon climate resilient sustainable development among other measures and mechanisms aimed at reducing carbon levels in the country.

Relevance to the proposed project

- The proponent should develop a Climate Change Action Plan and implement measures to ensure low carbon footprint at the facility through incorporating low carbon technologies in order to reduce emission intensity
- The proponent should install renewable energy sources such as lighting, energy efficient machines and ensure low carbon emissions to the environment

Climate Change risk and vulnerability assessment

Climate change refers to long-term shifts in temperatures and weather patterns. Such shifts can be natural, due to changes in the sun's activity or large volcanic eruptions. However, human activities have been the main

driver of climate change, primarily due to the burning of fossil fuels (like coal, oil and gas), which produces heat-trapping gases.

The purpose of the Climate Risk and Vulnerability Assessment is to develop an understanding of the current and future climate risks that will be attributed to the existence of the proposed project in the larger Voi area.

Objectives

- To inform participatory action planning processes that lead to community-driven and owned adaptation mechanisms
- To identify lower risk areas in which climate-resilient infrastructure can be developed
- To develop targeted early warning systems, training programs in environmental management and risk reduction and community capacity building within the project area
- To select, prioritize, and design appropriate resilient infrastructure development options.

Vulnerability assessment is a function of exposure, sensitivity, and adaptive capacity. The proposed project proponent together experts will identify critical assets, sectors, and populations vulnerable to climate hazards. The adaptive capacity of these assets and population groups to climate change will also be evaluated. The aspects of vulnerability conditions that will be examined include the following; physical, social, economic, and environmental factors.

This assessment involves the following methods;

1. Critical assets, sectors, and services will be identified, organized, and mapped
2. Vulnerable populations will be identified and mapped using area population data and previous studies. This may also involve engaging with community members, vulnerable groups, and climate experts.
3. A vulnerability assessment will be conducted, taking into account the exposure, sensitivity, and adaptive capacity of assets and groups

Risk assessment is a function of the probability of a hazard impact and the overall consequence of the impact. For instance;

Risk = Probability x Consequence

This assessment allows for the prioritization of the most at-risk assets, systems, and groups, focusing on the most vulnerable ones identified during vulnerability assessment.

3.4.5 The Occupational Safety and Health Act, 2007

The purpose of the Occupational Safety and Health Act (OSHA) is to provide for the safety, health and welfare of workers and all persons lawfully present at workplaces and to provide for the establishment of the National Council for Occupational Safety and Health and for connected purposes.

Of particular importance to the proposed project is the requirement that all work places must be registered with the Department of Occupational Safety and Health Services. Further, there is a requirement that a Safety and Health Committee must be put in place and those employees and members of this committee must be inducted and trained on the provisions of the Act accordingly.

The OSHA, 2007 stipulates that an employer shall not require or permit his employee to engage in the manual handling or transportation of a load which by reason of its nature is likely to cause the employee to suffer bodily injury.

Relevance to the proposed project

- Under OSHA, the proponent should register the site as a workplace with the DOSHS and ensure timely renewal of the same
- It also involves the prevention of accidents at the workplace and provision of personal protective equipment (PPE) to all workers and enforces their use.
- Strict provisions will be made for the requirement of supervision and training of inexperienced workers during commissioning period and carry out occupational safety and health audit annually.

3.4.6 Public Health Act, 2012

This is an act of parliament to make provision for securing and maintaining health. Section 13 states that it shall be the duty of every health authority to take all lawful, necessary and under its circumstances reasonably practicable measures for preventing the occurrence or dealing with any outbreak, or prevalence of any infections, communicable or preventable diseases or conditions to safeguard and promote the public health and to exercise the powers and perform the duties in respect of the public health conferred or imposed on it by this act or by any other law. The Public Health Act Cap 247, Section 3 gives provisions for use of poisonous substances. It refers to regulations for protection of persons against risk of poisoning, imposing restrictions or conditions on the importation, sale, disposal, storage, transportation or use of poisonous substances. This Act also requires persons concerned with importation, sale, disposal storage, transportation or use of

poisonous substances to be registered and licensed and provides measures for detecting and investigating cases in which poisoning has occurred.

Relevance to the proposed project

- The proponent should ensure compliance with the Act by providing clean, healthy and safe environment during construction and subsequent operation of the proposed waste oil handling facility

3.4.7 The Water Act, 2016

The purpose of the Water Act 2016 is to align the water sector with the Constitution's primary objective of devolution. The act recognizes that water related functions are a shared responsibility between the national government and the county government. The Constitution acknowledges access to clean and safe water as a basic human right and assigns the responsibility for water supply and sanitation service provision to the 47 established counties.

This is also an act of Parliament to provide for the regulation, management and development of water resources, water and sewerage services; and for other connected purposes. This Act may be cited as the Water Act, 2016 and shall come into operation on such a date as the Cabinet Secretary responsible for matters relating to water may by notice in the Gazette, appoint, and different dates may be appointed for the coming into operation of different provisions. Water in Kenya is owned by the Government, subject to any right of the user, legally acquired. However; this Act regulates conservation and management of all water resources within the republic, and related purposes. In section 3 of part II, it states that every water resource is vested in the State, subject to any rights of user granted by or under this Act or any other written law. The Act also provides for establishment of a Water Resource Authority, whose aim is to manage and coordinate conservation and utilization of water resources at national scale and other several organs to ensure development and sustainable use of water resources. These include Water Sector Trust Fund (WSTF), Water Resources Users Associations (WRUAs), Water Services Providers (WSPs) and Water Works Development Agencies among others.

Relevance to the proposed project

- The proponent should ensure that water usage in all phases of the project cycle is in line with the provisions of this Act
- Obtain a permit from WRMA if a borehole will be considered as a source of water to supply the facility.
- The proponent should also ensure that the activities of the facility does not cause any leachate that may cause ground water pollution.

3.4.8 The Energy Act, 2019

An Act of Parliament to consolidate the laws relating to energy, to provide for National and County Government functions in relation to energy, to provide for the establishment, powers and functions of the energy sector entities; promotion of renewable energy; exploration, recovery and commercial utilization of geothermal energy; regulation of midstream and downstream petroleum and coal activities; regulation, production, supply and use of electricity and other energy forms; and for connected purposes. The Act sets up the establishment of Energy and Petroleum Regulatory Authority (EPRA) hereinafter referred to as the Authority. The Energy and Petroleum Regulatory Authority (EPRA) is established as the successor to the Energy Regulatory Commission (ERC) under the Energy Act, 2019 with an expanded mandate of inter alia regulation of upstream petroleum and coal.

Relevance to the proposed project

- The proponent is required to ensure that the energy supplied is consumed in accordance to the provisions of the Act and energy audits carried out on the facility

3.4.9 The Petroleum Act, 2019

An Act of Parliament enacted by the Parliament of Kenya to provide a framework for the contracting, exploration, development and production of petroleum; cessation of upstream petroleum operations; to give effect to relevant articles of the Constitution in so far as they apply to upstream petroleum operations, regulation of midstream and downstream petroleum operations; and for connected purposes. The facility should strive to be compliant to provisions of this Act.

Relevance to the proposed project

- The proposed project should strive to be compliant to provisions of this Act.

3.4.10 Physical and Land Use Planning Act, 2019

The Act provides for the planning, use, regulation and development of land and for connected purposes. It was enacted to ensure that every person engaged in physical and land use planning shall promote sustainable use of land and livable communities which integrates human needs in any locality. The Act allows the County Government to prepare a local physical and land use development plan in respect of a city, municipality, town or unclassified urban area.

3.4.11 County Government Act, 2012

An Act of Parliament to give effect to Chapter Eleven of the Constitution; to provide for county governments' powers, functions and responsibilities to deliver services and for connected purposes. Section 109 of the County Government Act, 2012 helps counties to ensure effective coordination of spatial developments. Sub - section (2) part C states in part; a spatial county plan shall;

- Indicate desired patterns of land use within the county
- Address the spatial construction or re-construction of the county
- Provide strategic guidance in respect of the location and nature of development within the county
- Set out basic guidelines for a land use management system in the county taking into account any guidelines, regulations or laws as provided for under Article 67(2) (h) of the Constitution
- Set out a capital investment framework for the county 's development programs and;
- Contain a strategic assessment of the environmental impact of the spatial development framework

Relevance to the proposed project

- The Act gives right to access private property at all times by the County Government officers for inspection purposes.

3.4.12 Occupiers Liability Act Cap 34

This is an Act of parliament to amend the law as to liability of occupiers and others for injury or damage resulting to persons or goods lawfully on land or property from dangers due to the state of the property or to things done or omitted to be done there.

Relevance to the proposed project

- Ensure safety of workers during construction, implementation and possible decommissioning phases of the proposed project
- The act requires that the occupier warn the visitors of the likelihood of dangers within his premises to enable the visitor to be reasonably safe

3.4.13 National Construction Authority Act, 2011

This is an Act of Parliament to provide for the establishment, powers and functions of the National Construction Authority and for connected purposes. The National Construction Authority Act seeks to regulate the construction industry and coordinate its development.

Relevance to the proposed project

- The project proponent, shall liaise with NCA to ensure licensed contractors are the ones to be awarded contract to construct the proposed project at times whenever needed

3.5 Institutional Framework

At present there are many institutions and departments which deal with environmental issues in Kenya. To implement the above legal framework, these government institutions have varying mandates of implementation. These include;

a) The National Environment Management Authority (NEMA)

The object and purpose for which NEMA is established is to exercise general supervision and coordinate over all matters relating to the environment and to be the principal instrument of the government in the implementation of all policies relating to the environment.

b) The Directorate of Occupational Safety and Health Services

The mandate of the Directorate is to ensure compliance with the provisions of the Occupational safety and health Act 2007 and promote safety and health of workers. The directorate is aimed to promote a safe and health workplace by implementing effective systems for the prevention of Occupational diseases, ill health accidents and damage to property in order to reduce the cost of production and improve productivity in all

sectors of our economic activities. The core function of the directorate is among other functions Inspecting workplaces to ensure compliance with safety and health law.

c) The County Government of Taita Taveta

The County Government of Taita Taveta has powers to control or prohibit all businesses, factories and other activities including the proposed project which by reason of smoke, fumes, gases, dust, noise, wastes or other cause, maybe or become a source of danger, discomfort or annoyance to the neighborhood and to prescribe conditions subject to which such activities shall be carried.

The County Government of Taita Taveta shall supervise project roll out by use of the technical team to ensure no activity being implemented may become a source of danger, discomfort or annoyance to the neighborhood. The relevant county departments will be responsible in the issuance of the approvals and necessary permits for the proposed project activities.

d) The National Construction Authority (NCA)

The NCA is responsible for issuing permits to construction sites and advising the government of Kenya on construction. The proponent shall liaise with NCA to ensure licensed contractors are the ones to be awarded contract to carry out the project activities.

CHAPTER 4: PROJECT DESIGN & DESCRIPTION

4.1 Project description

The proposed project will involve the construction and subsequent operation of a waste oil (slop oil)/sludge handling facility. The facility will comprise of three (3) oil storage tanks with a capacity of 40,000 Ltrs each (40m3), loading and offloading area, oil/water interceptor, office block and sanitation facilities. The tanks will be mounted on concrete slabs above a paved ground (2ft high) with a drain to channel the oil sludge into the oil/water interceptor. At the interceptor, oil will be separated from water. The end product is furnace oil which will be sold off to industrial clients for further use. Currently, the project site has two storage tanks with the capacities of 40,000Ltrs and 30,000Ltrs respectively. water tank with capacity of 10,000Litrs, ground block that will be renovated to be used as office site, changing room and storeroom, the whole project site is enclosed by a perimeter wall with one gate entrance. The project proponent intends to upgrade the existing proposed project site to acceptable national environmental and safety standards.

The proposed facility site will be designed to facilitate proper handling and management of waste oil (slop oil)/sludge. The facility will accommodate the following basic components;

4.1.1 Office Block

The project proponent proposes to put up office space that will provide working space for the workforce during operation phase of the project. Currently, the project site has an old permanent block that will be renovated to be used as the site office.

4.1.2 Washrooms

The proponent intends to construct adequate toilet and washing facilities for use by the workforce during operation phase of the proposed project. The site has washrooms at the back outside the perimeter wall that will be renovated and be used as washrooms for the staff within the site.

4.1.3 Storage Tanks

The project proponent intends to install three (3) waste oil storage tanks with the capacity of 40,000Ltrs each incorporating concrete bund walls to serve as secondary containment for spillage. The site has currently two oil storage tanks with the capacities of 40,000Ltrs and 30,000Ltrs respectively.

4.1.4 Site Store

The proponent will include a store room to provide a designated space for the safe and organized storage of various equipment, tools, and supplies that are essential for the operation and maintenance of the facility. The existing permanent block will be renovated to provide space for store at the facility.

4.1.5 Parking Space

The open space within the yard will be used as a parking area for the trucks that will be delivering waste oil to the site or collecting processed oil from the site. The proposed project site will be expanded to provide adequate parking space for trucks. The proponent proposes to provide the entire yard with a concrete slab.

4.1.6 Oil/Water interceptor

The design of the yard will incorporate concrete drainage channel complete with oil/water interceptor. At the interceptor, oil will be separated from water.

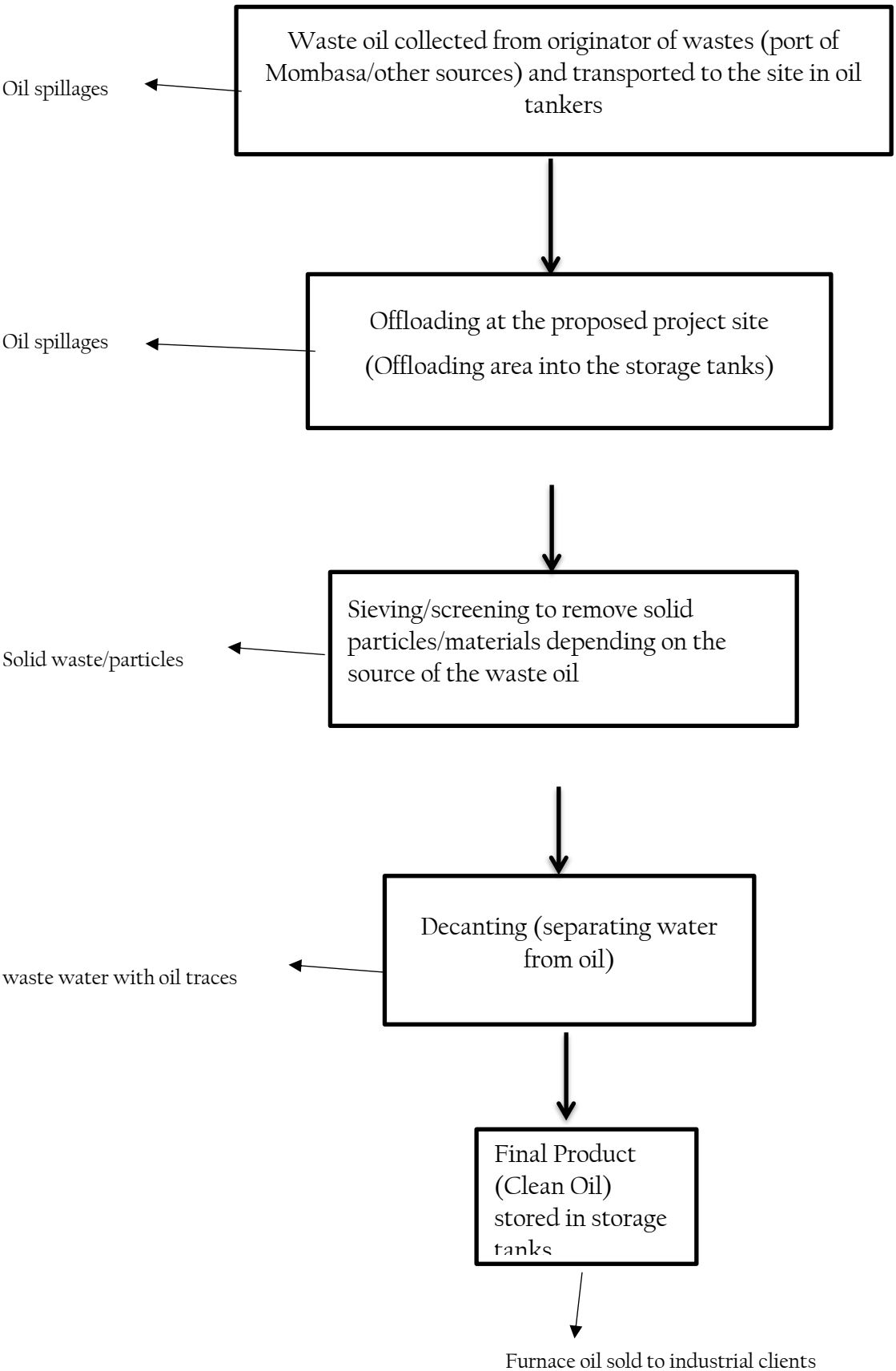
4.1.7 Perimeter Fence

The proposed project site has existing boundary wall with one gate entrance.

4.1.8 Site accessibility/Security

The proponent will provide a security area/room to serve as a centralized location for monitoring and controlling access to the facility. It will also serve as a hub for storing important documents, records, and communication equipment related to the site's security protocols.

Figure 4.1 Waste Oil Handling Process



4.2 Project activities

The proposed waste oil/sludge handling facility activities are described as follows;

4.2.1 Activities during Construction Phase

The project proponent intends to upgrade the existing proposed project site to acceptable national environmental and safety standards. The following will be the activities to be undertaken during this phase.

- Mobilization of construction equipment to the site
- Site excavation, leveling, grading and compaction of the ground
- Delivery of construction materials to the site
- Concrete mixing
- Construction of concrete slab, bund walls, and renovations of washrooms and office block
- Preparation of pipe and cable bridges/racks, service ways, ducts and trenches
- Installation of above ground fuel storage tanks and associated piping works
- Laying down of concrete storm water drainage channel incorporating oil/water interceptor
- Plumbing works
- Construction of decanting chambers
- Setting up the septic tank and soakage pit
- Power supply installation
- Site finishing works including plastering, painting, decoration, grading and landscaping

4.2.2 Activities during Operation Phase

Activities during operation phase of the proposed project will entail the following:

- Purchase of sludge/waste oil from the port of Mombasa and other sources
- Delivery of sludge/waste oil to the site using oil tankers
- Offloading and storage of waste oil in above the ground storage tanks
- Processing of sludge/waste oil in the decanting chambers
- Storage and/or transfer of processed oil in designated above ground storage tanks
- Selling and transfer of processed oil into awaiting oil tankers ready for transportation for reuse
- or recycling by third parties

4.2.3 Waste oil/Sludge Processing

The proposed facility will be involved in handling of waste oil (slop oil) /sludge in accordance with Waste Management Regulations and Technical Guidelines on the Management of Used Oil and Oil Sludge in Kenya, 2016. Waste oil processing will be a physical process, which is comparatively simple and requires no chemicals. It involves the following steps;

4.2.3.1 Sieving/Mechanical Screening

The waste oil delivered at the site will be stored in above the ground storage tanks. This oil will be allowed to flow to the first chamber by opening the valve. The sieve incorporated in this chamber will remove solid materials from the oil. The sieved oil will then be permitted to flow to the second chamber where it will be allowed to settle.

4.2.3.2 Settling

In the second chamber, the oil water mixture is allowed to settle. The mixture separates in two distinct layers one on-top of the other. Water being denser than oil sinks to the bottom, while the waste oil floats on top. The process of settling takes a few hours to several days depending on the composition of the waste oil.

4.2.3.3 Separation (decanting)

The water is then allowed to drain by gravity to the next chamber by opening the valves of the interconnecting pipes thereby leaving oil behind. The process of settling and separation is repeated in all the other chambers until all the water is removed from the waste oil. The water is then drained into the last chamber where it is contained until it is disposed off.

4.2.3.4 Disposal of oily water (supernatant) and solid waste

The water removed from the waste oil will contain a layer of oil hence making it unsuitable for direct discharge into the environment. The proposal is to contract licensed waste handler who will ensure sound disposal of the water hence preventing the potential for polluting soil and water resources. Solid waste will be placed in labelled waste bins which shall be emptied by a contracted waste handler registered by NEMA.

4.2.3.5 Storage of waste oil

The separated oil is the final product of the separation process. It will be pumped from any of the decanting chambers into a storage tank or directly into a collecting oil tanker for use.

4.2.4 Project's Decommissioning Activities

Decommissioning is an important phase in the project cycle and comes last to wind up the operational activities of a particular project. It refers to the final disposal of the project and associated materials at the expiry of the project lifespan. If such a stage is reached, the proponent needs to remove all materials resulting from the demolition/ decommissioning from the site. The following should be undertaken to restore the environment;

- The general public to be informed of demolition exercise well in advance by placing notices in public places concerning the intended demolition at least two weeks in advance;
- The site must be sealed off from public access;
- The firm commissioned to demolish must have enough relevant machines and equipment such as fleet of dumpers that will enable the work be undertaken smoothly and be completed within stipulated time;
- The firm must have experienced labor force to undertake the exercise;
- Adequate measures to be put in place to minimize environmental degradation;
- Site supervision from relevant County Government Departments throughout the exercise;
- Waste materials resulting from demolished development must be handled and disposed according to environmental requirements and procedures;
- Care must be taken to avoid destruction of trees and other vegetation on site during the exercise.

a) Site rehabilitation

Once demolition is complete rehabilitation of affected site should be undertaken to its original state or close to original state. Site rehabilitation will include the following: -

- Test and analysis of soil from site should be undertaken before rehabilitation begins;
- Planting of appropriate species of trees (indigenous), shrubs and grasses;
- Ensuring they are regularly watered, weeded in their early stages to ensure survival;
- The area should be fenced off while rehabilitation is in progress.

4.3 The Project Concept

Environmental Hygiene is the science of anticipation, recognition, evaluation and control of health hazards in the work environment with the objective of protecting the health of workers and citizens of the community. Its role is first, to ensure a healthy work environment through continuous surveillance; second, to protect workers from diseases that can be caused by unhealthy environments; third, to break the vicious

cycle of 'unhealthy environment' thus occupational diseases. It is for this reason, that proponent sought the assistance of environmental consultants to carry out an environmental impact assessment for the proposed waste oil/sludge handling facility.

4.4 Project Cost

The project implementation cost is estimated at Kshs. Three Million Five Hundred Thousand Shillings Only. (3,500,000). See the attached project Bill of Quantities.

CHAPTER 5: PUBLIC & STAKEHOLDER CONSULTATION

5.1 Introduction

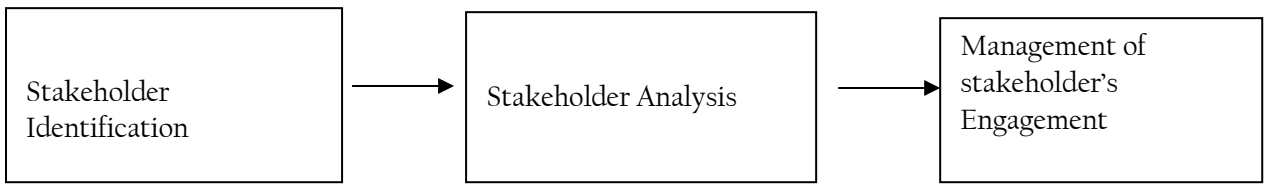
A public consultation process was engaged in gauging the sentiments of a variety of stakeholders. Besides the fact that this is a regulatory requirement under the Environmental (Impact Assessment and Audit) (Amendment) Regulations, 2019, it was an excellent opportunity to offer the public (PAPs) an opportunity to ventilate their concerns and probably give recommendations concerning the proposed project in the specific area.

Stakeholders represent individuals or groups that hold a stake in the project, either because they will be impacted by the project or because they have a vested interest in it. A public consultation/engagement process is very important in gauging the sentiments of a variety of stakeholders. The stakeholders' categories identified in this proposed project included the following Project Affected Parties;

- Local communities/immediate neighbors
- Local Administration (Area Chief, Mbololo Location)
- Government agencies
- Community Based Organizations (CBO's)

Each of the stakeholders above had different requirements, different interests, different levels of influence, and different expectations towards the project.

Stakeholder Management Plan



5.2 Stakeholder Analysis

After the identification of the stakeholders, it is time to analyse who they really are, their level of interest, what power they have, what their expectations are, and if they seem favourable or against the proposed project. This will be done through a power-interest matrix, where each stakeholder is plotted in the matrix based on their level of power to impact the project and their level of interest. All stakeholders are equal, but some are more equal than others.

Depending on power and interest of the stakeholder, different strategies apply to manage their engagement:

- **Keep them satisfied**

Stakeholders in this group have little interest in the project but high power to continue or stop. Examples of such stakeholders include the local communities which forms the larger group. The best engagement strategy is to meet their needs and keep them satisfied, which can mean invite them for project updates meetings occasionally or ensure that their communication requirements are being met.

- **Minimal effort**

Stakeholders who have little power and little interest in the project are the least important and require minimal effort from the project manager. However, they should not be totally overlooked.

- **Engage closely**

Stakeholders with a high level of power and a high level of interest are the most important stakeholders. This will include the lead and government agencies interested in the proposed project.

- **Keep them informed**

These are the stakeholders with low power but highly interested in the project. These are stakeholders to whom you need to show consideration, such as the project end-users and whom you should keep informed regularly on the project status.

5.3 Stakeholder engagement table

Stakeholder identification	Method of engagement	Presentation of the comments/concerns
Local Communities/immediate neighbours - Local residents	Public gathering/open public meeting was conducted at the proposed	Minutes of the meeting
Local Administration Mzee wa Mtaa/Village elders Area Chief, Mbololo Location	Public gathering/open public meeting was conducted at the proposed project site	Minutes of the meeting

Figure 5.1: Public Consultation Meeting at the project site (Source: Site survey/photography)

5.4 Public consultation methodology

Public consultative meeting was conducted at proposed project site on 27th May 2025 with the project affected parties; the local community and local leadership regarding the proposed project. Meeting minutes have been appended to this report.

5.5 Stakeholder comments/concerns

All the Project Affected Parties (PAPs) and the local community had a chance to understand and present their views and opinions about the proposed project. They were all in support of the proposed project as the benefits of the project seemed to supersede the threats to the environment and human health. However, community pointed out the following;

- The proponent should strive to create good and sustainable working relationships to foster good neighborhood. This will in turn promote project acceptance among the locals hence sustainability of the project in the area.
- The proponent should engage in Cooperate Social Responsibility (CSR) initiates such as helping the community in social engagements
- The local community should be given priority in job opportunities resulting from the project operations
- The local community also cited that in the event that the proposed project is seen to negatively impact on the health and environment due to failure of the proponent to abide by the set regulations, they will not hesitate to stop the project operations through their local leadership by launching official complain to NEMA and other state organs.

5.6 Conclusion on findings

Members of the public could see enormous benefits accruing to them by the coming into being of the proposed project. The local community and local leadership endorsed and supported the proposed project on condition that the relevant regulations and guidelines will be followed during operations and the local community will stand a chance to benefit from the project.

CHAPTER 6: ANALYSIS OF PROJECT ALTERNATIVES

6.1 Introduction

Investigating the available alternatives to the development proposal is an important aspect of the assessment process that could invariably help in mitigating the impacts of the proposed project. In this analysis, the consultants' team considered alternatives on the following basis.

- The project site
- Design and technology alternatives
- Scale and extent
- Waste management alternatives

In most cases, the ESIA process often occurs too late in decision-making to consider a full range of alternatives. This can undermine ESIA goals to encourage more environmentally sound and publicly acceptable solutions. Allowing new alternatives and objectives to evolve in relation to environmental conditions, public preferences and project sustainability may be a solution to most of the environmental and socio-economic problems associated with the implementation of new projects

6.2 Proposed Project Alternatives

6.2.1 The "No Project" Alternative

The No Project option in respect to the proposed project implies that the status quo is maintained. This option is the most suitable alternative from an extreme environmental perspective as it ensures noninterference with the existing environmental conditions. This alternative is however not viable owing to the fact that the status quo denies the proponent a viable investment opportunity and thereby income generation translating into profits, denies the local community employment opportunities and also denies both the County and National Government revenue. The 'No project' alternative is therefore not considered viable in the light of the benefits and deprivations of the project. From the analysis above, it becomes apparent that the No Project alternative is no alternative to the proponent.

6.2.2 The "Yes Project" alternative

This option envisages that the proposed project will be implemented thus was considered as the most viable because of the following reasons;

- There will be employment creation
- Commitment to environmental performance through effective waste management procedures
- Source of income to the proponent through investment

- County and National Government revenue generation

6.2.3 Alternative project site

Relocating the proposed project to an alternative site is not a viable option. An alternative site could be considered for the proposed project if the proposed project would present serious environmental challenges that cannot be effectively managed. However, the proposed mitigation measures are considered adequate to minimize the impacts to levels that do not warrant significant environmental damage. In addition, the proponent intends to expand the capacity of commercial waste management site within Taita Taveta County and its environs, there is also availability of adequate piece of land for the project since the site had similar operations, the site is also accessible and away from the densely populated areas thus making it suitable for the proposed, this piece of land is also dully owned by the project proponent. This alternative is therefore not viable.

6.2.4 Project Design Alternatives

a) Technological Alternatives and Input Materials

The proposed project will be constructed using environmentally accepted technological innovations and materials compliant to engineering standards but locally available to achieve public health, safety, security and environmental aesthetic requirements. Equipment that saves energy and water will be given first priority without compromising on cost or availability factors, the project will entail use of locally available materials like sand, cement and ballast or similar approved materials that would not have adverse impacts on the environment. The technology to be used is environmentally friendly. Proposed project design will employ simple technology that lowers the cost of setting up the project based on the prevailing geographical formation.

b) Sustainability and Affordability

Sustainability of the proposed waste oil/sludge handling facility would have a bearing on the environment in the area. This is because the operations of the project might affect the local environment positively or negatively; the proponent is expected to operate waste oil handling facility in line with the set guidelines by NEMA and internationally acceptable standards. This will be assured by developing standard operating procedures (SOPs) that will ensure that the project is sustainable. Sustainability would mean the ability of the project to continuously serve the proponent without adverse impacts within the project area. This would call for designs that would ensure that the cost of operating the facility is cost effective and does not impact

negatively on the environment. Subsequently, this translates to affordability of the proposed project. Sustainability would also translate to the longevity of the project versus intended use. Affordability is greatly determined at the design stage.

c) Potential environmental impacts

The project might not generate a lot of wastes other than industrial wastes from the waste generator associated with facility operations. An integrated solid waste management system is recommendable. First, the proponent will give priority to reduction at source of the materials. This option will demand a solid waste management awareness programme in the management and the staff involved in implementing the project. Recycling and reuse options of the waste will be the second alternative in priority. This will call for a source separation programme to be put in place.

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CHAPTER 7: POTENTIAL ENVIRONMENTAL IMPACTS IDENTIFICATION & MITIGATION MEASURES

7.1 Introduction

This Chapter identifies both positive and negative environmental and social impacts likely to be occasioned by the activities of the proposed waste oil/sludge handling facility. These impacts are hereby identified in three distinct phases of the project i.e., planning and designing phase, implementation/construction phase and operation phase. It discusses the nature of impacts, their magnitude, spatial and time extent and significance. The table below shows how these impacts are assessed.

Table 7.1: Scale for evaluation of project impacts

SCORE	(-1) +1	(-2) +2	(-3) +3	(-4) +4	(-5) +5
PARAMETER					
Magnitude	Impacts occur or are felt on site		Impacts affect more than 3 kilometers radius		Impacts affect the region
Significance	**Low** Small changes which are hardly detectable	**Moderate** Impact measurable but does not alter processes	**High** Many people, animals, plants affected. Disruption to ecosystems and social systems.	**Very high** Loss of biodiversity, property, livelihood systems	**Unknown effects** Insufficient information available. Apply precautionary principle
Probability of occurrence	**Possible** Impacts can occur but are controllable		**Probable** The impact is likely to occur but can be controlled by effective measures.		Definitely will occur
Duration of occurrence	**Short term** During pre-disposal phase only	**Medium term** Impacts will be during operational phase only		**Long term** Impacts will be there for entire operation phase	**Very Long term** For the entire operational phase and afterwards

7.2 Planning and Design Phase

7.2.1 Positive Impacts

- **Creation of Employment opportunities**

During the planning and design phase of the proposed project, there will be employment opportunities especially for professionals. Those involved in planning and design include engineers, surveyors, environmentalists and sociologists among others. Those employed will improve their living standards from the fees they will be paid for their services.

- **Awareness creation among the local community**

During the planning and design phase of the proposed project, a lot of awareness shall be done through consultations on different aspects of the project. Awareness improves civility in project planning, implementation and operations. This is a sure formula for ensuring there is sustainability of the project and acceptability among the local community. Impacts during this phase of the project are not significant. However, the professional consultants shall take necessary measures to document any concerns and address them on as they occur.

7.2.2 Negative Impacts

- **Heightened Expectations and Speculations**

The planning and design phase is bound to create heightened expectations and unwarranted speculations. It is expected that before all persons living within the project area are well informed on the objectives of the proposed project, a lot of speculation, lies and half-truths are peddled. This in return creates a lot of heightened expectations.

Proposed Mitigation Measures

- There has been adequate awareness through a public meeting held at the project site by the local area leadership and the ESIA experts
- Other professionals (engineers, architects, and surveyors) should be keen to listen and document any issue that requires to be addressed all through the project implementation cycle.

7.3 Implementation/Construction Phase

7.3.1 Positive Impacts

- **Employment opportunities**

The construction works will require several human resources from machine operators to other skilled and unskilled labourers. Machine operators will be engaged for excavation works, site clearance and compaction work. Several workers including casual labourers, plumbers and engineers are expected to work on the site for a period of time. Semi-skilled, unskilled and formal employees are expected to obtain gainful employment during the period of construction. With labour intensive construction technologies, the project will provide employment for the locals.

- **Market for construction inputs**

The project will require construction materials, most of which will be sourced locally. These include sand, cement, ballast and steel bars/ rods among others. This will provide a ready market for suppliers in and outside the project area.

7.3.2 Negative Impacts

- **Excavation and loss of top soil**

Project construction will involve earthworks and excavation that will comprise of pits and other landscaping activities. These activities will generate a lot of top soil that will need to be disposed from the project site.

This top soil will also be used during backfilling and landscaping activities. The excavated soil may affect the surrounding environment if not adequately disposed.

Proposed Mitigation Measures

- Maximizing the re-use of excavated materials to ensure that no permanent spoil dumps are created
- Properly disposing off the spoil in designated areas approved by NEMA and County Government

- **Physical disturbance of the project setting**

The proponent is expected to undertake physical works on the project site especially during the construction and renovation of the existing office block. These activities will have minimal negative impacts and could result in; changes in the local topography during excavation and blockage of natural drainage for rain water.

The negative impacts will be temporal because the proponent is expected to mitigate all the negative impacts prior to commissioning of the project. The potential negative impacts on the physical environment will be addressed through the environmental management plan.

Proposed Mitigation Measures

- The proponent should ensure that there is minimal disturbance to the topography of the area
- The excavation and lanscaping design shall not interfere with local drainage or change the topography or introduce physical changes that are not in harmony with the physical setting of the project area
- The project components and associated structures should be aesthetically acceptable to blend in with the surroundings
- The proponent shall as much as possible complete the works in such a way that natural aesthetics shall be retained at the locations
- Restoration shall be undertaken to ensure that the original setting is as much as possible retained
- The proponent should observe measures stipulated in the ESMP

- **Noise and Excess Vibrations**

Construction activities of the proposed project will most likely result in noise disturbance as a result of the machines that will be used e.g., excavation equipment and construction vehicles delivering materials to site. Noise will also be generated by construction workers. Significance of noise impacts depends on whether the

project would increase noise levels above the existing ambient levels by introducing new sources of noise. Noise impacts would be considered significant if the project would result in the following:

- Exposure of persons to noise levels in excess of acceptable and permitted levels
- Exposure of persons to excessive ground-borne vibration or ground-borne noise levels
- A substantial permanent increase in ambient noise levels (more than 3dBA) in the project vicinity above levels existing before the project

Proposed Mitigation Measures

- Provision of appropriate Personnel Protective Equipment (PPE)
- Construct activities to be mainly during the day
- Consider labour based construction methodologies; and
- Ensure compliance with Environmental Management and Coordination (Noise and Excessive Vibrations Pollution) (Control) Regulations, 2009 during construction phase

- **Dust Emissions**

Dust will be emitted during construction activities, excavation and related earthworks. Air-borne particulate matter pollution is likely to occur during the excavation works. This is likely to affect site workers, in extreme situations leading to respiratory problems.

Proposed Mitigation Measures

- Minimizing the number of motorized vehicles on use
- Rehabilitate disturbed areas
- Wet all active construction areas as and when necessary to reduce dust.
- Cover stock piles of construction materials to reduce dust emissions especially during windy conditions
- Ensure compliance with Environmental Management and Coordination (Air Quality) Regulations, 2024

- **Increased Waste Generation**

Solid wastes generated during construction include papers used for packing, plastics, cuttings and trimmings of materials among others. Dumping around the site will interfere with the aesthetic status and has a direct

effect on the surrounding community. Disposal of the same solid wastes off-site could also be a social inconvenience if done in the wrong places. The off-site effects could be aesthetic, pest breeding, pollution of physical environment including water resource, invasion of scavengers and informal recycling by communities.

Proposed Mitigation Measures

- Setting up waste collection and segregation area strategically within the facility/site for collection and sorting of solid wastes before disposal.
- Construction waste should be recycled or reused as much as possible to ensure that materials that would otherwise be disposed as waste are diverted for productive uses
- The proponent shall put in place measures to ensure that construction materials requirements are carefully budgeted and to ensure that the amount of construction materials left on site after construction is kept minimal
- Employ the 3R's concept (Reduce, Reuse & Recycle) in dealing with wastes onsite
- Contract a NEMA licensed waste handler for disposal of wastes from the site
- Ensure compliance with the provisions of the Environmental Management and Coordination (Waste
- Management) Regulations, 2024

- **Increased Water Demand**

During the construction phase of the proposed project, both the construction workers and the construction works will create demand for water in addition to the existing demand. Water will mostly be used during

construction for wetting surfaces or cleaning/curing completed structures. It will also be used by the construction workers to wash and drink.

Proposed Mitigation Measures

- The proponent through the contractor shall ensure that water is used efficiently at the site by sensitizing construction staff to avoid irresponsible water use
- Any water handling equipment, facility and systems shall be appropriate for the intended usage.
- Water used on the construction shall reflect the level of conservation achieved by the contractors.
- Documentation of amounts of water used will be helpful in minimizing wastage
- Ensure compliance with the provisions of the Environmental Management and Coordination (Water
- Quality) Regulations, 2024

- **Occupational hazards at workplace**

Construction workers are likely to have injuries and hazards as the construction works unavoidably expose workers to occupational safety and health risks. The workers are also likely to be exposed to risk of accidents and injuries resulting from accidental falls and injuries from hand tools and construction equipment. There

will also be an increased risk of traffic accidents where delays and diversions are imposed or altered without adequate warning.

Proposed Mitigation Measures

- To reduce on the workers accidents and hazards, the proponent will develop and commit the contractors to Site Occupational Safety and health rules and regulations as stipulated in the Occupational Safety and Health Act, 2007
- All construction workers should be advised of the dangers associated with construction work
- Workers should be provided with suitable and appropriate PPE's
- Provision of adequate sanitary facilities to workers, however, the site has an existing sanitary facilities
- Train all workers on Safety Health and Environment (SHE) with an aim of improving awareness
- Install safety signage along the work areas
- Task-based risk assessment should be done on daily basis to assess the risks and hazards thereby prescribing the appropriate prevention measures

7.3.3 Social Impacts during Construction Phase

- **Loss of Heritage, Cultural and Historical values**

The proposed project has the potential to cause loss of heritage cultural and historical significant to the community during its implementation. The site for the proposed project does not possess any cultural and heritage sites. From the field studies, there are no known impacts on archaeologically protected monuments and cultural properties in the proposed project area, if any archaeological or culturally important artefact be discovered during the construction process, the contractor should develop and implement a chance find procedure that should be approved by the relevant government body.

- **High Prevalence of Infectious and Communicable diseases**

During the construction phase, there is a risk of spread of communicable diseases. Aspects of the physical environment that promote transmission of diseases include: disposal of wastes and ventilation which are likely to occur during the construction phase of the project. With the influx of people during construction, there will be a likelihood of increase in diseases such as typhoid, tuberculosis, diarrheal diseases, respiratory diseases, dysentery and cholera.

The infection rate of HIV/AIDS and other STI's is expected to rise during the construction phase of the proposed project. This is due to the fact that the contractors, traders and workers will have money to attract

women/men from the project area in a bid to solicit for sex, thereby creating avenues for spread of HIV/AIDS and other STIs. The most vulnerable members of the community are women as they don't have access to resources necessary for production and wealth creation.

Proposed Mitigation Measures

- Education and sensitization of workers and the local communities on STIs including provision of condoms to the project team and the public
- The contractor has to institute HIV/AIDS awareness and prevention campaign amongst workers for the duration of the contract e.g. erect and maintain HIV/AIDS information posters at strategic locations within the site.
- The contractor has to ensure that staff are made aware of the risks of contracting or spreading sexually transmitted diseases
- The contractor should ensure that the project workers are sensitized on the local culture

- **Influx of people in the area**

The proposed project has the potential to contribute to the massive influx/movement of people from different areas both during the construction and operation phases. This will have an extended impact of the social setting of the Ikanga area in general. This therefore leads to concentration of people in one area drawn from diverse social and cultural backgrounds often resulting to a number of issues such as;

- Strain on various resources especially water resources, electricity and roads
- Grievances from local community members over job opportunities
- Sexual exploitation and abuse (SEA) and unwanted pregnancies

- **Social security and conflict**

Construction sites usually attract different kinds of people. These will include workers (both permanent and casual contract workers), food suppliers (to construction workers) and some idlers. A site of this nature can provide temptations to crooked workers and others to engage in theft. The presence of these people can therefore, negatively impact on the area's security. There could be conflict between the contractor or the facility and the surrounding communities due to: labor recruitment, shared resources (road, etc.) and behavior of workers.

Proposed Mitigation Measures

- The contractor should ensure the security personnel are well inducted to address security related issues as they arise
- Prepare labor management plan to guide recruitment of the workers in conjunction with local leaders
- Limit worker's interaction where possible with community members
- Contractor security personnel should discourage the use of force among the workers and community members unless for defensive purposes

- **Gender based violence and gender inequalities**

Gender-Based violence refers to harmful acts directed at an individual based on their gender. It is rooted in gender inequality, the abuse of power and harmful norms. Gender-based violence (GBV) is a serious violation of human rights and a life-threatening health and protection issue. Development projects are not isolated from traditions, culture, norms, customary laws and governmental policies that exist in the country and the community. If not addressed properly, commercial development projects can implicitly legitimize and reinforce harmful gender norms.

Gender inequalities may occur during project construction phase when the Contractor fails to comply with the following provisions; gender inclusivity requirements in hiring of workers and entire project management

as required by the Gender Policy of 2011 and gender rule, failure to protect Human Risk Areas Associated with Disadvantaged Groups, interfering with Participation Rights, and interfering with Labor Rights. Women face greater economic vulnerability as their labor participation is often highly informal, without social protection. Low-income women and women migrant workers are especially vulnerable.

Proposed Mitigation measures

- The contractor will mainstream Gender Inclusivity in hiring of workers and entire Project Management as required by the Gender Policy of 2011 and Gender Rule
- The existing community structures headed by local area administration such as chiefs should be involved in local labor hire, emphasize the requirement of hiring women, youth and people with disability
- Protecting Human Risk Areas Associated with Disadvantaged Groups, interfering with Participation Rights and interfering with Labor Rights to include promotion of rights, including gender equality and equity
- Ensure safe employment for women, including training for all staff on sex-disaggregated latrines, regular consultation with female employees and other measures to ensure physical safety and dignity of female employees
- GBV constitutes acts of gross misconduct and are therefore grounds for sanctions, penalties and/or termination of employment. All forms of GBV including grooming are unacceptable in the work site, the work site surroundings, or at worker's camps (if any). Prosecution of those who commit to be pursued
- Treat women and children (persons under the age of 18) with respect regardless of race, color, language, religion, political or other opinion, national, ethnic or social origin, property, disability, birth or other status. Do not use language or behavior towards women or children that is inappropriate, harassing, abusive, sexually provocative, demeaning or culturally inappropriate
- Sexual activity with children under 18-including through digital media is prohibited. Mistaken belief regarding the age of a child and consent from the child is not a defense
- Exchange of money, employment, goods, or services for sex, including sexual favors or other forms of humiliating, degrading or exploitative behavior is prohibited
- Sexual interactions between contractor's and consultant's employees at any level and member of the communities surrounding the workplace that are not agreed to with full consent by all parties involved in the sexual act are prohibited. This includes relationships involving the withholding, promise of actual

provision of benefit (monetary or non-monetary) to community members in exchange for sex, such sexual activity is considered "non-consensual" and should not be allowed

- Where an employee develops concerns or suspicions regarding acts of GBV by a fellow worker, whether in the same contracting firm or not, he or she must report such concerns in accordance with Standard Reporting Procedures
- All employees are required to attend an induction-training course prior to commencing work on site to ensure they are familiar with the GBV Code of Conduct
- All employees must attend a mandatory training course once a month for the duration of the contract starting from the first induction training prior to commencement of work to reinforce the understanding of the institutional GBV Code of Conduct.

- **Child employment (child abuse) and other Labor Related Impacts**

The proposed project will have employment opportunities for the locals within the area especially for non-skilled labor. The project area hosts populations living below poverty line, coupled by high illiteracy levels, these vulnerability conditions can lead to employment of the minors who may disguise as adults.

This social impact is prevalent due to the fact that project construction phase attracts various categories of workers from local, national and international markets. This therefore leads to concentration of people in one area drawn from diverse social and cultural backgrounds often resulting to a number of issues such as; strain on various resources especially water resources, electricity and roads. grievances from local community members over job opportunities, sexual exploitation and abuse (SEA) and unwanted pregnancies.

Proposed Mitigation Measures

- The Contractor will ensure effective community engagement and strong grievance mechanisms on matters related to labor with a discrete mechanism for safely and confidentially reporting issues sexual exploitation and abuse and GBV at the community level triggered by the project
- Effective contractual obligations for the contractor to adhere to the mitigation of risks against labor influx, the contractor should engage a local community liaison person in employment issues
- The contractor will ensure proper records of labor force on site while avoiding child and forced labor
- The Contractor will ensure compliance with provisions of the Work Place Injuries and Benefits Act (WIBA) 2007
- The Contractor will develop and implement a Child Protection Strategy; this strategy will ensure that no person under the legal age of 18 years is employed in the project

- The contractors will develop training and sensitization of workers on Sexual Exploitation and Abuse and ensure specific signage on zero tolerance in all work sites
- The contractor will ensure signage on SEA-related rights and safe and confidential reporting mechanisms at the community level
- The contractor shall comply with the International Labor Organization Standards ratified in Kenya which include but not limited to: Prohibition of forced labor (ILO No 29) and Abolition of forced labor (ILO No 159)
- The contractor shall comply with the Kenya's persons with disabilities PWDs Act. The contractor will make reasonable accommodations for qualified individuals with known disabilities. This policy governs all aspects of employment, including selection, job assignment, compensation, discipline, termination and access to benefits and training
- It is the contractor's responsibility to provide all employees with a workplace free of harassment, intimidation, coercion and retaliation as provided by Kenya's Employment Act Cap 226 of 2007
- Any employee(s) who witness or believe they have been subject to discrimination, harassment, retaliation is encouraged to notify their supervisor

- **Drug & substance abuse**

The proposed project involves the influx of people from various areas. With huge population in one place, drug and substance abuse is a factor. This may also occur during operation of the waste management site since workers may indulge in drug and substance abuse.

Proposed Mitigation Measures

- The project contractor and the proponent should create awareness among the site workers on the impacts of drug abuse
- The project contractor should discourage the use and abuse of drugs among the workers and the community members
- The contractor should formulate a policy that discourages entrance with drugs on site

- **Impacts on Traffic and Site accessibility**

The operations of the proposed project are likely impact on the traffic in the area through the access road to the site from the Main Highway. The proposed project will come along with increased (vehicle) traffic especially during construction phase.

Proposed Mitigation Measures

- The trucks carrying construction materials will be advised to access the site at intervals to reduce traffic congestion along the access road
- Develop and implement a traffic management plan
- Control entry and exit of vehicles to and from construction site
- Comply with the provisions of Traffic (amendment) Act, 2022
- Ensure that all the vehicles accessing the facility are parked within the premises

7.4 Impacts during Operation Phase

7.4.1 Negative Impacts

- **Impacts on Occupational Health and Safety at Workplace**

There are potential safety and health risks associated with operations of the facility. These include dermal contact with waste oil and inhalation of vapors during handling of such products, accidental falls, musculoskeletal injuries and general exhaustion. All these risks have potential to cause injuries, permanent disability or even death and hence the facility management should be committed to ensuring safety and health of workers and visitors to the facility.

Proposed Mitigation Measures

- All employees to be provided with the appropriate Personal Protective Equipment and Clothing (PPE & C) and enforce their use
- Warning & Safety signage to be displayed at strategic areas within the facility
- Restrict access to the facility by the unauthorized people/persons
- Develop and implement a safety and health policy, and emergency response plan for the facility
- Sensitize employees to adhere to work procedures to minimize accidents
- Conduct first aid training among the workers and provide well-stocked first aid kit

- Provide and keep an accident/incident register occurring on the facility including near misses and actions taken to prevent future occurrences
- Conduct annual occupational safety and health audits and other statutory safety audits
- Comply with the provisions of the Occupational Safety and Health Act, 2007 during facility operations

- **Waste oil leaks and spills**

There is potential of oil spills especially during offloading, and transfer of waste oil into the storage tanks and into the interceptor. Oil/ lubricant leakages may result from the delivery tankers. These products contain detrimental elements which should not be exposed to the environment since they contain traces of heavy metals such as lead, sulphur and mercury among others and would thus contaminate ground water and soil.

Proposed Mitigation Measures

- Pave the loading and offloading area with an impervious material to prevent any spills from contaminating ground water and soil
- Construct a bund wall around the storage tanks, loading and offloading area to prevent accidental oil leaks and spills from flowing to other areas
- Ensure that adequate spill containment is provided at all times in case of severe leakage of oils. The containment should be of at least 20% the capacity of the storage tanks
- Regularly empty sludge tanks and maintain the oil interceptor in good working condition
- Conduct regular tests on the waste oil tanks to curb possible tank failure
- Ensure compliance with the Technical Guidelines on the Management of Used Oil and oil Sludge in
- Kenya, 2016 during facility operations

- **Used oil/sludge management**

Oil sludge is the viscous, non-flowing, semi-solid material which is generated as a result of long storage of oils. The sludge is hazardous and thus special attention and utmost care in handling and disposal should be accorded. Sludge will be generated from the oil water interceptor and cleaning of the storage tanks.

- The sludge should be managed through incineration in in accordance with the provisions of the Environmental Management and Coordination (Waste Management) Regulations, 2024
- Ensure compliance with the Technical Guidelines on the Management of Used Oil and oil Sludge in Kenya, 2016 during facility operations.

- **Fire risks management and associated emergencies**

The proposed project will handle waste oil that contains hydrocarbons which are volatile and their vapors in specific concentrations are flammable. If precautions are not taken to prevent their ignition, fire and subsequent safety risks may arise. Vapors may be ignited rapidly when exposed to heat, spark, open flame or other source of ignition. When mixed with air and exposed to an ignition source, flammable vapors can burn in the open or explode in confined spaces. Fire occurrence may lead to death, financial losses and loss of livelihoods for the workers and neighbors.

Proposed Mitigation Measures

- Provide firefighting equipment within the facility
- Firefighting equipment should be serviced regularly by fire service providers to be contracted
- Train employees on the use of fire-fighting equipment
- Develop and implement a fire and emergency response plan
- Provide informative fire safety and warning signage within the facility
- Enforce a 'no smoking' rule within the facility
- Conduct fire drills and fire safety audits annually

- **Impact on air quality (air & noise pollution)**

Waste oil storage facilities can be a potential source of air pollution. The main sources of emissions to air include evaporative losses of volatile organic compounds (VOCs) of waste oil from storage, particularly during bulk deliveries. Other sources include exhaust fumes from the waste oil delivery tankers. On the other hand, noise pollution will emanate from vehicular movement in and out of the facility. However, the background noise within the area is in conformity with ethe existing environment being along the Mombasa-Nairobi Highway.

Proposed Mitigation Measures

- Provision of appropriate and adequate PPE to all workers within the site and enforce on their use
- Sensitize the drivers to avoid unnecessary hooting and running of vehicle engines
- Conduct air quality monitoring in collaboration with a NEMA designated laboratory in compliance with air quality regulations, 2024
  Ensure compliance with the provisions of the Environmental Management and Coordination (Air Quality) Regulations, 2024 and (Noise and Excessive Vibration Pollution) (Control) Regulations, 2009 during facility operations

- **Impact on water quality (effluent generation & management)**

During operations of the facility, water will be required for sanitation and drinking purposes and will be supplied by contracted water suppliers and stored within the facility in the water storage tank. Effluent from sanitation facilities will be managed through onsite septic tank. Additionally, wastewater will be generated at the interceptor during the separation process of the sludge.

Proposed Mitigation Measures

- Monitor the quality of the domestic effluent and the discharge from the oil/water interceptor to ascertain conformity to the standards stipulated in the Environmental Management and Coordination (Water Quality) Regulations, 2024
- Apply for and obtain an Effluent Discharge License (EDL) for onsite septic tank from the Authority (NEMA)
- Ensure compliance with the provisions of the Environmental Management and Coordination (Water Quality) Regulations, 2024
- Create awareness among the staff on water conservation mechanisms

- **Impact on solid waste generation and management**

The facility will generate different types of solid wastes i.e., from the office comprising of mainly paper from administrative activities, glass and plastics for office supplies. The facility will also produce hazardous wastes from used oil operations including waste oil rags, used seals and packaging materials. Poor disposal of solid waste degrades environmental quality.

Proposed Mitigation Measures

- Provide adequate solid waste collection bins with a capacity for segregation within the facility

- Sensitize workers on the process of solid waste collection, segregation and proper disposal
- Procure a sizeable central solid waste collection bin with chambers to accommodate separated waste
- Contract a NEMA licensed waste handler to dispose off wastes in compliance with Environmental Management and Coordination (Waste Management) Regulations, 2024
- Contract a NEMA licensed waste handler for collection and disposal of wastes from the facility
- Ensure compliance with Environmental Management and Coordination (Waste Management) Regulations, 2024; Legal Notice 178/2024 during wastes handling at the facility

- **Energy demand**

The facility will use energy resources from the environment such as electricity and fuel. Electrical energy will be used for lighting the offices, operation of electronic equipment and other daily operations. The primary energy source will be the National Grid.

Proposed Mitigation Measures

- Sensitize workers to switch off lights when not in use and ensure energy conservation methods within the facility
- Ensure use of renewable energy sources such as solar energy
- Ensure regular servicing and maintenance of electrical appliances at the facility

- **Impacts on Traffic and Site accessibility**

The operations of the proposed waste oil/sludge are likely to impact on the traffic in the area since thr project site is situated along the Mombasa-Nairobi Highway. This will be as a result of trucks visiting the facility in delivering the waste oil/sludge.

Proposed Mitigation Measures

- The trucks carrying used oil/sludge will be advised to access the site at intervals to reduce traffic congestion along the access road
- The operations of the facility will be on contractual basis hence reducing the potential impacts of heavy traffic
- Develop and implement a traffic management plan
- Control entry and exit of vehicles to and from the facility
- Comply with the provisions of Traffic (amendment) Act, 2022

- **Impacts on Heritage, Cultural and Historical Values**

The site for the proposed project does not possess any cultural and heritage sites. Therefore, the proposed protect will not have any impact on the cultural and heritage values of the community.

7.5 Decommissioning Phase

Decommissioning is an important phase in the project cycle and comes last to wind up the operational activities of a particular project. It refers to the final disposal of the project and associated materials at the expiry of the project lifespan. If such a stage is reached, the proponent needs to remove all materials resulting from the demolition/ decommissioning from the site and the proponent is also required to prepare a decommissioning management plan that will guide the decommissioning process and seek approvals/ permits from all the relevant government agencies.

- **Occupational health and safety impacts**

Safety and health risks are likely to emanate from accidental falls and cuts and injuries from machinery use. Noise and air pollution from decommissioning activities may also pose safety and health and safety risks to workers, neighbors and visitors to the facility

Proposed Mitigation Measures

- Ensure that the process of demolition is supervised by competent personnel
- Seek the services of a licensed construction company to carry out demolitions
- Ensure the protection of infrastructural facilities within the site during the decommissioning phase such as water facilities
- Provision adequate and appropriate PPE's and Clothing and enforce on their use for people involved
- Seek demolition permit from the relevant authorities

- Ensure compliance with the Occupational Safety and Health Act, 2007

- **Waste generation and management**

Demolition activities will result in generation of waste including building rubbles, oil sludge and effluent among others. If not properly managed, these generated waste will pose safety and health risks and environmental pollution

Proposed Mitigation Measures

- Ensure compliance with the Environmental Management and Coordination (Waste Management) Regulations, 2024; Legal Notice 178/2024 in disposing demolition wastes
- Contract a NEMA licensed waste handler to dispose waste generated from the demolition activities in compliance with Environmental Management and Coordination (Waste Management) Regulations, 2024; Legal Notice 178/2024
- Waste recovery should be encouraged, reusable and recyclable components from the facility should be conserved for secondary use

- **Socio-economic impacts**

Proposed Mitigation Measures

- Inform and train employees on alternative livelihoods prior to decommissioning of the project
- Prepare and issue recommendation letters to the workers to seek alternative employment opportunities elsewhere
- Ensure compliance with labor laws and other statutory regulations in decommissioning phase
- Economic decline within the project area, look for an alternative site to set up the facility and realize the associated economic benefits

CHAPTER 8: ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN (ESMP)

8.1 Introduction

The objectives of the Environmental and Social Management Plan are:

- To guide the project implementers in project planning,
- To guide the Project implementers on the likely impacts of the project and when they are likely to occur
- To give an assessment of the capacity requirements for the implementation of the ESMP
- To guide the project implementers to allocate adequate resources for the implementation of the mitigating measures

8.2 ESMP Outline

The table below outlines the environmental and social management plans for the proposed project cycle. The plan considers the following;

- Predicted/anticipated environmental impact
- Proposed mitigation measures
- Responsible party / parties
- Timeframe
- Estimated costs

The ESMP for the proposed project will cover all the project cylce or phases. The project phases comprises of construction phase, operation phase and decommissiong phase.

8.3 ESMP for Proposed Waste Oil/Sludge Handling Facility

8.3.1 Construction Phase

Anticipated Impacts/environmental aspect	Recommended Mitigation Measures	Responsible Party	Estimated Cost (Ksh)
Occupational Health and Safety Hazards at Workplace	– Provide all employees with appropriate and adequate Personal Protective Equipment and Clothing (PPE's & C). These include working safety boots, overalls, helmets, goggles, earmuffs, respirators/masks and gloves. – Warning & Safety signage will be placed at the strategic areas within the facility – Provide employees with correct equipment tools and for the jobs assigned and train on their use – Provide first aid services and emergency services kit at the project site. This should be fully equipped at all times and should be managed by qualified person. – Register the site as a workplace with the Directorate of Occupational Safety and Health Services – Ensure moving parts of machines and sharp surfaces are securely protected while on site – Regulate the entry of visitors to the construction site by deploying adequate security measures – The proponent should have workmen's compensation cover (WIBA). It should comply with workmen's compensation	Project Manager/Contractor	50,000.00

Anticipated Impacts/environmental aspect	Recommended Mitigation Measures	Responsible Party	Estimated Cost (Ksh)
Excavation and loss of top soil (Land degradation)	– Maximizing the re-use of excavated materials to ensure that no permanent spoil dumps are created – Properly disposing off the excavated soil in designated areas approved by NEMA in compliance with the Environmental Management and Co-ordination (Waste Management) Regulations, 2024; Legal Notice 178/2024 – Ensure compliance with the Environmental Management and Co-ordination (Waste Management) Regulations, 2024; Legal Notice 178/2024	Site Manager/proponent	20,000.00
Physical disturbance of the project area	– The proponent should ensure that there is minimal disturbance to the topography of the area – The excavation and lanscaping design shall not interfere with local drainage or change the topography or introduce physical changes that are not in harmony with the physical setting of the project area – The project components and associated structures should be aesthetically acceptable to blend in with the surroundings – The proponent shall as much as possible complete the works in such a way that natural aesthetics shall be retained at the locations – Restoration shall be undertaken to ensure that the original setting is as much as possible retained	Proponent/contractor	10,000
Noise and excessive vibrations	– Provision of appropriate Personnel Protective Equipment (PPE) to protect the empoyees from noise and vibrations effects – Construct mainly during the day (8am-5pm) – Consider labour based construction methodologies	Proponent/contractor	50,000

Anticipated Impacts/environmental aspect	Recommended Mitigation Measures	Responsible Party	Estimated Cost (Ksh)
	– Sensitize truck drivers to avoid unnecessary hooting and running of vehicle engines – Ensure compliance with provisions of Environmental Management and Coordination (Noise and Excessive Vibrations Pollution) (Control) Regulations, 2009		
Dust Emissions (Air pollution)	– Minimizing the number of motorized vehicles on use – Rehabilitate disturbed areas – Wet all active construction areas as and when necessary to reduce dust. – Dry materials should be kept dump or covered at all time – Install gadgets to intercept the particulate matter as well as controlling gaseous emissions.	Proponent/contractor	20,000.00
Increased waste generation	– Setting up waste collection and segregation area strategically within the facility for collection and sorting of solid wastes before disposal. – Construction waste should be recycled or reused as much as possible to ensure that materials that would otherwise be disposed as waste are diverted for productive uses – The Proponent shall put in place measures to ensure that construction materials requirements are carefully budgeted and to ensure that the amount of construction materials left on site after construction is kept minimal	Proponent and site supervisor	30,000.00

Anticipated Impacts/environmental aspect	Recommended Mitigation Measures	Responsible Party	Estimated Cost (Ksh)
Increased Water demand	– The proponent through the contractor shall ensure that water is used efficiently at the site by sensitizing construction staff to avoid irresponsible water use – Any water handling equipment, facility and systems shall be appropriate for the intended usage. Water used on the construction shall reflect the level of conservation achieved by the contractors. – Documentation of amounts of water used will be helpful in minimizing wastage – Ensure compliance with the Environmental Management and Co-ordination (Water Quality) Regulations, 2024; Legal Notice 177/2024.	Proponent/contractor	30,000.00

Anticipated Impacts/environmental aspect	Recommended Mitigation Measures	Responsible Party	Estimated Cost (Ksh)
Loss of Heritage, Cultural and Historical values	– Prevention and restoration of cultural and heritage values of the community in the proposed project site – The site for the proposed project does not possess any cultural and heritage sites	Proponent/contractor	Nil
High Prevalence of Infectious and Communicable diseases	– Education and sensitization of workers and the local communities on STIs and other communicable diseases – The contractor has to institute HIV/AIDS awareness and prevention campaign amongst workers for the duration of the contract e.g. erect and maintain HIV/AIDS information posters at strategic locations within the facility. – The contractor has to ensure that staff are made aware of the risks of contracting or spreading sexually transmitted diseases – The contractor should ensure that the project workers are sensitized on the local culture	Contractor/proponent	10,000.00
The community conflicts	– Make sure all stakeholders and the local population is comfortable with project implementation. – Comprehensive public consultation was conducted with the local community and leadership to create awareness among the locals	Proponent/ESIA experts	50,000

8.3.2 Operation phase

Anticipated Impacts/environmental aspect	Recommended Mitigation Measures	Responsible Party	Estimated Cost (Ksh)
Occupational Health and Safety	– Develop and implement a safety and health policy, and emergency response plan for the facility – All employees to be provided with the appropriate Personal Protective Equipment and Clothing (PPE & C) and enforce their use – Sensitize employees to adhere to work procedures to minimize accidents – Warning & Safety signage to be displayed at strategic areas within the facility – Restrict access to the site by the unauthorized people/persons – Register the site as a workplace with the Directorate of Occupational Safety and Health Services – Sensitize employees to adhere to work procedures to minimize accidents – Conduct first aid training among the workers and provide well-stocked first aid kit – Provide and keep an accident/incident register occurring on the facility including near misses and actions taken to prevent future occurrences – Conduct annual occupational safety and health audits – Comply with the provisions of the Occupational Safety and Health Act, 2007	The Proponent/Health and Safety advisor	80,000.00
Waste oil leaks and spills	– Pave the loading and offloading area with an impervious material to prevent any spills from contaminating ground water and soil – Construct a bund wall around the storage tanks, and loading and offloading area to prevent accidental oil leaks and spills from flowing to other areas – Ensure that adequate spill containment is provided at all times in case of severe leakage of oils at the facility	The proponent	50,000

Anticipated Impacts/environmental aspect	Recommended Mitigation Measures	Responsible Party	Estimated Cost (Ksh)
	– Regularly wash/desludge and maintain the oil interceptor in good working condition – Conduct regular tests on the waste oil storage tanks to curb potential tank leakages – Ensure comply with the Technical Guidelines on the Management of Used Oil and oil Sludge in Kenya, 2016 during facility operations		
Management of sludge/waste oil at the facility	– The sludge resulting operations of the facility should be managed through incineration in compliance with accordance with the Environmental Management and Co-ordination (Waste Management) Regulations, 2024; Legal Notice 178/2024 – Ensure comply with the Technical Guidelines on the Management of Used Oil and oil Sludge in Kenya, 2016 during facility operations	The proponent	50,000.00
Fire risks emergencies and management	– Procure and provide adequate firefighting equipment and place them strategically within the facility – Firefighting equipment should be serviced regularly by fire service providers – Develop and implement a fire and emergency response plan – Train employees on the use of fire-fighting equipment – Develop and implement a fire and emergency response plan – Provide informative fire safety and warning signage within the facility – Enforce a 'no smoking' rule within the facility – Undertake fire safety audit (FSA) for the facility in compliance with OSHA 2007	The proponent	60,000.00
Impacts on Air Quality and noise at the facility	– Provide appropriate and adequate PPE to all workers within the facility and enforce on their use – Sensitize the drivers to avoid unnecessary hooting and running of vehicle engines around the facility area	The proponent/site supervisor	100,000.00

Anticipated Impacts/environmental aspect	Recommended Mitigation Measures	Responsible Party	Estimated Cost (Ksh)
	– Conduct air quality monitoring in collaboration with a NEMA designated laboratories – Ensure compliance with the Environmental Management and Co-ordination (Air Quality) Regulations, 2024; Legal Notice 180/2024 during facility operations		
Impacts on solid waste generation & management	– Provide adequate solid waste collection bins with a capacity for segregation within the facility – Sensitize workers on the process of solid waste collection, segregation and proper disposal – Procure a sizeable central solid waste collection bin with chambers to accommodate separated waste – Contract a NEMA licensed waste handler to dispose solid waste from the facility – Ensure compliance with the Environmental Management and Co-ordination (Waste Management) Regulations, 2024; Legal Notice 178/2024	Proponent	60,000
Water quality and effluent management	– Create awareness among the staff on water conservation mechanisms within the facility – Monitor the quality of the domestic effluent and the discharge from the oil/water interceptor to ascertain conformity to the standards stipulated under the Environmental Management and Coordination (Water Quality) Regulations, 2024 – Apply for and obtain an Effluent Discharge License (EDL) from NEMA during facility operations – Ensure compliance with Environmental Management and Coordination (Water Quality) Regulations, 2024	Proponent/NEMA Accredited laboratories	100,000.00

Anticipated Impacts/environmental aspect	Recommended Mitigation Measures	Responsible Party	Estimated Cost (Ksh)
Traffic management & facility accessibility	– The trucks carrying used oil will be advised to access the site at intervals to reduce traffic congestion along the access road – The operations of the site will be on contractual basis hence reducing the potential impacts of heavy traffic – Develop and implement a traffic management plan – Control entry and exit of vehicles to and from the facility – Ensure compliance with the provisions of Traffic (amendment)Act, 2022	Proponent	10,000
Increased energy demand	– Sensitize workers to switch off lights when not in use – Ensure regular servicing and maintenance of electrical appliances – Use of renewable energy sources such as solar energy	Proponent	10,000

Anticipated Impacts/environmental aspect	Recommended Mitigation Measures	Responsible Party	Estimated Cost (Ksh)
Heritage, Cultural and Historical values	– Prevention and restoration of cultural and heritage values of the community in the proposed project site – The site for the proposed project does not possess any cultural and heritage sites – The project should be in harmony with the cultural and social aspect of the community	Proponent	Nil
Prevalence of Infectious and Communicable diseases	– Education and sensitization of workers and the local communities on STIs and other communicable diseases – The contractor has to institute HIV/AIDS awareness and prevention campaign amongst workers for the duration of the contract e.g. erect and maintain HIV/AIDS information posters at strategic locations within the site. – The proponent has to ensure that staff are made aware of the risks of contracting or spreading sexually transmitted diseases	Proponent	10,000
The community involment	– Make sure all stakeholders and the local population is comfortable with project implementation. – Provision of employment opportunities to the local community during operations	Proponent	Nil

8.3.3 Decommissioning phase

Anticipated Impacts/environmental aspect	Recommended Mitigation Measures	Responsible Party	Estimated Cost (Ksh)
Occupational Health and Safety	– The process of demolition should be supervised by competent personnel – Seek the services of a licensed construction company to carry out demolitions – Ensure the protection of infrastructural facilities within the site during the decommissioning phase such as water facility – Provision adequate and appropriate PPE's and Clothing and enforce on their use for people involved – Seek demolition permit from the relevant authorities – Ensure compliance with the Occupational Safety and Health Act, 2007	Proponent/contractor	80,000.00
Waste generation	– Ensure compliance with the Waste Management Regulations, 2024 in disposing of the demolition wastes – Contract a NEMA licensed waste handler to dispose waste generated from the demolition activities – Waste recovery should be encouraged, reusable and recyclable components from the site should be conserved for secondary use – All recyclable materials should be collected and sent to NEMA licensed recyclers	Proponent/ contractor	60,000
Social and economic concerns	– Train employees on alternative livelihoods prior to decommissioning of the facility – Prepare and issue recommendation letters to the workers to seek alternative employment opportunities elsewhere – Ensure compliance with labor laws and other statutory regulations in decommissioning phase	Proponent	Nil

Anticipated Impacts/environmental aspect	Recommended Mitigation Measures	Responsible Party	Estimated Cost (Ksh)
	– Economic decline within the project area, look for an alternative site to set up the facility and realize the associated economic benefits		
Land degradation	– Ensure environmental rehabilitation and restoration of the project site through planting of indigenous tress – Proper handling of wastes on site to reduce environmental degradation	Proponent	30,000

CHAPTER 9: ENVIRONMENTAL MONITORING PROGRAM

9.1 Overview of monitoring program

Throughout the operation phase, regular monitoring intended for proper safety and protection of the environment will be undertaken. The monitoring system will assist in observation, evaluation, assessment and reporting on the performance of different/various variables with regard to the environment.

Environmental Monitoring Plans is required to ensure full and systematic implementation of the Environmental Management Plan. It entails assessment of environmental performance of the proposed project by documenting, tracking and reporting any changes in environmental parameters in space and time. The objective of the monitoring plans is to enhance the environmental performance of the project by providing data and information on compliance with legislative standards and determining the levels of deviation from the values obtained during the baseline monitoring. This in turn informs the corrective measures if any that need to be implemented to comply with the legislative standards. For the proposed project, the following monitoring plans/parameters will be looked at;

- Occupational safety and health monitoring plan
- Wastewater quality monitoring plan
- Solid waste monitoring plan
- Air quality monitoring plan
- Noise monitoring plan

9.2 Environmental Management System

An environmental management system (EMS) is a comprehensive approach to managing environmental issues, integrating environment-oriented thinking into every aspect of development management. An EMS ensures environmental considerations are a priority with other concerns such as costs, product quality, investments, productivity and strategic planning.

The proposed waste management facility will require that a comprehensive safety, occupational and public health and environmental system be formulated and maintained in accordance with the relevant legislative and regulatory requirements.

9.3 Environmental Institutional Framework

The project proponent will work with EIA/EA experts' team in identifying ways to improve environmental performance of the waste management facility setting objectives and targets, monitoring and evaluating implementation.

9.4 Monitoring schedule

The proponent will follow the monitoring schedule that will assist in observation, evaluation assessment and reporting on the performance of different/various variables. The following table summarizes the suggested monitoring schedule for the proposed Waste Oil (slop oil)/Sludge Handling Facility.

Table 9.1: Summary of monitoring schedule

Description of parameter	Method of monitoring	Monitoring schedule and duration
Compliance by contractor and contractor staff to HSE requirements	Visual inspections against checklists containing requirements	Review daily to determine impact on quality
Public health and safety	Visual inspection and complaints from neighbors/workers Test quality of the environmental parameters such as air quality & water quality through NEMA accredited laboratories	Daily Annually/quarterly assessments

9.5 Waste tracking

In accordance with The Environmental Management and Co-ordination (Waste Management) Regulations, 2024; Legal Notice 178/2024 and the Technical Guidelines on the Management of Used Oil and oil Sludge in Kenya, 2016, the proponent must ensure that tracking documents are in place and that necessary notifications to the authority are done.

CHAPTER 10: CONCLUSIONS & RECOMMENDATIONS

10.1 Conclusion

The proposed project is considered important and beneficial to the economy as it will ensure safe management of sludge/used oil, provide raw materials to used oil recycling facilities promote socio-economic growth of the area through employment creation and revenue generation to the government. Mian concerns that will result from the implementation of the proposed project include waste oil leaks and spillages, oil sludge management, fire risks and management, occupational safety and health risks, air and noise pollution, water demand, waste generation and management and traffic congestion.

The ESIA study proposes a suite of comprehensive Environmental and Social Management and Monitoring Plans to address the anticipated negative impacts during the entire project cycle and improve the environmental performance of the proposed project. It is on this basis that we recommend that the project be allowed to proceed alongside conditions which will ensure compliance with the provisions of the Environmental Management and Coordination Act Cap. 387 of the Laws of Kenya.

10.2 Recommendations

This ESIA report recommends issuance of a license/approval subject to the conditions that NEMA may impose during the decision-making process. The following recommendations should however be considered:

- The project does not pose any serious/irriversable environmental concerns, other than those of a minor scale that accompany similar projects
- The positive impacts of the project outweigh the negative ones, which will be adequately contained by following the prescribed environmental and social impact management plans
- As such, the project could be allowed to commence, and activities be managed within the provided ESMP and sound environmental management practices that are locally and internationally recognized.
- Comply with all pieces of regulations as documented in this report.

REFERENCE

1. Kenya National Bureau of statistics, Kenya Population and Housing Census 2019
2. National Environment Policy, 2013
3. National Energy and Petroleum Policy, 2018
4. National Land Policy, 2009
5. Environmental (Impact Assessment and Audit) (Amendment) Regulations, 2019,
6. Environmental Management and Coordination (Air Quality) Regulations, 2024
7. Environmental Management and Coordination (Noise and Excessive Vibration Pollution) (Control) Regulation, 2009
8. Environmental Management and Coordination (Waste Management) Regulations, 2024
9. Environmental Management and Coordination (Water Quality) Regulations, 2024
10. The Constitution of Kenya, 2010
11. The Occupational Safety and Health Act, 2007
12. The Climate Change Act, 2016
13. Technical Guidelines on the Management of Used Oil and Oil Sludge in Kenya
14. The County Government Act, 2012
15. The Water Act, 2016
16. The Energy Act, 2019
17. National Construction Authority Act, 2014
18. The Physical and Land Use Planning Act, 2019
19. The Public Health Act, 2012
20. Occupiers Liability Act Cap 34

APPENDICES

Appendix 1: Company Certificate of Incorporation

Appendix 2: Copy of KRA PIN certificate

Appendix 3: Copy of land lease agreement

Appendix 4: Public participation minutes

Appendix 5: Approval of TOR

Appendix 6: Bill of Quantities

Appendix 7: Copy of EIA /EA experts' practising licenses