ENVIRONMENTAL IMPACT ASSESSMENT-FULL STUDY FOR THE PROPOSED SPECIAL ECONOMIC ZONE-RIFT VALLEY DEVELOPMENT TRUST TECH CITY

LOCATED AT NAKURU MUNICIPALITY BLOCK 40/2(FORMERLY L.R.NO. 22771/3 IN NAKURU COUNTY

SITE COORDINATES LATITUDE -0.2937812, LONGITUDE 36.012434.

PROPONENT

RIFT VALLEY DEVELOPMENT TRUST

P.O. BOX 7167-20100

NAKURU

SUBMITTED TO DIRECTOR; **NATIONAL ENVIRONMENTAL MANAGEMENT AUTHORITY (NEMA)**

Developed by:

BELEXA DEVELOPMENT CONSULTANTS
KFA Building, First Floor Office 6A
P.O. BOX 14464-20100, Nakuru
TEL: 0725237743
EMAIL: belexaconsultants@gmail.com

CERTIFICATION

ACKNOWLEDGEMENT

The EIA/EA experts take this opportunity to thank the proponent *for* providing this opportunity to conduct this Environmental Impact Assessment-Full Study and develop the project report for the proposed Special Economic Zone- Rift Valley Development Trust Tech City located Nakuru Municipality Block 40/2(Formerly L.R.NO. 22771/3 in Nakuru County. This was done in an endeavor to comply with the legal requirement as stipulated in section 58 of Environmental Management and Co-ordination Act (EMCA) of 1999 (revised 2015) legal notice No.8 and Environmental (Impact Assessment and Audit) Regulations, 2003 Legal Notice No. 101, (Amendment 2019).

Sincere thanks to our clients for availing the necessary documentation and facilitating the site visits to enable the experts to effectively carry out the EIA Full study. We further acknowledge and thank the neighbors and key stakeholders of the site who participated in our public consultation program by attending the baraza meetings and filling the attendance lists.

TABLE OF CONTENTS

ACRONYMS

CBOs	Community Based Organizations
DOSHS	Directorate & Occupation Safety & Health Services
EA	Environmental Audit
EIA	Environmental Impact Assessment
EMCA	Environmental Management and Coordination Act
ESIA	Environmental and Social Impact Assessment
EMPs	Environmental Management Plans
GDP	G ross Domestic Product
GoK	Government of Kenya
ISWMS	Integrated Solid Waste Management System
KESHP	Kenya Environmental Sanitation & Hygiene Policy
KPLC	Kenya Power & Lighting Company
LPG	Liquid Petroleum Gas
MDAs	Ministries, Departments & Agencies
M&E	Monitoring and Evaluation
NBSAP	National Biodiversity Strategy & Action Plan
NCA	National Construction Authority
NEC	National Environment Council
NEMA	National Environmental Management Authority
NGOs	Non-Governmental organizations
ODF	Open Defecation Free
OSHA	Occupation Safety and Health Act
PPE	Personnel Protective Equipment
RVDT	Rift Valley Development Trust
RVDT TC	Rift Valley Development Trust Tech City
SDGs	Sustainable Development Goals
SEP	Stakeholder Engagement Plan
SEZ	Special Economic Zone
SEZ's	Special Economic Zones
Sqm	Square Meter
SWMS	Safe Work Method Statements
UNFCCC	United Nations Framework Convention on Climate Change
UPVC	Unplasticized Polyvinyl Chloride pipes
VAT	Value Added Tax
TOR	Terms of Reference
WASREB	Water Services Regulatory Board
WRA	Water Resources Authority
WWTP	Wastewater Treatment Plant

EXECUTIVE SUMMARY

In pursuant to the Environmental Management and Coordination Act section 58 (1) and the Environmental Impact Assessment and Audit Regulations, 2019 part II, an environmental project study was carried out for the proposed comprehensive development project. The study was carried out in order to determine the anticipated environmental impacts of the proposed project and to identify the necessary mitigation measures in order to incorporate sustainable development aspects in the project cycle. At the same the Authority requires the proponent to initiate an Environmental Impact Assessment full study. Pursuant to the afore-mentioned regulations in October 2025, Terms of Reference (TOR) initiating an Environmental Impact Assessment Full Study were prepared and submitted to NEMA **(NEMA/ENVIS/EIA/TOR/0100)** and approved

The Environment Management and Co-ordination Act (EMCA), 1999 (Amended 2015), is the legislation that governs EIA studies. The second schedule of the Act lists the projects that are supposed to undergo EIA studies in accordance with section 58 (1-4) of the Act. It makes it mandatory for any proponent of a project, to, before financing, commencing, proceeding with, carrying out, executing or conducting or causing to be financed, commenced, proceeded with, carried out, executed or conducted by another person any undertaking specified in the second schedule in the Act, submit a project report to the National Environment Management Authority (NEMA), in the prescribed form, giving the prescribed information.

The primary objective of which this EIA full study report has been prepared is to document the proposed construction of Special Economic Zone -RVDT Tech City project which shall be constructed on Plot L.R No: Nakuru Municipality Block 40/2(Formerly L.R.NO. 22771/3) in Nakuru County. This construction project shares impacts similar to most private special economic zone development projects, and are thus manageable through the proposed EMP that shall be developed commensurate to the assessment of its potential environmental and social impact in this study report. On the other hand, the major objective of the EIA full study was to evaluate the effects/impacts of proposed development in relation to the general environmental aspects i.e., physical, biological, and social economic environments. It aims at influencing the protection and co-existence of the development with the surroundings as well as the compatibility of the proposed development to the area; to ensure and enhance sustainable environmental management during implementation and operational phases.

The study analyzes some of the potential positive and negative environmental impacts and proposes measures to reinforce economic and social benefits as well as mitigating measures for the negative impacts.

The following are some of the potential economic and social benefits (positive impacts) likely to arise as a result of the project:

- Optimal utilization of vacant land
- Increase in land values of surrounding area
- Direct and indirect Employment creation
- Increased government revenue
- Promotion of social cohesion and cultural integration

Core issues identified from review of the various Plans can be summarized into three key broad areas namely; Economic, Environmental and Social to ensure sustainability in the implementation of the Master Plan. The negative impacts of the three areas need to be mitigated to ensure that the cumulative impacts are addressed and the positive impacts enhanced for sustainability. The negative impacts of the three areas to be mitigated are highlighted below;

Social aspects

The significant negative social impacts may occur due to influx of people migrating to the site for economic gains. The new population settling within the site vicinity and those that will be involved directly or indirectly with the Rift Valley Development Trust Tech City SEZ Master Plan implementation activities may result in gender violence, prostitution, creation of vulnerable groups such as urchins among others from unplanned settlements and casual business e.g., slums and filthy alcoholic drinking dens and eateries.

The proponent is aware of such possible occurrences that have happened in many new sites being developed within the country. They have put in place planned development criteria in liaison with the local and national government to curb unwarranted negative social impacts to realize;

- Reduced gender-based violence; prostitution and family break ups
- Reduce drug and substance abuse
- Support vulnerable groups
- Training for sustainable development
- Safe work environment

- Cohesive society
- Safe communities

Environmental aspects

The significant negative Environmental impacts will be from infrastructural development, operations of enterprises investing in the zone. The development has initiatives to address the likeliness of depletion of natural resources; interference with adequate availability of water quality and access; pollution of ambient air, water and land including loss of biodiversity. Rift Valley Development Trust Tech City Master Plan has an environmental management and monitoring plan to mitigate significant negative environmental impacts focusing on;

- Sustainable management of natural resources
- Improve water quality and access
- Ensure climate resilient development
- Conserve wetlands
- Sustainable exploitation of natural resources
- Ensure green buildings
- Improve air quality
- Promote clean, sustainable, affordable energy at least cost
- Minimization of waste
- Reduce climate change and its effects
- To maintain and enhance biodiversity/ flora and fauna

Economic aspects

Negative aspects emanating from economic activities during the project implementation may be due to unfair employment opportunities, lack of sustained economic growth, discrimination of indigenous investment and lack of economic diversification. The proponent investment program is anchored on good investment practices that mitigate its investment program against negative social impacts.

The RVTTS Master Plan encourages;

- Sustained economic growth
- Sustainable livelihoods

- Indigenous investment
- Economic diversification
- Equitable and satisfying employment

To avoid, reduce, and/or minimize for potential significant, negative environmental and social impacts, mitigation measures were proposed and environmental and social management plan (ESMP) formulated. Recommendations were proposed to carry out annual environmental audits and follow ups once the project is in operation. However, a monitoring program was also developed to not only track down occurrence of impacts, but also to check on compliance requirements. Outlined below is a summary of impacts and mitigation measures;

Impact	**Mitigation Measures**
Air/Dust Pollution	✓ Ensure strict enforcement of on-site speed limit regulations ✓ Avoid excavation works in extremely dry weathers if and where possible ✓ Sprinkle water on graded access routes whenever necessary to reduce dust generation by construction vehicles ✓ Enclosing the structures under construction with dust proof nets. ✓ Using efficient machines with low emission technologies for the ones that burn fossil fuels. ✓ Regular maintenance and services of machines and engines. ✓ Use of clean fuels e.g. unleaded and low Sulphur fuels. ✓ Educate and raise awareness of construction workers on emission reduction techniques
Ecological imbalance due to loss of agricultural land and destruction of natural habitats for the local flora and fauna	✓ Maintain the proposed green spaces as per the Master Plan ✓ Where clearance of native vegetation is inevitable, consider introducing such natives in landscaped and other green spaces to compensate for the loss ✓ Protection of the riparian environment and establishment of a riparian reserve management plan ✓ Ensure all projects comply with the Environmental Management and Co-ordination (Conservation of Biological Diversity and Resources, and Access to Genetic Resources and Benefits Sharing) Regulations, 2006
Generation of Solid Waste	Following EMCA regulations on Waste Management, Legal Notice 121 including: ✓ Using waste minimization techniques such as buying required quantities in bulk. ✓ Identifying all sources of wastes, and ensuring wastes are handled by licensed personnel ✓ Making available suitable facilities for the collection, segregation and safe disposal of the wastes. ✓ All construction materials left over at the end of construction should be used in other

	projects or sold ✓ Ensure proper handling and storage of construction materials to reduce damage ✓ Accurately estimate the sizes and quantities of materials required to reduce amounts left ✓ Excavated upgrading waste should be re-used or backfilled
Occupational Health and Safety Risks	✓ Provide all workers with the necessary protective gears ✓ Ensure all workers are in protective gears all the time when on site ✓ Place fire extinguishers in strategic areas within the deport ✓ Designate and mark smoking areas ✓ Workers to be trained as fire marshals ✓ Fire escape routes to be shown clearly ✓ Provide enough first aid kits within the project site ✓ Train workers in administering first aid ✓ Ensuring all potential hazards like movable machine parts are labelled. ✓ Raising awareness and educating workers on risks from equipment and ensuring they receive adequate training on the use of the equipment. ✓ Placing visible and readable signs around where there are risks. ✓ Ensuring there is security in and around the site to control the movement of people. ✓ Providing safe and secure storage for equipment & materials in the site. ✓ Placing visible and readable signs to control the movement of vehicles and notify motorists and pedestrians around the, and workers in the site
Noise Pollution	Complying with the EMCA noise regulation Legal Notice 61 including: ✓ Observe normal working hours during noisy construction works (00800 to 1700) hours ✓ Ensure that all generators and heavy-duty equipment are insulated or placed in enclosures ✓ Sensitize drivers to avoid unnecessary gunning of vehicle engines ✓ Regular servicing of engines &other machines shall be adhered to ✓ Site workers to wear ear muffs if working in noisy
Working at High Heights	✓ Use construction barrier tape to isolate and guard site visitors from accidents & injuries; ✓ Implement a fall protection program that includes training in climbing techniques and use of fall protection measures, ✓ Use of helmets and other PPEs to mitigate against injuries ✓ Providing First Aid facilities at site
Change in Soil Characteristics	✓ Sprinkling water on the soil to prevent dust from rising. ✓ Creating specific paths for the trucks ✓ Ensuring there is enough space for normal percolation of water. ✓ Preventing pollution from construction wastes by having specific sites for collection, sorting and transport of wastes. ✓ Proper installation and configuration of drainage structures to ensure their efficiency. ✓ Installing cascades to break the impact of water flowing into the drains.

	✓ Controlling the earthworks and ensuring the management of excavation activities. ✓ Compacting areas with loose soil. Landscaping. ✓ Providing soil erosion control structures on the steeper areas of the site & controlling activities during the rainy season
Increased demand on water sources	✓ Ensure implementation of Integrated Water Resources Management (IWRM) including promoting recycling and reuse of water as much as possible ✓ Adopt green building water use technologies such as low volume water fixtures in proposed development and projects ✓ Development of storm water management plan with design strategies for storm water treatment and filtration systems. Such would entail use of recycled and harvested storm water in cleaning and Landscaping ✓ Incorporate water accounting systems and metering for all areas ✓ Limited abstraction of river water and instead use of alternative sources of water such as roof catchment rain water harvesting and harvesting of flood waters ✓ Pre-treatment of all effluent before discharge into environment ✓ Undertake a hydrogeological study in collaboration with WRA to determine the sustainable ground water abstraction levels
Increased energy consumption	✓ Institution awareness programmes to conserve energy ✓ Energy conservation through installation/use of energy efficient appliances / fittings ✓ Adoption of green energy sources e.g. solar energy, waste to energy projects ✓ Use of green building designs that allow for passive heating and cooling, and maximum utilization of natural light in buildings ✓ Continually seek avenues for energy conservation as international best practices evolve ✓ Carry out Energy Audits and ensure all projects comply with The Energy Act 2019 and subsidiary legislation under the Energy A
Population Influx	✓ Workers to be issued with jobs cards to monitor their movements in the site area ✓ Only authorized personnel should be allowed entrance to the site ✓ Presence of a work registry book where workers sign in and out ✓ Educating the workers on proper sanitation methods Sensitizing the worker on HIV/AIDS ✓ Making available suitable facilities for the collection, segregation and safe disposal of the wastes. ✓ Ensuring all waste is dumped in their designated areas and legally acceptable methods
Increased Traffic	✓ Placing signs around the site notifying other vehicles about the heavy traffic and to set the speed limit around the site. ✓ Ensuring all drivers for the project comply to speed regulations. ✓ Making sure the construction doesn't occupy the road reserves and complying with traffic and land demarcation obligations. ✓ Ensuring all vehicles used for the project are in good working condition both legally and commensurate to their intended use. ✓ Provision of adequate vehicular circulation space and parking areas

	✓ Adoption of non-motorized transport (NMT) program and facilities including cycling, walking, use of wheelchairs, scooters, hand carts, skates, skateboards amongst others. ✓ Provision of pedestrian walkways along all roads within the development ✓ Paving all pedestrian walk ways with robust, durable, and non-slippery materials ✓ Provision of all necessary street furniture along all roads within the development to accommodate users (including the disabled, elderly, and children) and to enhance security. ✓ Provision of bollards in appropriate areas to prevent vehicles from encroaching into the pedestrian domains. ✓ Provision of street lights to provide sufficient light for both pedestrian areas and carriage ways. ✓ Provision of trees along pedestrian walkways for shading and that require minimum maintenance; preferably indigenous
Fire Hazards and Accident	✓ Keep well stocked and functional first aid box Ensure proper storage of inflammables at the site. ✓ Maintain fire-fighting equipment and ensure that they are regularly inspected ✓ Create awareness among residents on proper safety measures
Surface Run-Off and Waste Water Disposal	✓ Landscaping to ensure there are areas where water will percolate underground. ✓ Constructing proper drains and monitoring them to ensure there are no blockages
Increase in Value and Land Use Changes	✓ Complying to zoning bylaws ✓ Collaborating with public and planning officials on current and future developments ✓ Aligning the project's objectives with those of National and County Development Policies
Greenhouse Gases Emissions	✓ Use of renewable sources of energy ✓ Retention of green spaces/landscaped spaces as carbon sinks ✓ Adoption of green buildings technology ✓ Continually seek avenues for energy conservation as international best practices evolve ✓ Annual air quality monitoring ✓ Ensure compliance of The Environmental Management and Coordination (Air Quality) Regulations, 201
Socio-cultural Impacts	✓ Integrating Equal Opportunity Principles in human resource policies. ✓ Maximize the recruitment of locals where possible and have a Labour Management Plan to ensure workers' labour rights including health and safety and are protected ✓ Develop community awareness programmes to enhance cohesion between project employees and the local community. ✓ Consult with the public and the locals during implementation of proposed developments ✓ Develop and implement a grievance redress mechanism (GRM) to address concerns of the locals ✓ Promoting social cohesion and integration among people in the area. ✓ Creating awareness towards the diversity of cultures and different economic

	background of the people within residents ✓ Allowing the residents and businesses to form social groups and networks that build social capital. ✓ Targeting social investment programs towards the local communities and region.
Insecurity Impacts	✓ Employing competent security firm at the premises ✓ Security to always searching all vehicles and people entering the premises ✓ Use of CCTV cameras to monitor security within the premises ✓ Collaborating with the local police on security matters ✓ Placing alarms around the premises and establishing emergency preparedness and response procedures

The assessment established that the developer had complied with the existing legislative and regulatory requirements in relation to the proposed development. Based on the public consultation conducted in the project area, the public identified the following main concerns:

- Transparent mechanisms for prioritization of locals in employment opportunities for skilled & unskilled labour.
- Occupational Health and safety issues at project site.
- Dust management from the use of access roads.
- Potential accidents due to increased traffic especially during construction phase
- Noise due to construction activities

Conclusions and recommendations:

In conclusion, results from EIA study show that the proposed RVDT Tech City project has significant impacts on the environment although most of them are short-term and can be mitigated. Implementation of an Environmental Management Plan will assist in dealing with environmental issues during the project cycle. There are also guidelines for addressing environmental, health and safety concerns. This project is recommendable for approval by the National Environment Management Authority (NEMA) for the issuance of an EIA license. This is subject to periodic monitoring and evaluation from the day of commencing construction operations and decommissioning phases, as long as the set standards, measures and regulations are thoroughly upheld and adhered to. This will be in compliance with the Environmental Management and Coordination Act of 1999 (Amended 2015) and the Environmental Impact Assessment and Audit regulations, 2019

CHAPTER 1: INTRODUCTION

1.0 Background Information

Industrialization has been a crucial driver of economic development for over 200 years. Nearly every developed country has achieved high levels of economic and social progress by first establishing an advanced industrial sector. Recognizing its significance, the international community has prioritized industrialization as a key component of global development efforts. The 2030 Agenda for Sustainable Development, specifically Sustainable Development Goal (SDG) 9, emphasizes the importance of resilient infrastructure, inclusive and sustainable industrialization, and innovation. It acknowledges the industrial sector's potential to generate employment, stimulate economic growth, facilitate technology transfer, attract investment, and foster skills development.

The real estate sector in Kenya has been experiencing dramatic growth since the mid-2000s. This has been occasioned by the property market responding to demand created by an expanding middle class with higher disposable income. Nakuru County is one of the main beneficiaries of this growth, the others being Nairobi and Kiambu Counties.

Rift Valley Development Trust (hereinafter referred to as *the Proponent*) proposes to develop a Special Economic Zone (SEZ) – Technological City on Land Reference Nakuru Municipality Block 40/2(Formerly L.R.NO. 22771/3, measuring approximately 199.4 hectares, located within Nakuru West Sub County in Nakuru County. The proposed project site is situated approximately 4 kilometers from Nakuru City, to the north-west of Lake Nakuru, within an area that is increasingly earmarked for urban, industrial, and technological development. The site is accessible via a tarmac road branching off the A104 (Nakuru–Eldoret Highway) and Njoro Road, providing reliable connectivity to Nakuru City, the wider Rift Valley region, and national transport corridors.

The geographical coordinates of the proposed development site are Latitude -0.2937812 and Longitude 36.012434. The proposed RVDT Tech City Project is envisioned as a large-scale, integrated technology and innovation hub aimed at supporting industrialization, digital transformation, skills development, and employment creation in Nakuru City. The project aligns with Kenya's broader development agenda to decentralize industrial growth, promote innovation-driven economies, and manage urban expansion in a planned and sustainable manner.

1.1 Environmental Impact Assessment (EIA)

This Environmental Impact Assessment (EIA) full study report has been prepared for the purpose of seeking licensing for the proposed construction of the proposed Special Economic Zone- Rift Valley Development Trust Tech City development and all its facilities and infrastructure on Plot L.R No: L.R Nakuru Municipality Block 40/2(Formerly L.R.NO. 22771/3, Nakuru West Sub County in Nakuru County

In compliance with the requirements and provisions of the Environmental Management and Coordination Act No. 8 of 1999 and Regulation 10 of the Environmental (Impact Assessment and Audit) Regulations, 2003 Legal Notice No. 101 and Legal Notice 15 of the Environmental (Impact Assessment and Audit) Regulations, 2019, the Authority requires the proponent to initiate an Environmental Impact Assessment full study. Pursuant to the afore-mentioned regulations, in October, 2025, Terms of Reference (TOR) initiating an Environmental Impact Assessment Full Study were prepared and submitted to NEMA **(NEMA/ENVIS/EIA/TOR/0100)** and approved.

This Environmental Impact Assessment report (EIA) seeks to examine both the positive and negative effects that the proposed commercial development project is likely to have on both the physical and socio-economic environment in order for sound decision making to promote human activities that align synergistically with the natural world within a sustainable development framework.

A comprehensive environmental policy was therefore needed to take care of the environment in a holistic way. This was achieved through enactment of the Environmental Management and Coordination Act (EMCA), 1999 (Amended, 2015). The Act stipulate that Environmental Impact Assessment be carried out on projects in the Second Schedule. It is in response to this provision that this EIA full study report has been prepared

1.2 Objectives of the Project

The overall objective of the project is to construct a large-scale, integrated technology and innovation hub aimed at supporting industrialization, digital transformation, skills development, and employment creation in Nakuru City

1.2.1 Specific Objectives of the Project

1. Attract both local and foreign investments
2. Expand and diversify production of goods and services
3. Promote value addition

4. Preserve aesthetics
5. Provide decent wages and livelihoods
6. Promote growth of local enterprises
7. Enhance innovation and technology development
8. Promote sustainable, climate-smart, industrial development

1.3 Objectives of the EIA

The overall objective of the study is to assess the potential significant adverse impacts of the proposed development and articulate appropriate mitigation measures.

1.3.1 The specific objectives of this study include the following

1. Proposed development and articulate appropriate mitigation measures
2. To identify and evaluate the significant environmental impacts of the proposed project.
3. To assess the environmental costs and benefits of the proposed project to the local and national economy.
4. To determine the compatibility of the proposed facility with the local environmental setting.
5. To evaluate and select the best project alternative from the various options.
6. To propose mitigation measures for the negative environmental impacts
7. To incorporate Environmental Management Plans and monitoring mechanisms during implementation, operation and decommissioning phases of the project.

1.4 Terms of Reference

This Environmental Impact Assessment full study involved the generation of baseline information, establishing the current status of the proposed site and its environs, identification of predictable effects of the development on the environment (including infrastructure, occupational health and safety issues) and direction & magnitude of the changes, analysis of the compatibility of the proposed project with the surrounding land uses (as per the prevailing policy and legal framework) and the proposition of potential mitigation measures to be undertaken throughout the project cycle; and development of an environmental management plan with proposed mechanisms for monitoring and evaluating the compliance and environmental performance.

1.5 Scope of the Study

The study has been conducted to evaluate the potential and foreseeable negative impacts of the proposed development. The physical scope is limited to the proposed site and the immediate environment as may be affected by or may affect the proposed project. Any potential impacts, are also evaluated as guided by EMCA 2015 and the Environmental (Impact Assessment and Audit) Regulations 2019. This report includes an assessment of impacts of the proposed site and its environs with reference to the following:

1. A review of policy, legal and institutional framework.
2. Description of the proposed project.
3. Review of baseline information.
4. Assessment of the potential negative environmental impacts of the proposed project.
5. Analysis of alternatives.
6. Development of mitigation measures and future monitoring plans.
7. Occupational and Environmental health and safety management.

1.6 Methodology

1.6.1 Environmental Screening.

The environmental screening was carried out to determine whether an EIA study was necessary for this project and at what level of evaluation.

1.6.2 Environmental Scoping.

In environmental scoping, the focus was on environmental impacts of great concern. Environmental issues were categorized into physical, natural/ecological and social, economic and cultural aspects. Impacts were also classified as immediate and long-term impacts

1.6.3 Desktop Study.

The desktop study and review provided a detailed description of the project with respect to the intended revisions i.e. spatial coverage, preliminary design layout, magnitude, implementation schedules, costs and human resources. Relevant documents were reviewed to obtain information on the baseline information in general but specifically at the proposed project site.
Proposed project documentary review provided further understanding the project design (site plan and architectural drawings), land use, local micro-environmental conditions, data on demographic trends, land use practices, development strategies and plans (local and national) as well as the policy and legal documents among others.

Others included. area maps, current and past survey documents, Development Plans of the Nakuru City, relevant policy, legal and institutional frameworks, regulations, guidelines and standards were also relied upon.

1.6.4 Field Site Visits

Physical evaluation of the project area was carried out with specific focus on landform trends, land use patterns, biodiversity, natural resources, hydrology and climatic variations. This was also an evaluation of the current environmental status with respect to physical, biological and sociocultural perspectives. It was a systematic field inspection backed with available documentation and direct interviews.

In addition to identifying the potential positive and negative impacts, field assessments contributed understanding the additional proposed works to be undertaken. The field survey adopted various techniques of baseline data collection on the existing environmental conditions, namely:

1.6.4.1 Field Observations

Detailed field observation assessment was undertaken to enable existing determination of the exact socio-economic activities within the proximity of the project site. Among the broad focal areas for which observation was done included; current settlement patterns and land use, commerce, and trade industry among others.

Checklists were used along with observations to check on additional/ possible environmental impacts of the project would have on the environment during both construction and operational phases. In this assessment, checklists were utilized to:

1. Indicate the magnitude of the additional development's environmental impacts both positive and negative;
2. Indicate possible adverse environmental impacts that are potentially significant but about which sufficient information can be obtained to make a reliable prediction on the additional developments; and
3. Indicate negative potential environmental impacts in the project area, which merit

   mitigation measures and monitoring during project implementation based the additional developments

1.6.4.2 Public Participation and Stakeholders Engagement

Structured stakeholder engagement was undertaken in the New Njoro neighborhood to capture the views and concerns of interested and affected parties. Photos of the project site and the immediate neighboring developments were taken from the initiated field visits and physical inspections for inclusion in this full study report. The engagement process entailed face to face meetings and interviews.

The study also sought public opinion/views of neighbors, interested or affected parties of the proposed project if any through Consultation and Public Participation (CPP) exercise. Public interviews were held with neighbors. The local county administration and relevant lead government agencies were engaged in the organization and participation of this meetings with key stakeholders. The minutes and attendance lists have been included in this report

1.7 Responsibilities and Undertaking

The Consultants undertook to meet all logistical costs relating to the assignment, including those of production of the report and any other relevant material. The consultants arranged for transport and travels during the exercise. On the site of the proposed development, the proponent provided a contact person(s) to provide information required by the Consultants. The proponent also provided site plan(s) showing roads, service lines, buildings layout and the actual sizes of the sites, details of raw materials, proposed process outline, future development plans, operation permits and conditions, land-ownership documents and site history, and estimated investment costs.

- The output from the consultants includes the following:
- An Environmental Impact Assessment report comprising of an executive summary, assessment approach, baseline conditions, anticipated impacts and proposed mitigation measures,
- An Environmental Management Plan outline, which also forms part of the report recommendations.

1.8 Reporting

In the entire exercise, the proponent and ESIA experts contacted each other on the progress of the EIA Full Study and signing of various documents. The ESIA experts will have to submit to the National Environment Management Authority for review and issuance of an EIA license. All the materials and workmanship used in the execution of the work shall be of the best quality and description. Any material condemned by the architect shall be removed from the site at the

contractors cost. Environmental concerns need to be part of the planning and development process and not an afterthought. It is therefore advisable to avoid land use conflicts with the surrounding area through the implementation of the Environmental Management Plan (EMP).

CHAPTER 2: PROJECT DESCRIPTION

2.0 General Overview

Special Economic Zones are among the most important features of progressive economic development and an effective vehicle for attracting investment, fostering technological transfer and innovation, and for creating jobs. With the potential to generate comparative and competitive advantages, SEZ's can attract innovative businesses, leading to both jobs increment and a larger tax base. The SEZ's key vision is to be a leading frontier in industrial and estate design, setting standards in sustainability, social amenity and building efficiency.

2.1 Introduction

A sustainable development has to incorporate socio-economic and environment-friendly concepts/ principles by hosting a community of integrated mixed-use development including housing, businesses, industrial etc. seeking to enhance environmental and economic performance through collaboration in managing environmental and resource issues, including energy, water and materials. Consequently, the proposed Master Plan has integrated all the facets of a sustainably developed entity by ensuring that the economic, social and environmental factors are its guiding principles in the design, construction and management. This chapter highlights the purpose, rationale, and objectives, of RVDT Tech City project

2.2 Nature of the Project

The proposed RVDT Tech City Project is envisioned as a large-scale, integrated technology and innovation hub aimed at supporting industrialization, digital transformation, skills development, and employment creation in Nakuru City. The project aligns with Kenya's broader development agenda to decentralize industrial growth, promote innovation-driven economies, and manage urban expansion in a planned and sustainable manner.

2.3 Site Ownership

The land where the proposed RVDT Tech City project development will be situated is absolutely owned by the proponent as appended to this report

2.4 Objectives of the project

The proposed RVDT Tech City project development aims to safeguard integration of all the facets of a sustainably developed entity by ensuring that the economic, social and environmental factors are its guiding principles in the design, construction and management. The specific

objectives of the plan are to provide the much-needed facilities and services as highlighted below;

1. Serve as a focal point for supporting innovation (innovation hub) that will empower locals' technical and technological capacity through practice, training or apprenticeship.
2. Create room for job opportunities (for both gender, race and colour), nurturing and transfer of technology through incubation and local employments
3. Facilitate cluster formation integrated model for collective benefit and augmenting competitiveness in the local and world market in order to achieve economic vitality.
4. To develop a housing development with low, medium and high-density units targeting both middle and high-income earners.
5. To establish industrial development that includes light industries.
6. To develop social amenities including a hospital and student housing
7. To provide a commercial centers and services with various and mixed-use developments.
8. To provide various recreational and sports facilities and services.
9. To design infrastructure utilities and services with reliable power supply network that includes
10. renewable sources.
11. To establish a transportation system with a comprehensive road network system that includes
12. transit and local roads with walkways
13. To designate natural green open spaces, wetlands & water bodies with public purpose utilities

2.5 Justification of the Proposed Project

This study presents the justification of the proposed RVDT Tech City project highlighted below as: -

2.5.1 Social - Economic and Environmental Justification of the Proposed Project

The proposed RVDT Tech City development has been subjected to economic analysis in order to determine whether or not it is economically justified. The cost-effectiveness and cost-benefit analyses, shows that the project is justified

2.5.2 Economic Growth

The development will attract investments, create jobs and boost local businesses, contributing to the overall economic growth of the county. The Nakuru County Integrated Development Plan III (2023-2027) envisions to develop the Special Economic Zones which is in line with what RVDT Tech City project will undertake in supporting and modernizing the blue economy

2.5.3 Improved Infrastructure (Roads and Drainage)

The development includes comprehensive planning of roads, utilities and green spaces, which will enhance the county's infrastructure and reduce congestion and pollution. The proposed area is currently open fields used for crop and Livestock farming and the upgrade of facilities shall ensure state of the art infrastructure and facilities opening up the area to private players who shall be attracted by the investment on board.

Opening the area by building roads and related infrastructure will improve the lives of population and increase access. Increased access will improve other services such as public transport, firefighting and ambulance services. Improve storm water, reducing cases of stagnant water and reducing soil erosion.

2.5.4 Social Benefits/Improved living standards

The project aims to create a safe, well-maintained and community centric environment, improving the quality of life for residents and reducing urban issues like traffic congestion, pollution and water provision.

- The RVDT Tech City project will develop social amenities including green spaces for wellness for the residents and community.
- The RVDT Tech City project intends to integrate living in different perspectives by bringing together, residential, commercial and recreational parks
- The RVDT Tech City project shall seek to invest and promote the industrial growth supporting the local economy

These social benefits enhance quality of live and living standards.

2.5.5 Subsidiary Industries Created, supported and expanded

This project through the supply of other utilities shall support other sectors in the area like security, logistics, retail and others like real estate business

2.5.6 Increased Revenue

The project will generate additional revenue through property taxes, business licenses and other fees associated with development of other amenities. The enterprises created at the facility by tens and hundreds of small retail businesses hosted at the facility shall be paying single business licenses, advertising fees and other levies as proscribed by Nakuru County's finance bill. Other businesses like commercial premises shall also act as revenue earners by both the county and national governments.

2.5.7 Enhanced Public Services

The project includes the provision of affordable housing, hospital, social amenities, and other community facilities, improving public services for residents. This development shall ensure the existing facilities match and ensure a state of art projects that ensure the public enjoys enhanced services.

2.5.8 Sustainable Development

The emphasis on sustainable principles and eco-friendly designs aligns with the county's goals for environmental conservation and sustainable urban planning. The project promises a sustainable way of living, by offering proper disposal of waste and water collection and re-use capabilities enabling the project to be a model project that has future qualities within it.

2.6 Project Design

The development is planned as an integrated mixed-use zone designed to support innovation, investment, and sustainable urban expansion through the establishment of residential neighborhoods, commercial centers, institutional facilities, light industrial activities and recreational infrastructure. Based on the project master plan, the proposed Special Economic Zone (SEZ) will comprise the following key components:

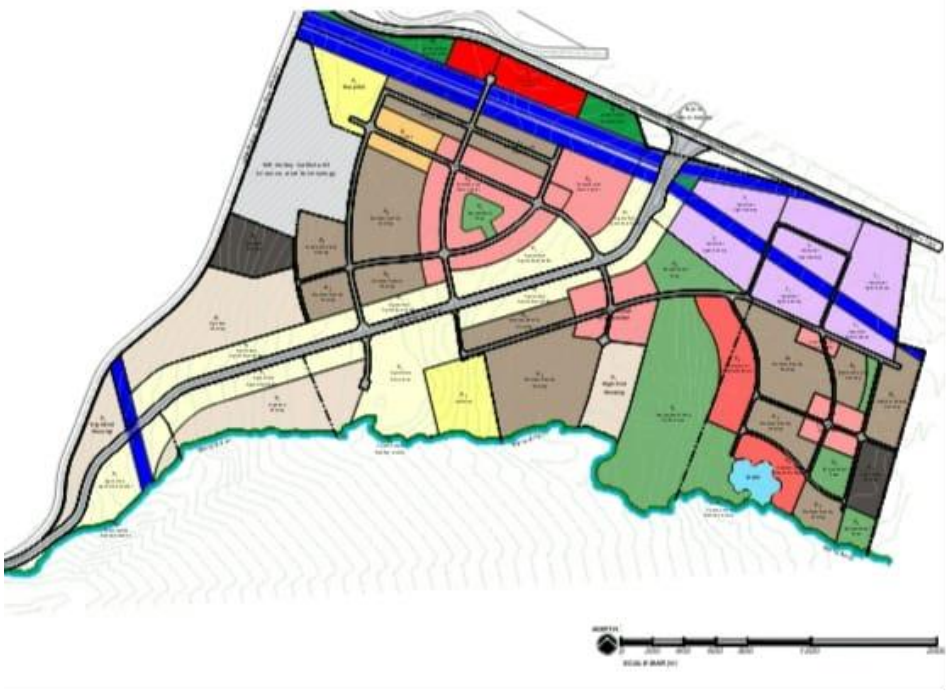


Plate showing masterplan design

Land use for proposed RVDT Tech City development

Land Use	Area(Ha)
Residential - Low Density	103.78
Residential - Medium Density	184.22
Residential - High Density	24.43
Industrial - Light	83.32
Educational Innovation Incubator	10.18
Recreational - Golf Course	72.40
Recreational - Park	30.21
Public purpose - Hospital	15.29
Public purpose - Institutional	18.62
Commercial - Retail	17.48
Commercial - Town Center	90.17
Commercial - Hospitality Resort	28.13
Public Utility - Wayleaves	76.17
Transportation - Local Roads	48.57
Conservation - Forest Buffer	31.57
Conservation - Riparian	20.51
Agriculture	142.49

Dam	6.50
Existing Institution - RVIST	56.88
Total	**1046.00**

The zones in each of the development phases include:

1) **Medium-density housing areas:** These will consist mainly of single dwelling residences developed on ¼-acre and ⅛-acre plots, intended to accommodate a growing residential population within the SEZ.
2) **Low-density (high-end) residential areas:** These will comprise single dwelling residences developed on ½-acre plots, targeting higher-end housing needs and contributing to land-use diversity within the project.
3) **Affordable housing units:** Affordable apartment housing is proposed as part of the development strategy to provide accessible accommodation and to act as a buffer zone in relation to the expanding Nakuru urban area. These units will be strategically located adjacent to the light industry zones.
4) **Innovation incubator hubs:** Architecturally distinct hubs will be developed to promote ICT learning, research, collaboration, and innovation, leveraging proximity to Rift Valley National Polytechnic (RVNP) formerly known as Rift Valley Institute of Technology (RVIST) and supporting knowledge-based economic development.
5) **Student housing area:** Student accommodation facilities are proposed adjacent to RVNP land to provide convenient residential options for students and support the educational ecosystem within the project.
6) **Commercial areas (town centers):** Retail centers and commercial nodes will be developed within the project area to provide shopping, service delivery, and business opportunities, reducing dependency on Nakuru City for day to-day needs.
7) **Light industry showrooms and warehouses:** The project proposes light industrial developments such as warehouses for storage and facilities for light processing activities, supporting value addition and industrial growth while minimizing heavy industrial impacts.
8) **Park and recreation areas:** Outdoor and indoor recreational zones will be integrated across the SEZ, supported by landscaped parks and green spaces to enhance livability and environmental aesthetics.

9) **Agricultural buffer zone:** Technology-enabled dairy and agricultural farming is proposed within the project area to support food security, provide an ecological buffer, and enable value addition through modern agricultural practices.

10) **Riparian reserve:** Areas around natural watercourses will be maintained as riparian reserves and left undisturbed to preserve biodiversity, protect water resources, and maintain ecosystem functions.

11) **Dam development:** A 6.50 Ha dam is proposed, guided by natural drainage patterns and site contours to optimize water capture, storage, and performance for project support needs.

12) **Golf course:** A golf course is proposed to be developed along the site's natural drainage corridor, complementing the resort and recreational offerings of the project.

Site Conditions

From the initial analysis of the site, the site was found to be suitable for the proposed development. The suitability of this kind of development can therefore be justified on diverse of use. This includes the demand based on nature and trend of developments in most areas, planning policy focus, plot area and zoning regulation, land-use and infrastructural compatibility, socio-economic impacts and environmental impact assessment among others. The area is connected to the national electric grid

2.7 General Infrastructure and designs of the Proposed Project

2.7.1 Buildings

The proposed Project will involve the development of development of large-scale, integrated technology and innovation hub.

2.7.2 Auxiliary Facilities

The other components will include, storm water drainage system, wastewater treatment area, electricity connections and water supply. Full details of the proposed design can be obtained from the building plans.

2.7.3 Open space

Landscaping of the project site will be undertaken

2.7.4 Natural Ventilation and lighting

Natural ventilation has been incorporated into the project design as much as possible. The project design aims to maximize the use of natural ventilation and lighting, especially during the day by providing a comfortable working environment and living conditions throughout the year. Energy efficient air condition systems shall be installed. Other elements of the project the façade design to achieve natural ventilation will include glass performance, glazing proportion, external shading components and geometry, size and position of ventilation openings, night cooling systems among others

2.8 Technology and Activities

The contractor shall employ modern and best building technologies. They should not be inferior to locally and internationally established building standards.

2.8.1 Construction technology to be used

Concrete mixing and mobile elevator equipment's will be installed during the construction. Other equipment's will include dump trucks and an assortment of hand tools. As such dust and noise will arise from the operations of the equipment's and are likely to be issues of concern. This requires the contractor to undertake the use appropriate technology that will reduce the impact of both noise and dust at the construction site.

2.8.2 Dust control technology

The contractor will deploy dust control screens to mitigate the impact of dust during construction activities. The effectiveness of the screens will mainly depend on their sizes since fine screens are more effective compared to course ones. Their effectiveness will also be a function of how well the site is covered. Worn out screens will need to be replaced on a regular basis and the contractor will ensure that the site is secured with screens throughout.

2.8.3 Noise pollution control technology

Use of machinery at the site will be a source of noise for the neighbors. The contractor will therefore have an obligation to use suitable noise reduction strategies. For example, the contractor could fit silencers to machines that produce noise. Another strategy will be for the contractor to locate noise producing machines as far away as practical from the residential area. However due to the open field, the noise levels at the construction site are expected to be minimal.

2.9 Project Activities

The project activities will be carried out simultaneously. The phases in the implementation of a development project include project planning; site preparation and clearing; construction; operation and project decommissioning.

2.9.1 Planning and design activity phase

During this phase, the project proponent obtains all necessary permits, licenses, approvals and other relevant documents from the respective authorities. Other activities include site clearance and preparation, taking into consideration the type and nature of materials to be used, the physical conditions of the site in line with total costs and the economic value of the project.

2.9.1 Construction phase

This phase will involve ground excavation, setting the foundation and backfilling and actual construction works (civil, plumbing, electrical, roofing, and other related works). Landscaping and drainage work, clearing the site of construction debris; and construction of wastewater treatment plant will also be carried out.

i. Sourcing and transportation of building materials

The proponent will source several building materials locally within the neighboring hardware's within Nakuru or any nearby building material hardware. The great emphasis laid on procurement of building materials from within the local area makes both economic and environmental senses since it reduces negative impacts of transportation of the materials to the project site through reduced distance of travel by the transport vehicles.

Building materials are transported to the project site from their extraction, manufacture, or storage sites using transport trucks. Construction materials will be stored at the site.

ii. Masonry, Concrete Work and Related Activities

The construction of the building's foundations, floors, and drainage systems among other components of the project involves a lot of masonry work and related activities. General masonry and related activities include reinforced structure of columns and beams filled with stone/block walls, concrete mixing, plastering, slab construction, construction of foundations, and erection of building walls and curing of fresh concrete surfaces. These activities are known to be labor intensive and will be supplemented by machinery where possible and also such activities as concrete mixing and curing require large amounts of water.

iii. Excavation /Earthworks

The site is currently undeveloped and is covered with vegetation. The same will be removed and disposed of to pave way for the construction. In order to prepare the site for construction of the building, some excavations will be carried out.

In this regard, machinery and human labor will be relied upon. Debris and excavated materials from earthworks, especially soil and stones shall be used in refilling and various construction activities. Debris and other materials not required at the site will be dumped in sites approved Nakuru County.

iv. Foundation and Masonry

Completion of excavations will be followed with setting a foundation for the building. Thereafter masonry which entails building courses, basement, ground and other floors, pavements, drainage systems, parking areas, and perimeter wall shall take place. Other masonry activities include stone carvings, concrete mixing, and plastering, slab construction, reinforcing walls/lintels and curing of walls

v. Structural Metal Works

The building will be reinforced with hoop iron and steel bars for stability. Structural metal works will involve metal cutting, welding and erection.

vi. Roofing Works

Roofing activities will include all roofing works such as roof tiles or iron sheets on timber trusses, painting of the timber fascia boards and the fixing ceiling on timber struts well as fixing of gutters.

vii. Electrical Work

Electrical work during construction of the premises includes; installation of electrical gadgets and appliances including electrical cables lighting apparatus, sockets etc. In addition, there will be other activities involving the use of electricity such as welding and metal cutting.

viii. Plumbing

Installation of pipe-work for water supply and distribution will be carried out within the entire premise. In addition, pipe-work will be done to connect sewerage from the facility to the *wastewater treatment plant.*

ix. Installation of Equipment

Several equipment's will be installed within the building and other facilities. Equipment to be installed include firefighting equipment's, lighting systems, sanitary equipment's such as hand washing facilities and waste handling facilities, and others as need be.

2.9.2 Operational phase

Upon completion and inspection, the project management will commence the use of the facilities. The proponent shall also ensure the hygiene of the facilities and common areas such as parking and sanitary areas. The management shall also ensure regular maintenance work at the building. Solid and liquid waste generated and accidental fire incidents comprise the main environmental challenges at the operational phase and effective mitigation measures have been spelt out in the EMP.

i. Solid Wastes

The proponent will provide facilities for handling solid waste generated within the premise. This will include dustbins outside the premise to temporary hold waste before disposal.

ii. Waste Water Management

Sanitary waste from the premises will be discharged into wastewater treatment plant which will be constructed on-site.

iii. Cleaning

The proponent will ensure regular washing and cleaning of the pavements and communal areas. Cleaning operations will involve the use of considerable amounts of water, disinfectants and detergents.

iv. General Repair and Maintenance

The building and associated facilities will be repaired and maintained regularly during the operational phase of the proposed project. such activities will include repair of walls and floors, repairs and maintenance of electrical gadgets and equipment, repairs of leaking water pipes, painting, maintenance of grass lawns, and replacement of worn-out materials among others.

2.9.3 Project's decommissioning phase

In the event that the facilities will be decommissioned, activities in this phase shall involve demolitions of all structures on site and clearing the debris. Electrical installations and piping shall also be safely disconnected. The activities in this phase shall be done carefully so as to cause a minimal hazardous environmental impact. Excavations shall also be done to restore the original landscape and the impact will be short term.

i. Site restoration

Once all the waste resulting from demolition and dismantling works is removed from the site, should be restored through replenishment of the top soil and re-vegetation using indigenous plan species.

ii. Solid waste generated

On decommissioning, large quantities of solid waste will be generated from demolition works and equipment dismantling. The proponent should provide measures for recycling, reuse or disposal of such waste.

iii. Environmental monitoring and audit

Environmental monitoring and audit are essential in a project's lifespan as they are conducted to establish if project implementation has complied with set of environmental management standards as provided for in EMCA 2015 and the EIA/EA regulations of 2019 (Legal Notice No. 101. For this project, environmental monitoring and audit will be conducted annually to ensure compliance with environmental regulations.

2.10 Project inputs

The project will basically handle input materials of various nature:

i. Non-hazardous materials

The store for non-hazardous materials will be accommodated within the site area. Materials to be stored shall include samples for review/testing by consultants and or inspectors

ii. Hazardous materials

Hazardous materials shall include paints, oil, grease, fuel, etc. The site store for storing these materials shall have a waterproof concrete bonding and a roof to contain spills. Storage and handling of all hazardous chemicals shall be in accordance with manufacturer's instructions as outlined on the Material Safety Data Sheets

iii. Bulk construction materials

The bulk materials to be stored on site include: sand, ballast, stones, cement, quarry chips, steel, etc. It is recommended that the project proponent should plan for material to be delivered in manageable quantities in order to avoid any form of deposit, which will impede site activities, induce safety hazards and create a nuisance to the neighborhood.

Other inputs include:

iv. Water:

The project will require significant volumes of water for various activities including spraying dusty sections, concrete-making, optimum compacting of different layers of materials, cleaning operations in worksite camps. Existing boreholes water will supplement water needs during construction and operation phases. The main water supply for the project is from onsite water reservoirs. The proponent will ensure the installation of adequate underground water storage reservoirs for construction and operation phases.

a) Labour

The contractor will hire skilled, semi-skilled and unskilled workers. In terms of numbers to be mobilized, this has not yet been established.

b) Site office

The contractor shall construct a temporary site office to run and manage all activities at different phases. This will also include securing of the utility services such as water and electricity which will be crucial for the construction activities.

c) Site Management

Clearly visible signage on the adjacent road will be erected. Sufficient and quality diversions will be created. Safety provision and maintenance of access to all properties and project neighbors' facilities will be mandatory.

CHAPTER 3: BASELINE INFORMATION

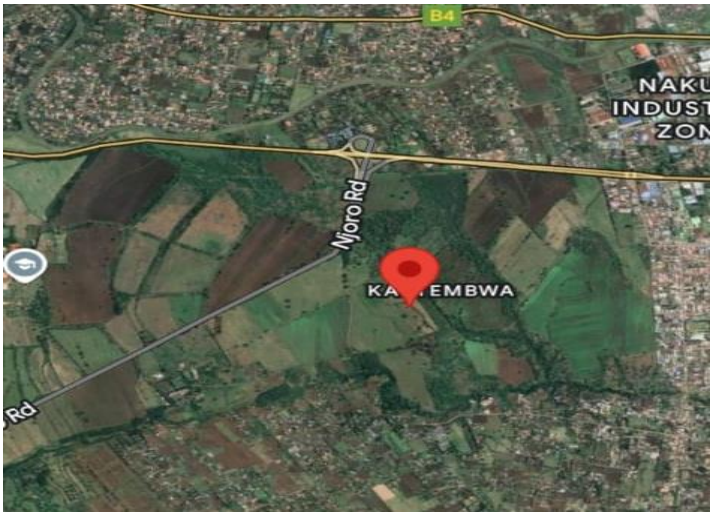
3.1 Introduction

Baseline information (background information on the biophysical, social and economic settings) is important reference point for conducting EIA. Baseline data is essential for the assessment of the potential impacts of the project. The conditions of the natural environment forms a basis for the selection by planners of the area to be developed for various land uses for the sustainability of the proposed project and therefore evaluation of the baseline information is important in understanding the existing environmental set up. The main objective of baseline information is to provide adequate and accurate environmental baseline information and this can be broken down as follows:

- To provide a description of the status and trends of environmental factors, against which predicted changes can be compared and evaluated in terms of importance
- To provide a means of detecting actual change by monitoring once the project is implemented

3.2 Physical Environment

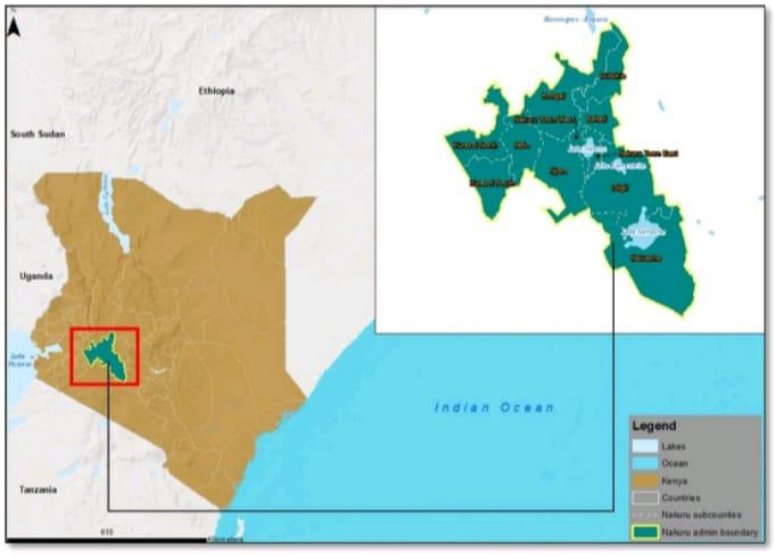
The proposed Special Economic Zone (SEZ) – Technological City is situated on Land Reference Nakuru Municipality Block 40/2(Formerly L.R.NO. 22771/3), measuring approximately 701.8 hectares, located within Nakuru West Sub County, Nakuru County. The geographical coordinates of the proposed development site are Latitude -0.2937812 and Longitude 36.012434.



Google map showing the proposed location

3.2.1Nakuru County

Nakuru County is one of the 47 counties of the Republic of Kenya provided in the Constitution of Kenya 2010. The county lies within the Great Rift Valley and borders eight other counties namely; Kericho and Bomet to the west, Baringo and Laikipia to the north, Nyandarua to the east, Narok to the south-west and Kajiado and Kiambu to the south. The county covers an area of 7,495.1 Km² and is located between Longitude 35 ° 28` and 35° 36` East and Latitude 0 ° 13 and 1° 10` south. The county headquarter is Nakuru Municipality which was previously the headquarters of Rift Valley Province provided for in the old constitution until 4th August 2010. The county is divided into nine administrative Sub-Counties namely; Naivasha, Gilgil, Nakuru, Rongai, Nakuru North, Subukia, Njoro, Molo, and Kuresoi. Njoro and Kuresoi were hived off from Molo, Gilgil from Naivasha, Rongai Sub-county from Nakuru County, and Subukia from Nakuru North. Njoro Sub County covers an area of about 702.0 km2 with Five (5) divisions and 18 sub locations hosting approximately 41,585 no. of households according to KNBS. It has a population of about 162,985.



A map of Nakuru County and its Sub Counties

3.3 Site baseline environmental status

3.3.1 Land use

The site is mostly open fields currently used for crop and Livestock farming at the site they also undertake agricultural training, research and environmental conservation. The proposed

premises are surrounded by small holder farms, residential homestead and Rift Valley National Polytechnic

Administration Building and rangeland

3.3.2 Air quality

The Baseline ambient air quality within and around the proposed project site was generally good, with all measured pollutant concentrations ($PM_{2.5}$, PM_{10}, SO_2, NO_2, NOx, CO, O_3, H_2S, and TVOCs). They were recorded at levels below the applicable tolerance limits prescribed under the Environmental Management and Coordination (Air Quality) Regulations, 2024 *(Annexed Baseline Study Report for Ambient Air Quality Monitoring)*

3.4 Climatic Conditions

The climate of Nakuru County is strongly influenced by the altitude and physical features. There are three broad climatic zones (II, III and IV). Zone II covers areas with an altitude between 1980 and 2700 m above the sea level and receives minimum rainfall of 1000mm per annum. This zone covers Upper Subukia, Rongai and Mau Escarpment. Zone III receives rainfall of between 950 and 1500 mm per annum and covers areas with an altitude of between 900-1800m above sea level. This zone covers most parts of the county and is the most significant for agricultural cultivation. Zone IV occupies more or less the same elevation (900-1800m) as Zone III. However, it has lower rainfall of about 500-1000mm per annum. This zone dominates Solai and Naivasha.

The county has a bimodal rainfall pattern. The short rains fall between October and December while the long rains fall between March and May. Temperatures in the county ranges from a

high of 29.3oC between the months of December, January, February, and part of early March to low temperatures of up to 12oC during the month of June and July. Molo and Kuresoi Sub-Counties are relatively cold while Naivasha, Gilgil and parts of Rongai Sub-County experience extreme hot weather. However, with the deforestation experienced in, the county's forest blocks and influence from climate change, variant rainfall patterns and higher temperatures may be experienced.

3.5 Topography/drainage

The area is characterized by relatively flat landscape. The topography of the proposed project site is gently sloping from east to west. The proposed area is generally flat and is mainly used for cultivation and settlements. The site is alongside both Nakuru-Eldoret and Nakuru-Njoro Highway. There exists a storm drainage channel along the highway.

Crop farmland

3.5 Soils

In general, the area is characterized by sandy loam soil. The soil in the area is sandy loams which are well drained. The soils are suitable for crop production. Both topography and soil types favors agricultural production and this explains why crop production is the main economic activity in the area. The proposed site has been under cultivation for many years.

Wheat Plantation

3.6 Regional Geology

The geology of the area has been described in Report No. 86 of the Geological Survey of Kenya: "Geology of the Molo Area" (D.J. Jennings, 1971). This report gives an adequate overview of the formations encountered in the surroundings of the study site. Most of the Nakuru West area is underlain by volcanic and volcano-sedimentary rocks of Tertiary-Pleistocene-Recent Periods. The area is relatively young: there are no rocks older than the Tertiary Era. A wide range of Volcanic and associated volcano-sedimentary deposits of the Tertiary-Pleistocene-Recent periods underlies the study area. The evolution of the Rift Valley is remarkably complex in this central sector, due to multiple stages of faulting, uplifting, volcanism and deposition. A short description of the different geologic units is given below in order of geological age (oldest rocks first).

3.6.1 Black Ashes of Rongai Plain and Njoro

The black ash of Rongai Plain has a fine-grained porous texture, the friable texture and high susceptibility to erosion prevent it forming marked features. The most common exposures are in the floors of riverbeds where it invariably has a sooty waterlogged appearance. The base colour, most commonly black, varies locally to dark purple and purple grey with rusty partings. The composition of the ashes include grit-sized pellets of lava, obsidian, plate-like feldspar crystals and fragments of uncompressed pumice which is usually black and green in colour. Highly variable in proportion, but quite common are large glassy bombs within the composition. These bombs are themselves composed of pophyritic obsidian with prismatic feldspar phenocrysts. Underlying the black ashes in the north are the eutaxitic-welded tuffs of the north-east.

3.6.2 Pyroclastics and Sediments of Rongai Plain and Mau Slope

The pyroclastics and sediments of the plain and Mau slope are locally composed of unconsolidated pumice. Elsewhere however, the Pleistocene to Recent succession is expanded with the inclusion of yellow sediments and white bleached tuffs at the base. Lateral variation from medium grainedpumice to fine-grained clays and sandy soils (produced by weathering of finer ash) occur within this formation.

The pyroclastics and weakly consolidated sediments are particularly susceptible to severe erosion. Differential erosion of beds of slightly different compaction has produced steeply terraced walls and pillars, and weirdly sculptured forms.

3.6.3 Menengai Pumice

The Menengai Pumice occurs in most part of the Rongai plains west of Menengai. This includes the area north of Njoro all the way towards the southern part of Kambi ya Moto. This volcanic deposit is uncompressed, unconsolidated and uncemented.

The Rift Valley Fault line

It is important to note, as was pointed out in the geological survey that the site is still on a geological fault line within the Rift Valley. There is no conceivable way to mitigate for this kind of factor but relevant agencies need to continue monitoring seismic activities in this location.

3.7 Water resources

Water resources refer to various sources of water accessible in the site and its vicinity. The various water resources in the area are:

- Tap water provided by NARUWASCO;
- Underground water;
- Water from Njoro River
- Rain water during rainy season.
- Water vendors.

Njoro River covered with indigenous vegetation

The area has no sufficient water and thus the proponent wants to sink a borehole to meet the daily requirements. The water demand is projected to be about 20,000 litres per day, mainly for domestic purposes.

3.8 Economy

Nakuru is a diversified County in terms of climate, people and livelihoods. Agriculture is the main sector providing food, income, employment creation and raw materials for industries pursuing processing. The sector provides about 48% of the household income and employs over 60% of the employed population. The main economic activity around the project site is agriculture. There is also concentration of commercial activities, within Nakuru City which is about 4Km from the site. As a result of increasing population in Nakuru City, the Njoro and Sobea areas have seen influx of people settling in these areas resulting to large farmlands been sub-divided into smaller portions.

Commercial premises along Nakuru-Eldoret Highway

3.9 Demographics

The local community is made up of people from different tribes across Kenya. The majority are native to the land while the rest are in-migrants from different counties. The sex ratio is said to be 1:1. The types of settlement in the area include permanent and temporary housing which are clustered while others are scattered

Kaptembwa estate besides project sit

CHAPTER 4: RELEVANT POLICY, LEGAL AND INSTITUTIONAL FRAMEWORK

4.1 Introduction

This section presents the institutional actors and legal texts that are relevant to the preparation of the EIA study, as well as an outline of the applicable EIA study process. National regulations are discussed along with international conventions to which Kenya is a party.

4.2 Constitutional Requirements for Environmental Protection

The 2010 constitution of Kenya acts as a benchmark for legislations and regulatory frameworks in Kenya by acting as a regulator and supervisor of development measures and project controls. It demands proper management of the environment as a national heritage and benefits to the future generations.

Environment and social sustainability is covered explicitly in the 2010 Constitution of Kenya. **Clause 42** under the Bill of Rights of the Constitution of Kenya, 2010 provides inter alia that every person has a right to a clean and healthy environment. Clause 43 of the Constitution provides that every person in Kenya has economic and social rights.

Chapter 5 of the Constitution provides for the sustainable management of land and the environment in Kenya. Specifically, **Part 2, Clauses 69 – 72** deals with environmental and natural resources management in Kenya and the proposed project will be conducted in accordance with these Clauses. **Clause 69(1)(f)** of the Constitution requires the State to develop systems for environmental impact assessment. The State already has a system for environmental impact assessment in the form of the Environment Management and Coordination Act, 1999 (EMCA) and its subsidiary legislation titled Legal Notice 101:Environment (Impact Assessment and Audit) Regulations, 2003 (L.N. 101)

4.3 Environmental Policy Framework

4.3.1 Environmental policy

According Sessional Paper No. 6 of 1999 on Environment and Development, since adoption by parliament in 1999 has been in use and had influenced the formation of EMCA (amended) 2015, but has since been surpassed by time and is therefore under revision to comprehensively cover areas that were previously left out to augment it.

The revised draft of the National Environmental Policy, dated April 2012, sets out important provisions relating to the management of ecosystems and the sustainable use of natural resources, and recognizes that natural systems are under intense pressure from human activities particularly for critical ecosystems including forests, grasslands and arid and semi-arid lands. (National Environmental Policy, 2012). The objectives of the Policy include developing an integrated approach to Environmental Management, strengthening the Legal and Institutional Framework for Effective Coordination, Promoting Environmental Management Tools.

Relevance

The project shall implement the EMP to mitigate the impacts resulting during the construction and operational phases of the project; this will ensure that the natural environments are not destabilized by the subsequent project activities.

4.3.2 The National Shelter Strategy

In chapter 2, land policy is linked to constitutional reforms; regulation of property rights is vested in the government by the Constitution with powers to regulate how private land is used in order to protect the public interest. The Government exercises these powers through compulsory acquisition and development control. Compulsory acquisition is the power of the state to take over land owned privately for a public purpose. However, the Government must make prompt payment of compensation. (National Land policy, 2009).

Chapter 4 of the land policy under Environmental Management Principles, The National Land Policy provides for the policy actions for addressing the environmental problems such as the degradation of natural resources, soil erosion, and pollution. (National Land policy, 2009)

For the management of the urban environment, it provides guidelines to prohibit the discharge of untreated waste into water sources by industries and local authorities; it also recommends for appropriate waste management systems and procedures, including waste and waste water treatment, reuse and recycling. The policy goes further to advocate for environmental assessment and audit as a land management tool to ensure environmental impact assessments and audits are carried out on all land developments that may degrade the environment and take appropriate actions. Public participation has been indicated as key in the monitoring and protection of the environment. (National Land policy, 2009).

Relevance

SEZ management shall implement the EMP to ensure that the environment around the proposed site is not polluted by subsequent activities during construction and operational phases. Health and safety measures will have to be maintained to protect users and workers during construction and operational phases.

4.3.3 Kenya Vision 2030

Kenya Vision 2030 is the country's long term development blueprint guiding development in Kenya from 2008 to 2030.Its objective is to transform Kenya into a newly industrializing, "middle income country providing a high-quality life to all its citizens by the year 2030" Section 5.4 on the Environment, states that Kenya aims to be a nation living in a clean, secure and sustainable environment by 2030. It also states that Kenya will harmonize environment-related laws for better environmental planning and governance. (Kenya Vision 2030, 2007)

Relevance

As part of environmental protection, mitigation measures have been formulated for this project which will ensure minimal negative effects to the environment. Development is in line with the national vision of providing a high quality of life for all its citizens.

4.3.4 National environmental policy 2013

The goal of this Policy is to Better quality of life for present and future generations through sustainable management and use of the environment and natural resources. (National Environmental Policy, 2013)

Relevance

The EIA Study report, as one of the project's management tool has developed an EMP for the study on how to handle wastes from the development to ensure environment is not compromised by illegal dumping of wastes.

4.4.5 National Policy on Water Resources Management and Development

While the National Policy on Water Resources Management and Development enhances a systematic development of water facilities in all sectors for promotion of the country's socio- economic progress, it also recognizes the by-products of this process as wastewater. It, therefore, calls for development of appropriate sanitation systems to protect people's health and water resources from institutional pollution. This implies that Industrial and business development activities should be accompanied by corresponding waste

management systems to handle the waste water and other waste emanating there from. The same policy also requires that such projects undergo comprehensive ESIAs that will provide suitable measures to be taken to ensure environmental resources and people's health in the immediate neighbourhood and further downstream are not negatively impacted by the emissions.

Relevance

As a follow-up to this, EMCA, 1999 requires annual environmental audits to be conducted in order to ensure that mitigation measures and other improvements identified during project implementation phase.

4.3.6 Forest Policy, 2014

It calls for an ecosystems approach to the management of forests, recognition of customary and use rights to support sustainable forest management and conservation

Relevance

The RVDT Tech City project has made provision of plan to ensure that there are trees planted in the development area and participate in other tree planting activities in the surrounding area to help the Kenya Government achieve 10% minimum forest cover nationally. In addition, the plan has provided for all roads, pedestrian walkways and parking spaces in the park to be lined with trees. Unutilized spaces in individual plots will also be greened. This will significantly increase the proportion of trees in the Zone.

4.3.7 Kenya Industrialization Policy

This policy has a vision for the country to be the leading industrial nation in Africa with a robust, diversified, and globally competitive manufacturing sector. Its specific objectives include;

1. Strengthening local production capacity to increase domestically- manufactured goods by focusing on improving the sector's productivity and value addition by 20%
2. Raising the share of Kenyan manufactured products in the regional market from 7 to 15 %
3. Developing niche products through which Kenya can achieve a globally competitive advantage
4. Increasing the share of Foreign Direct Investment in the industrial sector by 10%

5. Increasing by 25%, the share of locally-produced industrial components, spare parts, and machine tools
6. Increase the local content of locally-manufactured goods for export to at least 60%
7. Increasing the share of industries located outside major urban centers to at least 50%

Relevance

Mitigation of possible negative impacts on the environment are contained in this EIA study report.

4.3.8 Energy Policy, 2012

The broad objective of the national energy policy is to ensure adequate, quality, cost effective, and affordable supply of energy to meet development needs while protecting and conserving the environment. The specific objectives are to:

1. Provide sustainable quality energy services for development
2. Utilize energy as a tool to accelerate economic empowerment for urban and rural development
3. Improve access to affordable energy services
4. Provide an enabling environment for the provision of energy services
5. Enhance security of energy supply
6. Promote development of indigenous energy resources, and
7. Promote energy efficiency and conservation as well as prudent environmental, health and safety practices

Relevance: The RVDT TC project has incorporated use of energy efficient lighting, that will optimize use of energy and is open to work in liaison organizations such as Kenya Cleaner Production to promote industrial symbiosis in relation to energy conservation.

4.3.9 Integrated National Transport Policy, 2010

The Integrated National Transport Policy (INTP) was prepared in support of the Vision 2030 and sought among other issues to address the following:

1. Poor quality of transport services
2. Inappropriate Modal Split
3. Transport System Not Fully Integrated
4. Urban Environmental Pollution

5. Lack of an Urban/Rural Transport Policy
6. Institutional Deficiencies

Relevance

The RVDT Tech City SEZ project proposes road transport. While it is quite comprehensive it is important during implementation to ensure that all modes are adequately provided for including: private cars and Non-Motorized Transport users.

4.3.10 Kenya's Green Economy Strategy and Implementation Plan (GESIP 2016-2030)

The vision is for a low-carbon, resource efficient, equitable, and inclusive socio-economic transformation.

Relevance

In regard to the RVDTTC project, provisions are incorporated to have the developments in the zone to operate in a manner that does not adversely affect the environment but carried in an economical way.

4.3.11 The Kenya National Spatial Plan 2015-204

The National Spatial Plan supports the implementation of strategic national projects specifically the flagship projects spelt out under Kenya Vision 2030 by indicating their spatial locations and providing a framework for absorbing the spatial impacts of these projects. It provides a coordinating framework for sectorial planning which has been lacking in the country and it aims to address the dis-connect that has existed for a long time between physical and economic planning. The specific objectives of the National

Spatial Plan are: -

1. To create a spatial planning context that enhances economic efficiency and strengthens Kenya's global competitiveness.
2. To promote balanced regional development for national integration and cohesion.
3. To optimize utilization of land and natural resources for sustainable development.
4. To create livable and functional Human Settlements in both urban and rural areas.
5. To secure the natural environment for high quality of life

Relevance

The RVDT TC project has incorporated the Kenya National Spatial Plan 2015-2045 in its implementation strategy and the project is seen as an avenue that will result in:- opening

markets for goods and services; allow movement of capital in the region and national level ; the area will also attract foreign direct investment; there will be emergence of knowledge, technology, and innovation driven economies in the area.

4.3 12 The Nakuru County Integrated Development Plan 2023-2027

It prioritizes Special Economic Zones (SEZs) and industrial parks to drive economic diversification and growth. The overarching goal of these zones is to transform Nakuru into a "secure, cohesive, and industrialized county" by fostering a trade environment that prioritizes exports and creates sustainable employment

Relevance

Individuals and institutions directly or indirectly affected by implementation of the RVDT TC project have been accorded the right to express their interests and their respective considerations have been included in the development's implementation plan.

4.3.13 Kenya National Policy on Gender and Development of 2011

The overall aim of the Gender Policy 2011 was to provide precedence for the prevention of discrimination on the basis of sex in the national development process in order to improve social, legal/civic, economic, and cultural conditions of women, men, girls and boys in Kenya. Of the identified policy priorities, two were identified as relevant to project implementation. One of the priorities was incorporating gender equality objectives, indicators, as well as preventative action identification into the ministerial performance frameworks to which the project must comply. Additionally, the policy lays out a priority that each project will develop integrated gender equality strategies at the initiative level in priority areas.

Relevance

This policy will be a guide during initial project implementation, especially during hiring of staff, procurement of suppliers, and contracting of sub consultants/contractors.

4.3.14 The Kenya Environmental Sanitation and Hygiene Policy Of 2016-2030

The Kenya Environmental Sanitation and Hygiene Policy (KESHP) 2016-2030 provides broad guidelines to both state and non-state actors at all levels to work towards universal access to improved sanitation leading to improved quality of life for the people. Primarily, the KESH policy aims to increase the proportion of the population with access to improved sanitation to 100 percent by 2030 and ensure a clean and healthy environment for all in Kenya. The

development of KESHP 2016-2030 is a result of extensive policy review and participatory stakeholder consultations and validation meetings held throughout the country.

The policy sets Kenya on the trajectory of ensuring that all Kenyans have sustainable access to improved sanitation and a clean and healthy environment by 2030.

Relevance

The proponent and the contractor will seek to comply with the provision of this policy to achieve 100% open defecation free (ODF) at the project area.

4.3.15 Kenya Health Policy Of 2014-2030

The Kenya Health Policy, 2014–2030 gives directions to ensure significant improvement in overall status of health in Kenya in line with the Constitution of Kenya 2010, the country's long-term development agenda, Vision 2030 and global commitments. It demonstrates the health sector's commitment, under the government's stewardship, to ensuring that the country attains the highest possible standards of health, in a manner responsive to the needs of the population.

Relevance

The proposed project is expected to employ both skilled and unskilled workers some who might come from the marginalized groups within the project area. The rights and fundamental freedoms of these workers should be protected in compliance with the requirements of this policy.

4.3.16 The National Occupational Health and Safety Policy Of 2012

This National Occupational Safety and Health Policy intends to significantly sustain continual development and implementation of the National Occupational Safety and Health systems and programs to reduce incidences of work-related accidents and diseases. In addition, it seeks to offer equitable compensation to those who suffer physical injuries and contract occupational diseases. The main objective of this policy is to establish national occupational safety and health systems and programmes geared towards the improvement of the work environment. The Policy seeks to reduce the number of work-related accidents and diseases, and equitably provide compensation and rehabilitation to those injured at work or who contract occupational diseases.

Relevance

The proponent will need to seek to compliance with the provision of the policy in ensuring that workers operate in a safe and healthy environment and that their welfare is safeguarded. There is also a need to establish a safety policy in line with the Act.

4.3.17 Kenya National Biodiversity Strategy and Action Plan (NBSAP) 2019-2030

The NBSAP 2019-2030 is presented as a road map to achieving biodiversity conservation targets in the country while also fulfilling international and regional obligations. The action plan sets the time required to realize the action, performance and verifiable indicators and allocates responsibilities for implementation to different institutions that include Government Ministries, Departments and Agencies (MDAs), County Governments, Private sector, Research and Academic Institutions, NGOs and CBOs. Its vision is to ensure that by 2030, Kenya will have a highly valued, conserved and sustainably utilized biodiversity contributing to socio-economic wellbeing of the people of Kenya.

Relevance

This policy is triggered by project in that it has the potential to cause significant conversion (loss) or degradation of natural habitats, whether directly (through construction) or indirectly (through human activities induced by the Project). The developer is expected to abide by the above provisions.

4.4 Environmental Legal Framework

The key national laws that govern the management of environment resources in the country have been briefly discussed in the following paragraphs. Note that whatever any of the laws contradict each other, the environmental management and coordination act 1999 prevails.

4.4.1 Environmental Management and Coordination Act (EMCA) of 1999(Revised 2015)

The Act received Presidential assent on 6th January, 2000 and came into force 14th January 2000.The Act was on a review of 77 statutes; 57 of them relating directly to protection of environment and management of natural resources, while the 20 relate indirectly to environment. Lack of coordination in dealing with environmental protection necessitated the need for a comprehensive Act to deal with environmental matters.

Part 11 of EMCA entitles every person in Kenya to a clean and healthy environment and confers upon every person the duty to conserve and safeguard the environment. Part V of the Act provides measures for protection and conservation of the environment. Pollution of environment through waste disposal, dust emission noise radiation pesticides, heavy metals and smell are prohibited. Violation of them may exert restoration orders from NEMA.

Part X11of the Act defines environmental offences and provides for heavy penalties on any person who commits an environmental offence. Section 148 provides that the act shall prevail over any written law, relating to the management of the environment that was in force immediately before coming into force of this act

The proponent has undertaken an EIA Full study report to ensure compliance and will undertake subsequent annual environmental audits. EMCA has provided for the development of several subsidiary legislations and guidelines that govern Environmental Management which are relevant to the current project.

4.4.2 The Environmental Impact Assessment and Audit Regulations 2003 (Legal Notice No. 101) and EIA & Audit Regulations (Amendment) 2019.

Regulation 24 – *EIA license*

-Environmental Impact License shall be issued after the authority approves the project under regulations 23, and shall be issued in form.

Regulation 28 – ***False or incorrect information***

-Substantial changes or modification and when project poses an environmental threat that information or data given by the licensee were false, incorrect or intended to mislead.

Regulation 24 – ***Annual Environmental Audit***

-Annual environmental auditing after presentation of an EIA report shall be undertaken by the licensee to ensure the implementation of environmental management plan is audited on regular basis, an audit report submitted to NEMA annually and ensuring that the criteria to audit is based on environmental management plan developed during the EIA process or after the initial audit.

Regulation 40 - *Monitoring changes after project implementation*

Monitoring by NEMA and Lead Agencies shall be done to establish any possible changes in the environment and their possible impacts, immediate and long term effects of its operations, identify and determine parameters and measurable indicators and conduct

changes that occurred after implementation. The aim of this section is to provide the Proponent and Contractors with quick reference to most critical legal and policy provisions to enable proper planning and impact assessment during project planning and implementation.

4.4.3 The Environmental Management and Coordination (Air Quality) Regulations, 2024.

The objective is to provide for prevention, control and abatement of air pollution to ensure clean and healthy ambient air. It provides for the establishment of emission standards for various sources such as mobile sources and stationary sources. It also covers any other air pollution source as may be determined by the Minister in consultation with the Authority. Emission limits for various areas and facilities have been set.

The proponent is encouraged to strictly adhere to the provisions and requirements of these regulations during construction and operations.

4.4.4 Water Quality Regulations, 2025

Water quality Regulations apply to water used for domestic, industrial, agricultural and recreational purposes; water used for fisheries and wildlife purposes, and water used for any other purposes. Different standards apply to different uses. These Regulations provide for the protection of lakes, rivers, streams springs, wells and other sources. The overriding objective of the Regulations is to protect human health and the environment. Proper enforcement of the Regulations can lead to marked reduction in water-borne diseases. The Regulations provide guidelines and standards for the discharge of poisons, toxins, radioactive and other pollutants into the aquatic environment. Standards have also been set for discharge of effluent into the sewer and aquatic environment. The National Environment Management Authority regulates discharge into the aquatic environment.

Part of the study involves a review of the environmental standards that provides a basis for monitoring and future audits. The table below presents recommended guidelines on wastewater quality for discharge into the public sewers and open water bodies

Standards for Discharge into public sewers (mg/l)

Parameter	**Maximum Levels Permissible**
Suspended solids (mg/L)	250
Total dissolved solids (mg/L)	2000
Temperature 0C	20 - 35

pH	6-9
Oil and Grease (mg/L) -where conventional treatment shall be used	10
Oil and Grease (mg/L)- where ponds is a final treatment method	5
Ammonia Nitrogen (mg/L)	20
Substances with an obnoxious smell	Shall not be discharged
Biological Oxygen Demand BOD5 days at 20 oC (mg/L)	500
Chemical Oxygen Demand COD (mg/L)	1000
Arsenic (mg/L)	0.02
Mercury (mg/L)	0.05
Lead (mg/L)	1.0
Cadmium (mg/L)	0.5
Chromium VI (mg/L)	0.05
Chromium (Total) (mg/L)	2.0
Copper (mg/L)	1.0
Zinc (mg/L)	5.0
Selenium (mg/L)	0.2
Nickel (mg/L)	3.0
Nitrates (mg/L)	20
Phosphates (mg/L)	30

Standards for Discharge into Environment (Water body)

Parameter	**Max. Allowable (Limits)**
1,1-dichloroethylene	0.2
1,2-dichloroethane	0.04
1,3-dichloropropene (mg/l)	0.02
Alkyl Mercury compounds	Nd
Ammonia, ammonium compounds, NO3 compounds and NO2 compounds (Sum total of ammonia-N times 4 plus nitrate-N and Nitrite-N) (mg/l)	100
Arsenic (mg/l)	0.02
Arsenic and its compounds (mg/l)	0.1
Benzene (mg/l)	0.1
Biochemical Oxygen Demand (BOD 5days at 20 oC) (mg/l)	30
Boron (mg/l)	1.0
Boron and its compounds – non marine (mg/l)	10
Boron and its compounds –marine (mg/l)	30
Cadmium (mg/l)	0.01
Cadmium and its compounds (mg/l)	0.1
Carbon tetrachloride	0.02
Chemical Oxygen Demand (COD (mg/l)	50
Chromium VI (mg/l)	0.05
Chloride (mg/l)	250
Chlorine free residue	0.10

Chromium total	2
cis –1,2- dichloro ethylene	0.4
Copper (mg/l)	1.0
Dichloromethane (mg/l)	0.2
Dissolved iron (mg/l)	10
Dissolved Manganese(mg/l)	10
E.coli (Counts / 100 ml)	Nil
Fluoride (mg/l)	1.5
Fluoride and its compounds (marine and non-marine) (mg/l)	8
Lead (mg/l)	0.01
Lead and its compounds (mg/l)	0.1
n-Hexane extracts (animal and vegetable fats) (mg/l)	30
n-Hexane extracts (mineral oil) (mg/l)	5
Oil and grease	Nil
Organo-Phosphorus compounds (parTanaon, methyl parTanaon, methyl demeton and Ethyl parantrophenyl phenylphosphorothroate, EPN only) (mg/l)	1.0
Polychlorinated biphenyls, PCBs (mg/l)	0.003
pH (Hydrogen ion activity----marine)	5.0-9.0
pH (Hydrogen ion activity--non marine)	6.5-8.5
Phenols (mg/l)	0.001
Selenium (mg/l)	0.01
Selenium and its compounds (mg/l)	0.1
Hexavalent Chromium VI compounds (mg/l)	0.5
Sulphide (mg/l)	0.1
Simazine (mg/l)	0.03
Total Suspended Solids, (mg/l)	30
Tetrachloroethylene (mg/l)	0.1
Thiobencarb (mg/l)	0.1
Temperature (in degrees celsius) based on ambient temperature	± 3
Thiram (mg/l)	0.06
Total coliforms (counts /100 ml)	30
Total Cyanogen (mg/l)	Nd
Total Nickel (mg/l)	0.3
Total Dissolved solids (mg/l)	1200
Color in Hazen Units (H.U)	15
Detergents (mg/l)	Nil
Total mercury (mg/l)	0.005
Trichloroethylene (mg/l)	0.3
Zinc (mg/l)	0.5

Sources: EMC (Water Quality) Regulations

During the construction and operation phases, RVDT TC in conjunction with relevant government agencies, will require constant monitoring in order to ensure that the activities do not affect the water quality of both surface and underground water resources as the proponent aims to comply with the standards specified in this regulation.

4.4.5 The Sustainable Waste Management Act No31 of 2022

Legal Notice No. 121: Section 4-6*Part II* of the Environmental Management and Co-ordination (Waste Management) Regulations, 2006 states that: -4.

(1) No person shall dispose of any waste on a public highway, street, road, recreational area or in any public place except in a designated waste receptacle.

(2) Any person whose activities generate waste shall collect, segregate and dispose or cause to be disposed off such waste in the manner provided for under these Regulations.

(3) Without prejudice to the foregoing, any person whose activities generates waste has an obligation to ensure that such waste is transferred to a person who is licensed to transport and dispose off such waste in a designated waste disposal facility. In addition, the Regulations state that:

5. (1) a waste generator shall minimize the waste generated by adopting the following cleaner production methods

The proponent shall ensure that the main contractor adopts and implements all possible cleaner production methods during the construction phase of the project. During the construction phase of the project, the proponent shall ensure that the main contractor implements the above-mentioned measures as necessary to enhance sound Environmental Management and Coordination (Noise management of waste).

4.4.5 The Sustainable Waste Management Act No31 of 2022

Legal Notice No. 120; Part II – Protection of Sources of Water for Domestic Use.

(1) Every person shall refrain from any act which directly or indirectly causes or may cause immediate or subsequent water pollution, and it shall be immaterial whether or not the water resource was polluted before the enactment of these Regulations

(2) No person shall throw or cause to flow into or near a water resource any liquid, solid or gaseous substance or deposit any such substance in or near it, as to cause pollution

5. All sources of water for domestic uses shall comply with the standards set out in the First Schedule of these Regulations.

The proponent and project Architect as well as engineer are urged to ensure that drainage channels are well designed during the construction phase of the project, and upon completion the entire project is supposed to be connected the wastewater treatment plant.

4.4.6 Noise and Excessive Vibration pollution (Control) Regulation, 2009

The Regulations prohibit any loud, unreasonable, unnecessary or unusual noise that annoys, disturbs, injures or endangers the comfort, repose, health or safety of others and the environment. In determining whether noise is loud, unreasonable, unnecessary or unusual, the following factors may be considered: Time of the day; Proximity to the residential area; Whether the noise is recurrent, intermittent or constant; The level and intensity of the noise; Whether the noise has been enhanced in level or range by any type of electronic or mechanical means; and, Whether the noise can be controlled without much effort or expense to the person making the noise.

Maximum Permissible Noise Levels - Construction Phase

Facility		Maximum noise level permitted (Leq) in dB(A)	
		Day	Night
1.	Health facilities, educational institutions, homes for the disabled, etc.	60	35
2.	Residential	60	35
3.	Areas other than those in (i) and (ii) above	75	65

Time frame:

Day: 6.01 am – 8:00 pm (Leq, 14 hours)

Night: 8:01 pm – 6:00 am (Leq, 10 hours)

Maximum Permissible Noise Levels - Operation Phase

Facility		Sound Level Limits (dBA) (Leq, 14 h)		Noise Rating Level (NR)(Leq, 14 h)	
		Day	Night	Day	Night
1	Silent Zone	40	35	30	25
2	Places of Worship	40	35	30	25
3	Residential - Indoor	45	35	35	25
4	Residential - Outdoor	50	35	40	25
5	Mixed residential (with some commercial and places of entertainment)	55	35	50	25
6	Commercial	60	35	55	25

Time frame:

Day: 6.01 am – 8:00 pm (Leq, 14 hours)

Night: 8:01 pm – 6:00 am (Leq, 10 hours)

The proposed project site neighbor's other developments. Noise & vibration nuisance will be highly avoided and in the case of excess noise and vibration. To minimize the impacts of noise and vibrations from the proposed activities. All possible care will be undertaken to ensure that the machinery is properly greased and oiled to reduce friction and possible noise emission.
The contractor /sub-contractor for civil works will be required to ensure compliance with the above regulations in order to promote a healthy and safe working environment throughout the construction phase.

4.4.7 Special Economic Zones Act of 2015

Part V, section 27 (3): In evaluating applications for special economic zone developer, operator and enterprise licenses, the Authority shall assess the specific engineering and financial plans, financial viability, and environmental and social impact of the applicant's proposed special economic zone project, as appropriate.

The proponent has made provisions to ensure that it will adhere to all laws and policies relevant in Kenya during the Master Plan implementation.

4.4.8 The Physical Planning Act 2019

This Act empowers Local Authorities to plan, guide and control development activities taking place within their areas of jurisdiction. The Act empowers Local Authorities with the powers to prohibit or control the use and development of land and to approve all development applications.The Act further provides for penalties relating to contravention of its provisions. A Local Authority is in addition empowered to require a development applicant to submit an ESIA where a proposed development is considered of potential injurious impacts on the environment, (section 36)

The proponent has to acquire the necessary approvals from the department of physical planning.

4.4.9 The Building Code 2024

Building Code regulates all the development activities into the building industry to ensure safety, convenience and acceptable standards. The By-Laws specify design standards relating to building materials, building sites, foundations, walls, fire safety. Roofs, floors, chimney, stairs, lifts, refuse disposal, water supply, ventilation and drainage of building. The By-laws

also specify standards for sanitary conveniences, sewers, access to plots and sitting and spacing about building within a given plot. Any person who erects a building or develops land or changes the use of a building must therefore comply with the requirements of the code. All such developments must be applied for in a prescribed form and submitted to the relevant local authority for consideration and consequent approval or rejection.

During project implementation, the appointed contractor shall meet registration and approval requirements with NCA

4.4.10 Water Act 2016

The ministry of water is vested with duty to conserve and regulate the use of natural water resource. A section of the act related to the environment prohibits the abstraction of water without permit and also spells out penalties for pollution of water. The ministry through the district water board regulates the use of water and drilling boreholes. The Acts also creates the water resource management authority responsible for the regulation of water allocation through the issuance and amendments of water permits.

Section 73 of the Act provides that a person who is licensed to supply water has a responsibility of safeguarding the water sources against degradation. According to section 75 (1) such a person is required to construct and maintain drains, sewers and other works for intercepting, treating or disposing of any foul water arising or flowing upon land for preventing pollution of water sources within his/her jurisdiction.

Developments envisioned by RVDT TC project will require to keep water use consumption for monitoring purpose and as part of legal compliance to the regulations. Water sources such as boreholes and wells will be expected to seek Water Resource Authority (WRA) approval as the authority is liable for management, conservation, use and control of water resources

4.4.11 Public Health Act 2012 ((Drainage and Latrine) Rules)

The Rule 85 provides that every owner or occupier of every workshop, workplace or other premises where persons are employed shall provide proper and sufficient latrines for use by employees. Rule 87 requires every contractor, builder or other person employing workers for the demolition, construction, reconstruction, or alteration of any building or other work in any way connected with building to provide an approved position sufficient and convenient temporary latrine for use by such workers. Rule 91 provides that no person shall construct a latrine in connection with a building other than a water closet or a urinal,

where any part of the site of such building is within 200 feet of a sewer belonging to the local authority that is at a suitable level, and where there is sufficient water supply. (Laws of Kenya- Public Health Act, 2012)

This Act is applicable to the project since the contractor for civil works will be required to provide sanitation facilities for use by workers and visitors to the site during the construction.

4.4.12 Prevention Act Cap 246

Section 5 – Drainage System-No operations shall obstruct flow of water into or out of any drainage. The management shall be required to maintain the drainage system within the area of the project for removal of water from any land around the project to prevent larvae breeding.

4.4.13 The Penal Code Cap. 63

Section 191 – *Fouling water*-The proponent shall ensure that no water or any public spring or reservoir is rendered unfit for the purpose for which it was ordinarily used for by the community.

Section 192 – *Dwellings and Neighborhood*-The operation phases of the project shall ensure that health of persons in general dwellings or carrying on business in the neighborhood or passing along a public facility are protected.

Section 193 - *Offensive Trade*-The proponent shall control loud noises or offensive smells so as not to interfere with the common rights of the people within the surrounding. This offence is punishable for common nuisance.

The main contractor for civil works and proponent will be required to ensure strict adherence to the environmental Management Plan throughout the project cycle in order to mitigate against any possible negative impact associated with dust, noise, and effluent discharge.

4.4.14 Occupational Health and Safety Act 2007

This Act of Parliament was enacted to provide for the health, safety and welfare of persons employed in workplaces and for matters incidental thereto and connected therewith. Its relevant clauses and stipulations relevant to the proposed project are;

- Part II of the Act provides the General Duties that Occupiers must comply with in respect to health and safety in the workplace. Such duties include undertaking S&H

risk assessments, S&H audits, notification of accidents, injuries and dangerous occurrences, etc.

- Part III of the Act provides the administrative framework for supervision of the
- Part IV deals with the enforcement provisions that the DOSHS has been provided with under the Act. It discusses the instances when Improvement and Prohibition Notices can be issued as well as the powers of OSH officers.
- Part V of the Act requires all workplaces to be registered with the DOSHS. The Occupier has to apply for registration of their project with the DOSHS on completion of installation of the crusher and before the operational phase of the project.
- Part XI of the Act contains Special Provisions on the management of health, safety and welfare. These include work permit systems, PPE requirements and medical surveillance. All sections of this part of the Act will be applicable to this project during the operational phase.
- Part XIII of the Act stipulates the fines and penalties associated with noncompliance of the Act. It includes those fines and penalties that are not included in other sections of the Act and will be important for an Occupier to read and understand the penalties for non-compliance with S&H provisions
- Part XIV of the Act is the last section of the Act and contains miscellaneous provisions which are not covered elsewhere. Most of the sub-sections under this part of the Act will be applicable to mining projects and it is in the interest of an Occupier to read, understand and ensure compliance with it.

Some of the important subsidiary legislations which operationalized the Act and are applicable to the proposed project are described below.

I. Safety and Health Committee - Rules 2004 Legal Notice (L.N) 31 of OSHA 2007

These rules came into effect on April 28th, 2004 and require that an Occupier formalize a Safety and Health (S&H) Committee if there are a minimum of 20 persons employed in the work place. The size of the S&H Committee depends on the number of workers employed at the place of work. For a Proponent and Contractor, the Occupational Safety and Health Act and the S&H Committee Rules 2004 are important as they require compliance with the following measures:

- Posting of an Abstract of the Factories and Other Places of Work Act in key sections of each area of the workplace.
- Provision of first aid boxes in accordance with Legal Notice No. 160: First Aid Rules of 1977.
- Ensuring that there are an appropriate number of certified first aiders trained by a DOSHS approved institution and that the certification of these first aiders is current.
- Provision of a General Register for recording amongst other things all incidents, accidents and occupational injuries.
- Appointment of a safety and health committee made up of an equal number of members from management and workers based on the total number of employees in the company.
- Training of the safety and health committee in accordance with these rules.
- Appointment of a safety and health management representative by the proponent.

The Safety & Health Committee must meet at least quarterly, take minutes, circulate key action items on bulletin boards and may be required to send a copy of the minutes to the DOSHS local office. Proper record keeping including maintenance of all current certificates related to inspection of critical equipment such as the tractor, transport vehicles and the generator, etc. Such inspections need to be undertaken by a competent person certified by the Director of the DOSHS.

II. Noise Prevention and Control Rules

These rules have set minimum and maximum exposure limits beyond which workers and members of the public should not be exposed to noise without adequate means of protection.

The rules also have limits for exposure out of workplaces. The rules have several recommendations on a comprehensive noise control program for workplaces that includes a requirement for medical examination of workers who are exposed to noise. The rules have also set the minimum noise levels that should emanate from a facility to public/neighboring areas by day or by night. The proponent will provide functional earmuffs for those operating the noise emitting machines and those working in noisy environments; and keep on renewing their noise and vibration permit from NEMA. All in all, the project proponent will be required to adhere to all the stipulations of the OSHA Act, 2007 requirements and regulations.

III. Medical Examination Rules, 2005

These rules provide for Occupiers to mandatorily undertake pre-employment, periodic and termination medical evaluations of workers whose occupations are stipulated in the Second Schedule of the Act and the First Schedule of the Regulation.

The workers are to undergo medical evaluations by a Designated Health Practitioner (DHP) duly registered by the DOSHS. Exposure to airborne crystalline silica present negative impacts to human health, the workers exposed to the dust will be required to undergo medical examinations in accordance with the above Rules. The project proponent is required to ensure that on site workers are examined medically and appropriate gears availed to them while at site, like earmuffs, helmets, overalls and respiratory gears.

IV. Fire Risk Reduction Rules, 2007 Legal Notice (L.N) 59 of OSHA 2007

These rules were promulgated by the Minister for Labour on April 16th 2007 and apply to all workplaces. The rules apply to this sector project in several ways as enumerated below; Rule 16 requires a Proponent to ensure that electrical equipment is installed in accordance with the respective hazardous area classification system.

It is also a requirement that all electrical equipment is inspected after six months by a competent person and the Proponent is required to keep records of such inspections. Rules 29 – 31 refer to the installation and maintenance of firefighting systems in

workplaces. Fire extinguishers are to be mounted at least 60cm above ground while a fire hose reel must be located within a radius of 30m. Fires can arise from electrical fault at the site. Worker's safety will be given priority during both construction and operation phases of the project.

The proponent shall adhere to the provisions of OSHA, 2007 and the subsidiary rules and regulations under it.

4.4.15 Work Injury Benefits Act, 2007

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

Section 7(a) of the Act, on the obligations of the employer, requires an employer to obtain and maintain an insurance policy with an insurer approved by the State in respect of any liability that the employer may incur under this Act to any of his employees.

Section 10(1) States that an employee who is involved in an accident resulting in the

employee's disablement or death is subject to the provisions of this Act, and entitled to the benefits provided for under this Act. It also states expressly that an employer is liable to pay compensation in accordance with the provisions of this Act to an employee injured while at work.

On First Aid covered in section 45(1), an employer is supposed to provide and maintain such appliances and services for the rendering of first aid to his employees in case of any accident as may be prescribed in any other written law in respect of the trade or business in which the employer is engaged.

The proponent shall acquire insurance cover for all the workers for the time they will be working at the project site which will enable them get compensation in case of accident occurrence.

4.4.16 The Trust Land Act Cap 288

This Act makes provision for the administration of Trust land as defined by section 114 of the Constitution of Kenya, the setting a part of an area of Trust land for use and occupation for specified purposes, the use of Trust land and for other related purposes. The act applies to all land which for the time being is trust land The local authority in whom the Trust land is vested ("council") shall divide the Trust land vested in it into such divisions as appear to it to be necessary or expedient for the purposes of this Act, or may declare the whole of that land to be a division for purposes of this Act. Land may be set apart on request of the Government for purposes set out in section 118 of the Constitution.

In pursuance of section 117 (I) of the Constitution, a council may set apart an area of Trust land vested in it for use and occupation: (a) by any public body or authority for public purposes; (b) for the purpose of the extraction of minerals or mineral oils; or (c) by any person or persons for purposes for the benefit of residents. The council

may, with the approval of the Minister, grant a license to any person for the purpose of: (a) the grazing of livestock; (b) the removal of timber or other forest produces from Trust land which is not included in a forest area within the meaning of the Forests Act; (c) the taking of common minerals; (d) wayleaves; or (e) the establishment of temporary labour accommodation.

The project is within a trust land hence this act applies thus the developer will be expected to abide by the above act.

4.4.17 EMCA (Wetlands, river banks, lake shores and sea Shore management) Regulations, 2009

The legislation ensures that no person shall carry out any of the activities stipulated in Section 42 of the Act without a Wetland Resource Use Permit by the relevant lead agency and an Environmental Impact Assessment License issued by the Authority where applicable

The Master Plan has made provisions for sustainable riparian zone management for rivers in the zoned area.

4.4.18 Persons with Disability Act Cap 133

The Government of Kenya took a step to the maximum of its available resources with a view to achieving the full realization of the rights of persons with disabilities set out in this act. The act provides for the rights and rehabilitation of persons with disabilities, to achieve equalization of opportunities for persons with disabilities and to establish the National Council for Persons with Disabilities.

With regards to this project, the act mandates that:

- No person shall deny a person with a disability access to opportunities for suitable employment.
- A qualified employee with a disability shall be subject to the same terms and conditions of employment and the same compensation, privileges, benefits, fringe benefits, incentives or allowances as qualified able-bodied employees.
- No employer shall discriminate against a person with a disability

During project cycle, the project will offer employment opportunities to both skilled and non-skilled persons. The proponent and contractor should abide by the provisions in this act.

4.4.19 Traffic Act Chapter 403

This Act serves as a comprehensive consolidation of laws pertaining to traffic on public roads. It not only regulates various aspects of road usage but also addresses the prohibition of encroachment on and damage to roads, including the protection of land specifically designated for road purposes.

By encompassing these provisions, the Act aims to ensure the orderly and safe use of public roads while preserving their integrity and functionality.

The proposed project is under the provisions of the Act, in that it will utilize the roads near the project.

4.4.20 Public Roads and Roads of Access Act (Cap 399)

Sections 8 and 9 of the Act address the dedication, conservation, or alignment of public travel lines, which includes the construction of access roads adjacent to lands from the nearest part of a public road. These sections outline the procedures and requirements for establishing these travel lines and access roads. In line with this, Sections 10 and 11 of the Act enable authorities to serve notices on adjacent landowners, seeking their permission for the construction of the respective roads. These sections provide a legal framework for the communication and consent process between the authorities and the affected landowners.

By incorporating these provisions, the Act aims to facilitate the proper planning and development of travel lines and access roads, ensuring efficient and safe transportation infrastructure for the public.

The proponent shall issue notices to land owners adjacent to the project area before construction works begin. In addition, the proponent will inform the relevant authorities on the intended modifications of the roads near the proposed project

4.4.21 Way Leave Act Cap 292

Section 3 of the Act grants the Government the authority to construct sewers, drains, or pipelines across any land, as long as it does not disrupt existing buildings. However, the Government must provide one month's notice before commencing such works, as outlined in Section 4. This notice should include a detailed description of the intended works and specify the location for inspection. If any damages occur during the works, Section 8 of the Act stipulates that the owner of the affected property must be compensated. It further states that anyone who constructs a new building without consent on a designated way leave or causes obstruction along the way leave will be considered an offense, and any necessary alterations will be at their own expense.

The proponent shall observe this Way leave Act when developing drainage system for the project.

2.4.22 Employment Act, 2007

This Act applies to all employees employed by any employer under a contract of service. It requires that employee recruitment, contract and grievance management, disciplinary

measures and retrenchment and termination of service should be rational, fair and just. Employment of children is also regulated: Employment of children under thirteen years of age is prohibited, whether gainfully or otherwise in any undertaking (section 56 (1)). Children between thirteen and sixteen years of age may be employed to perform light work which is:

- Not likely to be harmful to the child's health or development; and
- Not such as to prejudice the child's attendance at school, their participation in vocational orientation or training programs or their capacity to benefit from the instructions received (article 56 (2)).

The proponent will need to follow the requirements of the Act during the Project

4.4.23 Land and Environment Court Act, 2012

A Land and Environment Court is established under Section 4 of the Act. The court has jurisdiction to hear any dispute relating to environment and land. The Court has original and appellate jurisdiction to hear and determine all disputes in accordance with Article 162(2)(b) of the Constitution and with the provisions of the Act or any other written law relating to environment and land. The court is also empowered to hear cases relating to public, private and community land and contracts, choices in action or other instruments granting any enforceable interests in land.

The court therefore has jurisdiction to deal with such disputes relating to environment or land administration and management that may arise during project implementation.

4.4.24 Urban Areas and Cities Act, No. 13 Of 2011

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

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

4.4.25 County Government Act 2013

The Act requires that every County council and every urban city shall have powers-

a) To establish and maintain sanitary services for the removal and destruction of, or otherwise dealing with, all kinds of refuse and effluent and, where any such service is established, to compel the use of such service by persons to whom the service is available;
b) To establish and maintain one or more fire brigades and to take all necessary steps for the prevention and extinguishing of fires and to compensate the owners of property demolished or damaged for the purpose of preventing or extinguishing fires;

Section 171 of the Act provides that a municipal council may establish and maintain any such sewage forms or sewage disposal works either within or without its area. It is on the basis of this Act that the proponent is determined to ensure conservation of the project site by adhering to the above act while maintaining environmental and public health safety.

4.4.26 National Construction Authority (2011)

The National Construction Authority Act, Number 41 of 2011 streamlines, overhauls and regulates the construction industry in Kenya. The industry has for many years suffered poor legislative framework and has been dominated by quacks and unqualified persons. All contractors must be registered with the Authority meaning that shoddy contractors and quacks will be locked out of the industry. It is an offence to carry out any construction work without first having been registered with the Authority. The Act contains provisions on quality and safety standards of any construction work.

The proponent shall register the project with the project with authority.

4.4.27 The Environmental Management and Co-Ordination (Conservation of Biological Diversity and Resources, Access to Genetic Resources and Benefit Sharing) Regulations, 2006

Kenya has a large diversity of ecological zones and habitats including lowland and mountain forests, wooded and open grasslands, semi-arid scrubland, dry woodlands, and inland aquatic, and coastal and marine ecosystems. In addition, a total of 467 lake and wetland habitats are estimated to cover 2.5% of the territory. In order to preserve the country's wildlife, about 8% of Kenya's land area is currently under protection.

The country has established numerous goals, as well as general and specific objectives that relate to these issues, among others: environmental policies and legislations; involvement of communities; documentation of national biological resources; sustainable management and

conservation of biodiversity; fair and equitable sharing of benefits; technical and scientific cooperation; biodiversity assessment; dissemination of information; institutional and community capacity building; and integration of biodiversity concerns into development planning.

RVDT TC project is in synergy with the regulation as the plan aims to ensure conservation of biological diversity.

4.4.28 The Energy Act, 2019

The energy Act aims 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 implementer of RVDTTC project should ensure close linkage with the County Government of Nakuru as they have power to ensure efficient use of energy and its conservation.

The Developer will liaise with the Kenya Power and Lighting Company before installation of electric power to the site to ascertain the requirements required to ensure that the power to the site is adequate and doesn't affect other users in the area.

All developments envisioned by the masterplan are expected to protect health and safety of users of energy by providing an enabling environment of operation that protects the health and safety of users of the service for which the license or permit is required and other members of the public affected by the undertaking.

4.4.29 Climate Change Act, 2016

The Act provides for a regulatory framework for enhanced response to climate change; to provide for mechanism and measures to achieve low carbon climate development, and for connected purposes.

Part IV Section 16 states that the Council may, in consultation with the Cabinet Secretary and relevant State Departments, impose climate change obligations on private entities, including entities constituted under the Public Benefits Organizations Act, 2013.

RVDTTC Plan is anchored on sustainability and green initiatives which will be critical to ensure climate change mitigation and adaptation. All developments envisioned by the plan will be anticipated to be climate resilient to extreme temperatures or precipitation.

4.4.30 Industrial Property Act, No. 3 of 2001

The Act provides for the promotion of inventive and innovative activities, to facilitate the acquisition of technology through the grant and regulation of patents, utility models, technology innovations and industrial designs, to provide for the establishment, powers and functions of the Kenya Industrial Property Institute and for purposes incidental thereto and connected therewith.

Part XI Section 80 states that Subject to this section, where—

1. the public interest, in particular, national security, nutrition, health, environmental conservation, or the development of other vital sector of the national economy so requires; or
2. the Managing Director determines that the manner of exploitation of an invention by the owner of the patent or his licensee is not competitive,

The industrial zone users envisioned by RVDTTS Master Plan are anticipated to have the exclusive rights to sell or cause to be sold for commercial or industrial purposes the goods in which the design is incorporated

4.4.31 The National Gender and Equality Act, 2011

National Gender Equality Commission is a constitutional Commission established by an Act of Parliament in August 2011, as a successor commission to the Kenya National Human Rights and Equality Commission pursuant to Article 59 of the Constitution.

NGEC derives its mandate from Articles 27, 43, and Chapter Fifteen of the Constitution; and section 8 of NGEC Act (Cap. 15) of 2011, with the objectives of promoting gender equality and freedom from discrimination.

Gender mainstreaming in this project will ensure that the concerns of women and men form an integral dimension of the RVDTTC development design, implementation, execution and the monitoring and evaluation ensures that women and men benefit equally, and that inequality is not perpetuated

4.4 Institutional Framework

4.4.1 National Environmental Management Authority (NEMA)

The object and purpose for which NEMA is established is to exercise general supervision and co- ordination 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. A Director General appointed by the president heads NEMA. The Authority shall, among others:

- Co-ordinate the various environmental management activities being undertaken by the lead agencies and promote the integration of environmental considerations into development policies, plans, programmes and projects with a view to ensuring the proper management and rational utilization of the natural resources environment on a sustainable yield basis for the improvement of the quality of human life in Kenya.
- Take stock of the natural resources in Kenya and their utilization and consultation, with the relevant lead agencies, and develop land use guidelines.
- Examine land use patterns to determine their impact on the quality and quantity of the natural resources among others. Moreover, NEMA mandate is designated to the following committees:

NEMA will issue improvement orders to Contractors in the event that non-compliance to is observed. NEMA will also review the Environmental Audit reports submitted by private concessionaire during project implementation as required by the EIA/EA regulations (2019).

4.4.2 Water Resources Regulatory Board (WASREB)

The Water Services Regulatory Board (WASREB) is a regulatory state corporation operating under the Water Act, 2016. Its main objective is to protect the interests and rights of consumers in the provision of water services, while ensuring other stakeholders' interests are also safeguarded.

WASREB's statutory mandate is to monitor and review rules and regulations to ensure water services provision is affordable, efficient, effective, and equitable.

Various permits from Water Services Regulatory Board (WASREB) will be required for proposed water abstraction methods, whether surface or ground water.

4.4.3 Nakuru, County Government

The Constitution of Kenya, 2010 under chapter one article 6 has provided for the creation of a decentralized system of government that has devolved the Legislature and the Executive

arms of government into 47 Political and Administrative Counties. The primary objective of decentralization is to devolve power, resources and representation down to the local level. To this end, various laws have been enacted by Parliament to create strategies for the implementation framework and the adoption on which objectives of devolution can be achieved including, but not limited to the County Government act No.17 of 2012, Urban Areas and Cities Act, No. 13 of 2011, National Government Co-ordination Act, No. 1 of 2013, and National Government Coordination Act, No. 1 of 2013.

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

Nakuru County Government will be responsible for the issuance of trade licenses needed for the project, issuance of temporary facilities construction plan approvals, monitoring environment protection within the project, and general development control.

4.4.4 Directorate of Occupational Safety and Health Services (DOSHS)

DOSHS is responsible for the enforcement of Occupational Safety and Health Act (OSHA),2007 and associated regulations. DOSHS undertakes workers' safety and health inspections at its own initiative or upon receiving reports on any associated issues and requires that all Construction sites be registered with the Directorate.

The project construction site will be registered with this authority as workplaces before the commencement of the construction works and the safety management plans.

4.4.5 County Environment Committee.

The County Environment Committee has an oversight and decision-making role at the County level. Like in the case of County Environment Committees, the County Environment Committees are responsible for the proper management of the environment within the province, which they are appointed. They are also to perform such additional functions as are prescribed by this Act or as may from time to time be assigned by the Minister by gazette notice.

4.4.6 Public Complaints Committee.

The Committee is charged with the following functions:

- Investigating allegations/ complaints against any person or against the Authority (NEMA) in relation to the condition of the environment and its management.

- Prepare and submit to the Council periodic reports of its activities which shall form part of the annual report on the state of the environment, and to perform such other functions and excise such powers as may be assigned to it by the Council.

4.4.7 National Environment Action Plan Committee.

This Committee is responsible for the development of a 5-year Environment Action plan among other things. The National Environment Action Plan shall contain: Analysis of the Natural Resources of Kenya with an indication as to any pattern of change in their distribution and quantity over time, and Analytical profile of the various uses and value of the natural resources incorporating considerations of intergenerational and intra-generational equity among other duties as the EMCA specifies.

4.4.8 National Environmental Tribunal.

This tribunal guides the handling of case related to environmental offences in the Republic of Kenya. The Tribunal hears appeals against the decisions of the Authority. Any person who feels aggrieved may challenge the tribunal in the High Court.

4.5 International conventions and treaties

A treaty is a binding agreement under International Law concluded by subjects of International Law, namely states and international organizations. Treaties can be loosely compared to contracts; both are means of willing parties assuming obligations among themselves, and a party to either that fails to live up to their obligations can be held legally liable for that breach. The central principle of treaty law is expressed "pacts must be respected."

Kenya has ratified the following international conventions which are relevant to this Project:

4.5.1 United Nations 2015 Sustainable Development Goals (SDGs)

In October 2015, The United Nations adopted 17 Sustainable Development Goals aimed at transforming the world. Eleven of these goals have some bearing on the RVDT TC Master Plan. They include Goal number 1 aiming at reducing poverty, Goal 2, reducing hunger; Goal 3 good health and wellbeing; Goal 4, clean water and sanitation; Goal 7, affordable clean energy; Goal 8, decent work and economic growth; Goal 9, Industrial growth, innovation and infrastructure; Goal 11, sustainable cities and communities; Goal 12, responsible consumption and production; Goal 13, climate action; and Goal 15, life on land.

The projects and programs outlined in the proposed RVDT TC project are aligned with the objectives of all the 17 SDGs and their 169 targets in the three dimensions of sustainable development i.e., economic, social and environmental. In this regard, RVDTTC has identified SDGs as relevant to its various sectors

4.5.2 Earth Summit on Sustainable Development Agenda 21

The Agenda 21 entails a comprehensive plan of action to be undertaken globally, nationally and locally by organizations affiliated to the United Nations, governments, and other groups in every area in which human's impact on the environment. Kenya continues to implement Agenda 21 plan of action by incorporating its principles in national policies, plans, programmes and strategies.

The provisions have also been incorporated in the RVDT TC plan to promote sustainable development, which comprises of the three (3) underlying tenets of economic, social and ecology, which are well articulated in the EIA Full study

4.5.3 The World Commission on Environment and Development (The Brundtland Commission of 1987)

The Commission in its 1987 report dubbed "Our Common Future" focused on the environmental aspects of development, in particular the emphasis on sustainable development that produces no lasting damage to the biosphere and to particular ecosystems. In addition to environmental sustainability is economic and social sustainability. Economic sustainable development is development for which progress towards environmental and social sustainability occurs within available financial resources.

RVDTTC Plan's with the ethos of social and sustainable development that maintains the cohesion of a society and its ability to help its members work together to achieve common goals, while at the same time meeting individual needs for health and well-being, adequate nutrition, and shelter, cultural expression and political involvement.

4.5.3 African Convention on the Conservation of Nature and Natural Resources

The main objective is to facilitate sustainable use of the above resources. The convention was adopted in Algiers on 15th September, 1968 and came into force on 16th June 1969.

RVDTTC project has provided for land use plans that reaffirms the importance of natural resources both renewable and non-renewable, particularly the soil, water, flora and fauna which is in line with the African Convention on the Conservation of Nature and Natural Resources

4.5.4 United Nations Convention on Biological Diversity (UNCBD)

The convention promotes the protection of ecosystems and natural habitats, respects the traditional lifestyles of indigenous communities, and promotes the sustainable use of resources.

The execution of developments envisioned by RVDT TC Development Plan will impact to the flora and fauna; as such, both the developers and the contractor must ensure that their activities do not affect the immediate ecosystems negatively and that the livelihoods of the local people are not negatively affected but rather enhanced

4.5.5 United Nations Framework Convention on Climate Change (UNFCCC)

The Convention on Climate Change sets an overall framework for intergovernmental efforts to tackle the challenge posed by climate change. It recognizes that the climate system is a shared resource whose stability can be affected by industrial and other emissions of carbon dioxide and other greenhouse gases

The parties agreed in general that they would recognize "common but differentiated responsibilities" with greater responsibility for reducing greenhouse gas emissions in the near term on the part of developed/industrialized countries. Conferences have been held and agreements made in relation to this convention. These include:

4.5.5.1 The Cancun agreements 2010

The developed countries agreed to finance technology and capacity-building support to help developing countries meet urgent needs to adapt to climate change, and to speed up their plans to adopt sustainable paths to low emission economies that could also resist the negative impacts of climate change. This conference represented key step forward in capturing plans to reduce greenhouse gas emissions, and to help developing nations protect themselves from climate impacts and build their own sustainable futures.

4.5.5.2 Durban 2012

All governments committed in Durban to a comprehensive plan that would arrive at an ultimate objective of the Climate Change Convention in order to stabilize greenhouse gas

concentrations in the atmosphere at a level that reduce interference with the climate system and at the same time preserve the right to sustainable development

The contractor will institute precautionary measures to stop and/or limit the amount of greenhouse gas emission through regular maintenance of vehicles and equipment on site and ensuring that idle car engines are switched off Solid waste contribute to emission of greenhouse gases, and any effort made to remove it will be a major contribution towards lowering emissions. The proponent should therefore ensure minimal emission of greenhouse gases so as to contribute to reduction in carbon footprint.

CHAPTER FIVE: IMPACT IDENTIFICATION, MITIGATION/SAFEGUARD MEASURES

5.1 Impact Assessment

The proposed RVDT TC project will result in both positive and negative impacts to the physical, biophysical and socio-economic environment. All feasible measures should be put in place to ensure that; any significant negative impacts are mitigated; positive impacts are enhanced and maximized and local people from neighborhood benefit positively from the project.

5.2 Positive impacts

5.2.1 Positive Impacts on the Physical Environment

5.2.1.1 Optimal Use of Land

Currently, the land proposed for the RVDT TC project is under large-scale agriculture specializing in crop and Livestock farming. The proposed master plan will fully utilize the available land economically to benefit the locals, county government and the national government through the returns earned from various operations in the development.

Land is a precious resource in Kenya and optimized land use is encouraged. Such utilization will not only benefit the proponent but also the residents, local authority, among others. When the proposed development is complete and executed as per the master plan, a lot of economic returns will accrue from mixed development activities compared to the current crop and Livestock farming. In economic terms, the proposed development is more profitable in the long-run.

5.2.1.2 Landscaping and Improved Aesthetic

Implementation of the proposed development, under RVDT TC project, will involve carrying out landscaping activities in different zones of the proposed. Execution of the planned developments together with the green parcels will make the site more interesting, appealing, and aesthetically attractive resulting in a significant positive impact. This will greatly improve visual landscape beauty of the proposed area for master plan implementation

5.2.2 Positive Impacts on the Biological Environment

5.2.2.1 Conservation of riparian zone / riverine vegetation

It is expected that landscaping will be concurrent with the development works on various land use zones. During landscaping of the various zones, assorted urban forestry trees species some exotic and others indigenous will be introduced. The landscaped areas will increase tree cover at the sites proposed for green areas/parks in the master plan.

Some sections of the proposed Mixed-Use Development will be set aside as open spaces and others for natural walks. It is likely that most of these sections will be kept under natural vegetation.

5.2.2.2 Conservation of wildlife habitat and green spaces

The proposed mixed-use development Master Plan has set aside land for development to be green spaces. Creation of buffer zones and protection of the green zone around river Njoro will go a long way in cushioning the areas from spill-over effects of the proposed.

Notably, green spaces interventions are known to improve environmental conditions, protect and improve biodiversity, promote outdoor activities and active life- styles, increase social interaction and exchange, and provide healthy urban conditions for good physical and mental well-being.

Apart from creation of habitat for wildlife and the green spaces will minimize air, water, and noise pollution, and may offset greenhouse gas emissions through CO2 absorption. The green spaces also provide for storm water attenuation, thereby acting as a measure for flood mitigation including preservation of biodiversity and nature conservation.

5.2.3 Positive Impacts on Socio-Economic Aspects

Table below gives a detailed analysis of the positive impacts on socio-economic aspects of the master plan execution.

Socio-Economic aspects	Description
Creation of additional residential space	A residential zone has been set aside as per the master plan. The zone will house low, medium and high density of people mainly middle- and high-end-income earners. It is important to note that in Kenya, the housing space demand by far outstrips the unit supply. This has led to the scramble for the fewer available spaces, which are usually charged

	expensively. Implementation of the master plan will greatly bridge the existing housing shortage in Nakuru City
Growth of industrial sector / Contribution to the Manufacturing Agenda	According to the RVDTTC master plan, a section of the land will be used for industrial activities. Light industries will be established in this zone. This will contribute to the manufacturing, processing and distribution warehouses. Growth in industrial sector will generally be accompanied by a wide range of benefits such as employment opportunities, government revenue amongst others. Establishment of more industries will significantly contribute towards achievement of vision 2030
Increase in property value	Once the project is executed, the land will appreciate hence leading to the overall increase in property value around RVDTTC. The local community may benefit from selling the property at higher profit margins as compared to when there was no development.
Improved communication network coverage	The new industrial and residential zones will increase the demand for better communication services, in terms of internet and normal cellular services. The major communication companies in Kenya will expand their coverage within the region neighboring the development, leading to an overall better and efficient coverage and service provision.
Provision of social amenities	The RVDTTC project proposes a zone to be used in setting up a hospital and student hostels. Implementation of the master plan will not only lead to expansion of health care facilities but also promote efficient and improved provision of these basic services. Growth in health and education sectors are a key pillar in achieving vision 2030 and the sustainable development goals.
Expansion of recreational facilities	The master plan proposes for recreational facilities. Among recreational facilities include golf course, nature trails, play grounds amongst others. These recreational facilities will support the tourism / hospitality industry thereby increasing employment opportunities, generation of revenue amongst other tourism enhancement benefits
Infrastructural development	From the master plan, it is evident that the proposed development will be supported by advanced infrastructure. Such infrastructure

	and service utilities include transport such as roads, electricity lines, water sources / lines, telecommunication lines, waste treatment plants amongst others. A strong and advanced infrastructure and service utilities translate to ease in doing business and a vibrant economy
Creation of employment opportunities	Several employment opportunities will be created during the implementation phase of the various phases / zones including office and residential buildings, roads, telecommunication infrastructure, water projects, industries among other public amenities. This will be a significant positive impact since unemployment rates are currently quite high in Nakuru County and the country at large
Revenue to national and county governments	Through payment of relevant taxes, rates and fees to the government and the local authority, the master plan implementation will contribute towards the national and county revenue earnings.
Increased business opportunities	The large number of master plan implementation staff required will provide ready market for various goods and services, leading to several business opportunities for small-scale traders such as food vendors around the construction site. The various zones to be implemented will also see an increase in demand for construction materials. This as a result will lead to increased business opportunities. During the operation phase of the proposed master plan, quite a number of businesses will mushroom hence creating additional employment and business opportunities for the population within and outside Nakuru County.
Improved security	Execution of the masterplan will lead to implementation of advanced security system for the development. Amongst key envisioned facilities include use of CCTV, gated community estates, private security services emergency response system amongst other advanced security features

5.3 Potential negative

Key potential negative environmental impacts are likely to result from the proposed development during both the construction and operational phase of the project as discussed below;

Construction phase impacts	Operational phase impacts
✓ Loss of agricultural land ✓ Loss of livelihood for current workers ✓ Health and safety risk ✓ Traffic Related issues ✓ Habitat Alteration ✓ Oil Leaks and Spills ✓ Dust nuisance ✓ Noise and vibration nuisance ✓ Vegetation loss ✓ Increase in vehicular traffic ✓ Impacts of solid waste	✓ Impacts of solid waste ✓ Increased demand for water and electricity supply ✓ Mushrooming of Informal Settlements ✓ Public Concerns ✓ Surface drainage ✓ Sewage and effluent

5.3.1 Potential negative during construction phase

5.3.1.1 Loss of Agricultural Land in Nakuru County

Rift Valley Development Trust contribute significantly to agricultural productivity in Nakuru County. Crops and Livestock farming are among the key enterprises in the County. The farm supports many livelihoods within the County and beyond. Land conversion from agriculture to the mixed-use development will mean a reverse of the gains so far made in the agricultural sector. Implementation of the master plan will, therefore, leave a major footprint in the agricultural sector in Nakuru County.

Mitigation Strategies

The following strategies should be established to reduce the loss of agricultural land:

- Retain some sections of the land for agricultural use
- Carry out the development in phases
- Invest some of the land in other intensive agricultural production

5.3.1.2 Loss of Sources of Livelihoods

The existing farm employs workers directly and many indirectly. Implementation of the proposed RVDT TC master plan will thus mean loss of employment by the farm workers.

This will have direct negative impacts on the affected workers and indirect impacts on their dependent's. However adequate measures should be established to ensure alternative sources of livelihoods to the affected workers.

Mitigation Strategies

The following strategies should be established to cushion the farm workers and their dependents from the negative impacts of land conversion:

- Provision of alternative employment opportunities in the proposed development during execution of the masterplan
- Sensitize the workers about the proposed mixed-use development and allow for smooth transition through livelihood restoration programs
- Where feasible compensate the affected appropriately and consider incorporating the locals into the labour force.
- Establish skills development and training opportunities to transit non-skilled local labour force skilled labour force.

5.3.1.3 Health and Safety Risk

The several developments and land use changes envisioned by the Master Plan will result to known workplace safety risks. Safety hazards are likely to increase resulting in a possible increase in accidents involving workers and/or the public. Development works will expose workers to occupational health and safety risks and injuries resulting from accidental falls or use of hand tools and construction equipment. Safety hazards are also posed to the public especially pedestrians and motorists passing near on-going developments.

Upon development (or various phases/projects are complete) and in operation, potential health and safety hazards may arise in the event of a lack of adequate facilities, protection measures, worker protection measures, and general laxity in adherence to best practices and OSHA, 2007 regulations. Adequate health and safety plans will therefore require to be implemented to mitigate all foreseeable health and safety risks in the development.

Mitigation Strategies

- Establish an emergency plan to assist in managing occupational hazards and risks for the development. Risk management plans should also be established with other facility control and safety systems.
- Provide for the safety, health and welfare of workers and all persons at workplaces

- All places intended to be used as a workplace must be registered by DOSHS before they are occupied.
- Ensure that all building plans are approved by the Local Authority
- Establish monitoring measures, hazard identification and risk assessments and Safe Work Method Statements (SWMS) for all activities intended to be done at the development.

5.3.1.4 Traffic Related issues

The envisioned RVDT TC development is likely to result into an increase in current levels of human and vehicular traffic with major impact being felt in the immediate Nakuru-Eldoret and Nakuru-Njoro roads. Human population increase will result to a directly proportional increase in number of vehicles. This may pose a risk of increased traffic related accidents/incidents and traffic snarl-ups.

Mitigation Strategies

- Establish and implement a Traffic Management Plan. Key aspects to be considered include:
  - ✓ Warning signs, aimed at both drivers and other road users, to highlight hazards will be erected along the Nakuru-Eldoret and Nakuru-Njoro roads,
  - ✓ Demarcated pedestrian crossings will be established at appropriate points where necessary,
  - ✓ Barriers to separate vulnerable road users (pedestrians and cyclists) from vehicle traffic in high-risk areas will be considered in the proposed plan area.
  - ✓ Road safety initiatives proportional to the scope and nature of project activities should be designed:
- Adoption of best transport safety practices across all aspects of proposed plan operations with the goal of preventing traffic accidents and minimizing injuries suffered by project personnel and the public.
- Ensure a good connection between spine roads and the Nakuru-Eldoret and Nakuru-Njoro roads
- Provision of adequate vehicular circulation space and parking areas
- Provision of pedestrian walkways along all roads within the development
- Paving all pedestrian walkways with robust, durable, and non-slippery materials

- Provision of all necessary street furniture along all roads within the development to accommodate users (including the disabled, elderly, and children) and to enhance security.
- Provision of bollards in appropriate areas to prevent vehicles from encroaching into the pedestrian domains.
- Provision of streetlights to provide sufficient light for both pedestrian areas and carriage ways.
- Provision of trees along pedestrian walkways for shading and that require minimum maintenance, preferably indigenous for ecological and cultural advantages.
- Ensure Installation and maintenance of all construction signs, signals, markings, and other devices used to regulate traffic, including posted speed limits, warnings of sharp turns, or other special road conditions

5.3.1.5 Habitat Alteration

The EIA full study notes that the execution of the proposed Master Plan will lead to habitat alteration and eventual loss of agricultural land. Although the alternative of analysis clearly showed that the mixed-use development will have higher benefits, it's ideal that the Master Plan ensures reduced catchment disturbances.

Mitigation Strategies

The following mitigation strategies should be put in place to cushion habitat alteration from the proposed RVDTTC Development:

- Maintain the proposed green spaces as per the Master Plan
- Where clearance of natural vegetation is inevitable; ensure replacement with indigenous species / tree planting program in landscaped sections and other green spaces
- Formulation and implementation of a Biodiversity Management Plan
- Ensure all projects comply with the Environmental Management and Co-ordination (Conservation of Biological Diversity and Resources, and Access to Genetic Resources and Benefits Sharing) Regulations, 2006.

5.3.1.6 Oil Leaks and Spills

It is important to note that oil/grease spills / leaks are prevalent in construction sites and in most areas that make use of petroleum products, which contain hard/hazardous elements that are detrimental to the environment.

During construction phase, oil waste may be generated from the vehicles of the residents if poorly maintained.

Mitigation measures

- All machinery must be keenly observed not to leak oils on the ground.
- Maintenance must be carried out in a designated area (protected service bays more suitably outside) and where oils are completely restrained from reaching the ground. Such areas should be covered to avoid storm water from carrying away oils into the soil or water systems by installation of oil interceptors and other suitable facilities.
- All oil products and materials should be stored in site stores or in the contractor's yard and should be handled appropriately to avoid spills and leaks.
- Car Park areas and other places handling oil activities (especially during construction) in the site must be well managed.
- Oil interceptors should be installed in the channels leading from such areas.

5.3.1.7 Dust nuisance

Dust is likely to be generated from the following activities/areas: ground excavation; delivery of building materials to site; and handling and mixing of cement.

i. Ground excavation-

Site preparation in readiness for construction work will require vegetation clearance stripping off of overburden material, ground leveling and compaction. These activities will open-up the ground to wind action and thus potentially resulting in dust generation. This is because vegetation clearance will directly expose the ground to agents of erosion, stripping off of overburden material will loosen soil aggregates thus making them easily susceptible to wind action; while removal of tree stumps and roots will weaken soil bounding and thus can easily be blown by wind

ii. Delivery of building materials to site

Construction materials such as building blocks, cement, sand, steel bars, ballast will be bulky and thus will require to be delivered on site by a fleet of trucks driving in and out of the construction site. During this exercise dust is likely to be generated from: handling of cement which is dusty by nature of the way it is; handling of ballast which could contain loose

iii. Potential Environmental Impacts of Dust

Dust produced will potentially negative effect on employees, general public; and vegetation.

Effects of dust to employees

- Eye irritation.
- Skin irritation.
- Impairment of normal sweating of the skin as it blocks pores on the skin.
- Chocking of the throat.
- Respiratory difficulties.
- Difficulty in breathing.
- Potential course of chest complication and ailment

Dust impacts to immediate neighbors and general public

- Reduced visibility; emission of high particulate matter to the environment will reduce local visibility.
- Continuous exposure of people to dust will likely affect one's eye sight that can potentially result in an outbreak of eye infection.
- Chest related aliment; continuous exposure of people to dust will likely result in chest complications and respiratory disorders.

Dust impacts to vegetation

- Dust settling on plant leaf surface will block leave stoma hence interfering with normal respiration of the plants.
- Dust settling on plants will reduce the evapo-transpiration of plants.
- Animals such as butterflies, caterpillars, grasshoppers who feed of foliage will be affected as the dust settled on foliage will render the foliage unpalatable.
- Heavy dust settling on plant matter will impair on normal growth of the plant.
- Heavy dust settled on plants will choke and kill plants.

iv. Safeguards against dust nuisance

The following measures can be put in place to mitigate possible negative impacts of dust that can result from implementation of the proposed accommodation project.

- ✓ Regular sprinkling of water to be done on open surface and dust grounds until paving is done.
- ✓ Selective cutting of trees in the site should be carried out. Only trees which are on exact proposed position of the buildings should be cleared any other vegetation outside proposed building position should be maintained.

- ✓ Any open area should be planted with appropriate trees, flowers and grasses.
- ✓ Project management and contractor to enforce strict use of personal protective clothing.

Complains of dust related ailments among employees and neighbors to be given access to medical attention

5.3.1.8 Noise and vibration nuisance

Noise is likely to be generated from the following activities/areas:

- ✓ During ground preparation.
- ✓ During assembly of building materials on site.
- ✓ During construction of the accommodation development.

A brief elaboration of each of the potential source/cause of noise is as follows: -

i. Ground preparation

Ground preparation is another activity that will potentially result in noise nuisance. Activities of ground preparation that are likely to result in noise nuisance include;

- ✓ Cutting of large trees on site to pave way for construct work. Some trees on site are large if they will be cut then a power saw must be used. The use of power saw will course noise nuisance.
- ✓ Use of heavy machinery such as excavators, caterpillars in ground excavation will be a source of noise nuisance.
- ✓ Transportation of excavated earth material from site by use of dump trucks will result in noise nuisance. The noise will be mainly from the trucks.

ii. Assembly of building materials

Building materials to be used in construct site will first be gathered and assembled on site. These include building blocks, timber, steel bars, sand, gravel cement. Possible courses of noise nuisance when assembling construction material on site include;

- ✓ Offloading of building materials on site especially steel bars, gravel and building blocks can result in noise.
- ✓ Trucks ferrying in building materials can be a source of noise.
- ✓ Employees involved in offloading of building material can be a source of noise.

iii. Construction of the proposed development

Construction of the accommodation units will be labour intensive. This will involve engaging a large workforce, also during construction some machines and equipment will be in use.

Possible sources of noise during construction work may include: loud talking, shouting and conversation among employees; noise from equipment such as cement mixers; noise from machines such as welding machines and wood working machines; increased machine and equipment activity on site.

iv. Potential environmental impacts of noise

Impacts of noise will potentially affect the immediate neighbors; and employees.

Impacts of noise to immediate neigbours

- ✓ Noise nuisance especially from power saw, excavators, cement mixer, may be a nuisance to immediate neighbors.
- ✓ Continuous exposure of neighbors to noise nuisance may result in noise induced hearing lose.
- ✓ Noise nuisance may reduce concentration of neighbors in their private matters.

Noise impacts to employees

- ✓ Noise nuisance especially from power saw, excavators, cement mixer, may impair oral communication among employees.
- ✓ High noise level will force employees to shout laud when communicating to one another.
- ✓ Exposure of employees to high noise level (above 85dB) continuous for 8hours per day may result in noise induced haring lose.
- ✓ Exposure of ear to peak sound level instantaneously may result to deafness.

i. Proposed noise safeguards

The following measures can be put in place to mitigate possible negative impacts of noise that can result from implementation of the proposed accommodation unit's project.

- ✓ Noise levels to be within the prescribed limits as stated in EMCA (Noise and Excessive Vibration Pollution Control) Regulations, 2009.
- ✓ All construction work to be limited to daytime only.
- ✓ Immediate neighbors to be notified in writing on the date of commencement of construction work at least one month in advance.
- ✓ All employees likely to be exposed to ear noise to be provide with ear protectors.
- ✓ Contractor to ensure strict enforcement on user of ear protectors.
- ✓ Where applicable and possible exceptionally noisy machines to be fitted with noise reduction devices.

- ✓ Any employee who may complain about ear related pain and or complication while at work to access medical attention at the expense of the contractor or project proponent.
- ✓ Where employees are likely to be exposed to continuous noise, management to organize for work to be done in four hours shift instead of eight-hour shift.
- ✓ Noise equipment especially concrete mixer to be located as far away as possible from already built residence in the neighborhood.

5.3.1.9 Vegetation loss

i. Impact of Vegetation Clearance

The proposed project will involve clearing of forms of vegetation on site**.** Vegetation plays vital role in soil conservation as they hold soil aggregate tight thus reducing soil erosion. They also shed their leaves helping in the provision of nutrients to the soil micro-organism which helps in the soil formation. Vegetation clearance also reduces soil erosion by wind and surface runoff. This phase will result in the removal of vegetation on site which is the trees, shrubs and hedges. These can be converted into firewood by the few local residents once allowed to collect. Equally, they can be kept in a safe place where the owner of the land could use in bits as firewood. This activity is likely to lead to the reduction of tree cover as much of the vegetation of the proposed project site will have to be brought down to create space for the construction of the accommodation units and other auxiliary facilities. Cutting of the trees and vegetation removal will directly affect the flora in the proposed project site and in the area. Farther reduction in vegetation cover on site and by extension in the locality will potentially result in the following: -

- ✓ That vegetation gets cleared and that what emerges is a new built-up environment that rarely contributes to the reduction of space for sinking carbon in the atmosphere.
- ✓ That an increased built-up area increases the chances of reduction of the little available natural environments in that built up areas are alien to nature at most
- ✓ Exposing the ground to agents of erosion.
- ✓ Loss of important patching and roosting ground for birds and other fauna.
- ✓ Reduction on the capacity of area carbon sink.
- ✓ Open ground will be exposed to direct sun hence potentially increase soil moisture loss.

ii. Mitigation measures on vegetation clearance

- ✓ Along the periphery of the plots should not be cleared and the trees along the periphery to acts as wing breaks

5.3.1.10 Solid waste

Solid waste in considerable quantity is likely to be generated in two different phases. The first phase will be during site preparation stage while the second phase will be during operational phase of the project. Solid waste to be generated will include kitchen waste, waste paper and garden waste. Of these, kitchen waste will be of critical importance.

i. Potential environmental impacts of solid waste

- ✓ Poorly disposed waste paper especially plastic waste can block drainage.
- ✓ Poorly managed and disposed kitchen waste can attract dieses vectors.
- ✓ Decomposing kitchen waste can pollute local ambient condition.

ii. Safeguard for solid waste pollution

- ✓ Solid waste to be handled, managed and disposed according to the EMCA (Waste Management) Regulations,2006.
- ✓ The project management to contract a NEMA licensed waste collection company disposal of solid waste.
- ✓ Solid waste to be collected regularly for disposal.
- ✓ Waste handling bins to be provided, each bin should have a lid which should always be covered.
- ✓ Colour code to be used to distinguish waste bins of different waste.
- ✓ Waste to be sorted at source.
- ✓ There should be no scattering of waste during transportation to disposal site.
- ✓ Solid waste to be disposed only at NEMA licensed disposal sites.

In a case where kitchen waste is to be held for a day or more before disposal, then cold room facility to be provided for temporary handling to avoid decomposition.

5.3.2 Potential negative during operational phase

5.3.2.1 Increased demand for water and electricity supply to the area

Increase in demand for water and electricity is likely to be experienced once the proposed accommodation development begins to be implemented. Demand for water will be for

construction of the project and water to be used during operation of the accommodation units. As opposed to demand for water, rise in electricity demand will be experienced once the project is complete and operational.

i. Water sources

The project proponent has three possible alternatives that can be exploited to meet the required demand for water. These are (in order of priority): water supplied by the water reservoir; harness local ground water resources and rain water harvesting.

ii. Potential environmental impacts that could result from increase in demand of water and electricity

- ✓ Increased water rationing to the area
- ✓ Increased power supply rationing to the area from national grid.
- ✓ Increased use of diesel power generators.
- ✓ Diversification into the use of alternative energy source as solar will be experienced

iii. Proposed safeguards for public utilities

- ✓ Approximate volumes of water to be required during construction of the proposed accommodation development to be computed in order to put in place mechanisms of reliable supply;
- ✓ Water saving devices such as push taps to be installed to minimize lose through leaking taps;
- ✓ Sinking of borehole to be done after obtaining clearance and licensing from WRA;
- ✓ Energy efficient fixtures to be used in lighting throughout the entire development;
- ✓ Generator to be installed to be automatic to safe on fuel consumption when there Is electricity from national grid;
- ✓ Electricity to be used in heating and warming to be mainly solar;
- ✓ Solar energy to be harnessed and used in pumping water, heating and security lighting

iv. Water demand and usage

Water use in the facilities will be in the following areas: food preparation, cleaning and sanitation, sanitary facilities. Water use for food preparation will be for food cleaning and cooking. Water use for sanitary purposes is mainly cleaning of floors and sanitary facilities. Water demand for these activities will depend on occupancy of accommodation units. The bulk of the water will go to food preparation and sanitation. Presumed sources of water for the project are mainly: municipal supply and borehole water.

v. Potential negative environmental impact of increased water use

- ✓ Increased abstraction of ground water to meet demand may result in over abstraction which will strain local water table. Increase competition for ground water as the number of users in the locality increase.
- ✓ Change in ground water quality overtime due to salt water intrusion

Mitigation Strategies

- An array of strategies should be employed to reduce excessive consumption of water in the proposed master plan development activities. These include:
- Adopt water systems that are efficient and not prone to wastage
- Adopt systems to recycle wastewater
- Development of storm water management plan with design strategies for storm water treatment and filtration systems. Such would entail use of recycled and harvested storm water in cleaning and Landscaping
- Put in place systems of monitoring water consumption and aid in future planning
- Ensure sustainable water resource protection, and conservation options.
- Adopt and implement a water conservation and management & monitoring plan for the development including surface and ground water quality checks from periodic tests and analysis in the various land use zones.

i. Energy demand and use

Energy demand for the facilities will be for lighting, heating, and cooling. Anticipated energy sources will be national grid supply from KPLC, standby generator and Liquid petroleum gas (LPG). Demand for energy use will depend on:

- ✓ Prevailing weather- when it is hot, more energy will be required in air conditioning systems

ii. Sources of electricity

Just like in the case of water sources, there are three possible sources of electricity that the project proponent intends to exploit. These are:

- ✓ First priority is to source electricity from the national grid.
- ✓ Second priority will be installing power generators.
- ✓ Thirdly will be harnessing solar energy.

Electricity from the national grid will be the main supply of electricity.

iii. Potential negative impacts of energy demand and use

- ✓ Increase in energy use in the area will increase the peak demand of energy in the area. This might result to shortage and in extreme case to power rationing.
- ✓ The use of diesel-powered generator as standby power will result in generation of combustion emissions. The emissions are composed of greenhouse gases and thus long operation hours of the emergency generator will result in the higher greenhouse gas emissions.
- ✓ Reliability of energy supply is essential in the kitchen due to voltage sensitive equipment such as freezers and air conditioning systems. Increased energy demand might trigger power outages that would damage some of this equipment resulting in food spoilage.

Mitigation Strategies

The proponent is expected to put in place the following strategic measures to reduce energy consumption

- Carry out energy audits for evaluation and improvement of energy consumption and saving practices adopted by all sectors involved.
- Capitalize on renewable energy opportunities which include the harnessing of solar energy, and generation of energy from waste. This will reduce over-reliance on fossil fuel and expensive sources of energy such as diesel.
- Observe green building technology.
- Ensure machines, equipment and transport systems are energy efficient.
- Put in place systems to monitor energy consumption and aid in future planning.
- Adhere to requirements of the various Energy laws and Regulations including Energy Act, 2019

5.3.2.2 Mushrooming of Informal Settlements

The proposed development may involve mushrooming of informal settlements and kiosks around the surrounding area owing to workers' preference to stay near their places of work to reduce on costs associated with transport.

Mitigation Strategies

- Liaison with Nakuru County's planning department on effective planning regulations and enforcement

- RVDT Tec City proponents should work in collaborative partnerships with the planning department of Nakuru County in supporting the developments compatibility with the neighborhood scale and character.

5.3.2.3 Public Concerns

Based on the proposed Master Plan and scale of the development upon execution, it will have varying impact to the local communities and public.

Mitigation strategies

In brief the following mitigation strategies are recommended:

- Maximize the recruitment of locals where possible and have a Labour Management Plan to ensure health and safety of the community are protected
- Develop community awareness programmes to enhance cohesion between project and the local community
- Consult with the public and the locals during implementation of proposed developments
- Develop and implement a grievance redress mechanism (GRM) to address concerns of the locals.
- Establish a corporate social responsibility (CSR) plan to support key community needs
- Ensure public facilities including roads, parks within the development are aligned
- with the master plan and protected for accessibility / use by the public

5.3.2.4 Surface drainage

Run-off generated by rainfall may cause a myriad of consequences in various facets including flooding and its consequences which may include damage to property, health and safety hazards. The drainage layout should ensure effective flow of the anticipated surface run-off emanating from the roof catchments and other areas within the site.

Mitigation

- The designs should ensure that surface flow is drained suitably into the natural drainage system effectively. The internal channels should be designed with regard to the peak volumes and must ensure the safe final disposal of run-off /surface water and must be self-cleaning.

- Drainage channels should be installed in all areas that generate or receive surface water. The channels should be covered with gratings or other suitable and approved materials to prevent occurrence of accidents and dirt entry that may compromise flow of run-off.
- Storm water generated from roof catchments should be harvested, stored and made use in various household activities i.e., general cleaning and garden watering. This will reduce run-off.
- Paving of the side walkways, driveway, parking and other open areas should be done using pervious materials i.e., concrete blocks to encourage water percolation; reducing run-off volume

5.3.2.5Sewage and effluent

Sewage encompasses soil and waste water from sanitary facilities and is of significant concern with respect to the environment and particularly to water and soil. In its raw form, it is serious health hazard and emits offensive odors. It must always drain effectively into the proposed sewer systems; via high quality, well designed and laid pipe networks.

Mitigation

- The internal and external sewerage system should be made of hard, strong, durable, smooth, impervious, and non-corrodible materials.
- All drain pipes passing under building; driveway or parking should be of heavy duty UPVC pipe tube encased in 150mm concrete surround.
- All manholes on drive ways and parking areas must have heavy-duty covers set and double sealed airtight; as approved by specialists. All waste pipes must have cleaning rodding eyes which must be accessible.
- Sanitary facilities must be kept clean always, through regular washing and disinfecting.
- The design of the sewerage system should consider the estimate discharges from individual sources and the cumulative discharge of the entire project even during peak volumes. The gradient should be sufficient to ensure and maintain maximum depth of flow.
- Branches should be streamlined in the direction of flow. The sewer system should be constructed to the relevant standards and appropriate quality materials

CHAPTER 6: PROJECT ALTERNATIVES

6.1Introduction

An alternative analysis of various project options has been discussed in this chapter. The analysis bases this on various options including the employing alternatives to achieve the same plan, use of alternative approaches, and the no intervention and discussing the implication of key Master Plans to the proposed RVDT TC project.

The chapter begins by identification of alternatives which include the no intervention option (carbon sink), farmland/agriculture, Relocation Alternative Mixed Land Use Alternative and proposed mixed use development, Analysis of Alternative Construction Materials, Design, and Technology and Solid Waste Management Alternatives. Justification of the preferred alternative is given in succeeding section with the linkages with ongoing projects and developments forming the last subsection in the chapter

6.2 Alternative Options and Strategies

The land use zoning for the proposed RVDT TC project was done after considering several suitability factors to meet the social, economic, environmental, cultural and even political aspirations of the respective planning jurisdictions. As a result, different land uses were opted for ranging from, among others, residential, commercial, industrial, green areas/open spaces, transportation, public amenities and infrastructure in a balanced manner that promotes sustainable development. The establishment of the proposed project conforms to this provision by actualizing the development demands in addition to meeting the flagship project proposals of the Kenya Vision 2030.

Much as this development conforms to the zoning provisions of the land, there is need to widen the scope of potential alternative developments that may suffice needs other than the designated use. Should there be justifications beyond reasonable doubt that an alternative development can be established on the land whose returns economically, environmentally and socially supersede those of a mixed-use development, and then a change of mind can be considered.

The ESIA team identified four possible alternatives/ options to which the land can be used. They include:

Option 1-No Development,

Option 2- Mixed Land Use Alternative,

Option 3-Farm land /Agricultural Use Option and

Option 4-The Proposed Mixed-Use Masterplan Use.

The likely environmental and socio-economic impacts of each option were assessed. The results are as reported descriptively below:

6.2.1 Option 1: No Development (Carbon sink/ sequestration Option)

The proposed RVDT TC project shall occupy 199.4 hectares of land. Land is one of the finite natural resource on earth. Its optimal utilization is therefore one key factor to consider. This option has the highest and most appealing environmentally and ecologically rewarding outputs and promote carbon sequestration. However, if the value of the land is compared to the no use option, this shall amount to massive wastage of valuable land, because it is located only 4 km from Nakuru City

Carbon sequestration in the agriculture sector refers to the capacity of agriculture lands and forests to remove carbon dioxide from the atmosphere. Trees are natural sequesters of carbon and depending on their characteristics and local circumstances, forests can play different roles in the carbon cycle, from net emitters to net sinks of carbon. Forests sequester carbon by capturing carbon dioxide from the atmosphere and transforming it into biomass through photosynthesis. Sequestered carbon is then accumulated in the form of biomass, deadwood, litter and in forest soils. Release of carbon from forest ecosystems results from natural processes (respiration and oxidation) as well as deliberate or unintended results of human activities (i.e. harvesting, fires, deforestation). For this process of carbon sequestration to succeed it is essential that carbon must not return to the atmosphere from burning.

In this option, the site will remain in its current state as an agricultural land. This means that the proposed mixed-use development would not take place. This option will have some advantages since no land use change will occur, the agricultural sector especially crop and Livestock farming in Nakuru County will not be affected and farm workers will not lose their source of livelihood, among others. Though this is the cheapest option, there would be various losses and foregone opportunities as presented below: -

- There will be financial losses to the master plan proponent since the proponent has invested a lot of capital in terms of acquisition, planning, professional and statutory fees.
- The Nakuru County and national governments will miss out the benefits of the proposed mixed-use development thus limiting its plans to become an investment and business destination. This translates to loss of revenue to the county authority.
- There would be loss of opportunity to provide local community with opportunities for income-generation and poverty alleviation.
- There would be loss of an opportunity to create jobs for increasing number of school leavers and graduates since the proposed mixed-use development will create more job opportunities directly and indirectly.
- The statutory bodies and other professional firms engaged in the proposed development would miss out on the potential revenue.

6.2.2 Option 2: Wildlife Conservancy

Wildlife conservation is the practice of protecting wild species and their habitats in order to prevent species from going extinct. Wildlife plays an important role in balancing the environment and provides stability to different natural processes of nature and maintenance of essential ecological processes and life-support. Major threats to wildlife include habitat destruction/degradation/fragmentation, overexploitation, hunting, pollution and climate change.

Wildlife conservation has social, environmental and economic benefits: Social in the sense that, apart from being a carbon sink by absorbing toxic gases in the environment, wildlife provides sites for natural beauty, hiking, controlled hunting, canoeing and wildlife photographing. On the environment perspective, wildlife plays an essential role in the ecological and biological processes that are yet again significant to life. The normal functioning of the biosphere depends on endless interactions amongst animals, plants and microorganisms. This in turn maintains and enhances human life further. To add on these, ecological processes are vital for agriculture, forestry, fisheries and other endeavors that support human life.

Besides, there are several biological processes wherein wildlife plays a key role such as pollination, germination, seed dispersal, soil generation, nutrient cycling, predation, habitat

maintenance, waste, breakdown among other benefits. Wildlife conservation is also linked to the acceleration of ecotourism on a national level which is a very influential stimulus for the Kenyan economy. Eco-tourism and wildlife conservation are complementary or overlapping sectors of the economy. Income generated from ecotourism can be used to fund both wildlife conservation and socio-economic development to benefits of the local communities

Several pockets of wildlife habitats exist within the proposed Master Plan area. Depending on type of habitat, different wild game exists. At the proposed Master Plan area, three types of wildlife habitats exist. Water bodies such as Njoro river and the proposed dams form a key wildlife habitat mostly for aquatic animals. Secondly, the riparian corridors of the water bodies mainly composed of natural forests/vegetation forms another key wildlife habitat at the proposed Master Plan area. Thirdly, the many pockets of grasslands scattered in the proposed area forms another habitat for wildlife.

Ecologically, only small game can survive in such small habitats since the available resources for feeding, sheltering and reproduction are limited. This implies that the existing wildlife habitat will be decimated further to the detriment of the wildlife in habitation. Wild game is known to prefer natural ecosystems and any disruption that may result to departure from the natural state such as habitat fragmentation, loss of nesting sites and other wildlife habitat through bush clearing, disruption of watercourses, establishment of non-native invasive plant species, creation of barriers to wildlife movement and visual and auditory disturbance forces wild game to move out of their habitat, die of heat stroke or die due to lack of their most preferred diet.

The proposed mixed-use land uses are expected to subject the existing wildlife habitats to further disturbances/modifications. Incidences of habitat pollution, especially the water bodies are likely to occur thus altering the existing natural conditions. Surface run-off from the proposed Master Plan development will be used to recharge the dam.

Wildlife Conservancy option is also not compatible to the immediate surroundings of mixed land use developments and as much as this land use option is important, the economic gain is low as compared to the current option of utilizing it as mixed-use city development.

6.2.3 Option 3: Farm land / Agricultural Use Option

Agriculture is the predominant economic activity in the proposed development area. The development area is vastly under crop and Livestock farming. Also notable are sparsely populated natural/indigenous tree species. However, if this land use option is compared to other land use development option identified above, it will be noted that this is not the most optimal way to use the land. This land is in a prime land value area for the mixed use and mixed income area of Nakuru.

6.2.4 Option 4: Relocation Alternative

Relocation option to a different site is an option for the project implementation. At the moment, the proponent has no alternative sites for relocation. Finding and acquiring land to accommodate the scale, type and size of the project and completing official transaction on it may take a long period. Besides, there is no guarantee that such land would be available and suitability is another very important factor, which cannot be ignored.

Although monetary costs should not be used to justify a wrong project, this would also call for extra costs in terms of money and time for example whatever has been done and paid to date would be a direct loss to the proponent. This may also lead to a No Action Alternative situation. The other consequence is that it would discourage both foreign and local investors especially in the housing and industrial sector that has been shunned by many public and private investors in consideration of the above concerns and assessment of the current proposed site, relocation of the project is not a viable option. The problem is further aggravated by the fixed characteristics of land and the bottlenecks of the planning policy

6.2.5 Option 5: Proposed Mixed-Use Masterplan Development

This option will focus on developing the whole 199.4 hectares of land for mixed use development, including housing, commerce, manufacturing industry, agriculture and livestock, recreation, public purpose and natural green open spaces with riparian reserve, water bodies and wetlands. All the proposed development will be served with a comprehensive transportation network and telecommunication facilities.

Recently, the Kenyan government, under its Economic Transformation Agenda, identified four key priority sectors for the development of the country and realization of Vision 2030. Popularly known as the Big Four, the transformation focuses on increasing capacity in

affordable housing, manufacturing sector, universal healthcare and food security. With housing provision for over 150,000 residents planned on completion, alongside tens of thousands of jobs in construction, manufacturing and ancillary services,

Housing has always been a basic human need. Developing countries, Kenya included, have encountered the perennial challenge of housing shortage, more so for the low and middle-income population. The housing shortage can be attributed to the high urban population influx and growth rate. Nakuru City, as the administrative capital of Nakuru County, has heavy shortage of the middle-low-income housing.

The mixed-use development option will optimize economic benefits in its entire decision making. Commercial development shall promote the economic development by providing more space for doing business. One key factor to consider is the socio-economic impact of this option to both the locals and investors.

Industrial development on the other hand has a higher potential of impacting on the value chain aspects of development. For instance, whereas the option will promote the various professional, business and service provision elements of development, industrial development shall promote the entire range from agro-production, manufacturing, logistics, professionals, research and development. This shall also promote production for export. This will earn foreign exchange in the short, medium and long term. The housing development alone cannot achieve this.

Industrialization has been one of the major economic Rivers since the industrial revolution era. As a result, less industrialized countries in the third world countries, Kenya included, have struggled to thrive economically and competitively in the global trade. It is on this backdrop that Kenya established several industrial development flagship projects under the Kenya Vision 2030. Industrial development is an approach to revitalizing the industrial sector that has been dwindling over time. In addition, industries focus on the public value rather than individual value.

6.2.6 Option 6: Analysis of Alternative Construction Materials, Design, and Technology

The proposed project will be constructed using modern, locally and internationally accepted materials 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 concrete pillars and walls will be made using locally sourced stones, cement, sand (washed and clean), metal bars and fittings that meet the Kenya Bureau of Standards requirements. Beautiful and durable re-enforced concrete roofs because they are good in heat insulation with minimal iron sheet roofs. Heavy use of timber during construction is discouraged because of destruction of forests. The exotic species would be preferred to indigenous species in the construction where need will arise. However, these construction methods and technologies to be used will require very little timber.

Priority shall be given to construction techniques and materials that are environmentally friendly, save on time and cost of construction.

Various alternative designs and technology have been evaluated by the proponent and various professionals involved i.e. the architect, engineers, and surveyors end environmental consultants. After extensive discussions and relevant considerations, the various options were assessed and the most optimal design and technology were agreed as per the proposed plans, materials and technology.

6.2.7 Option 7: Solid Waste Management Alternatives

Throughout construction, the project will produce wastes such as excavated soil, wood chips, metal scraps and paper wrappings among other. Wastes to be generated during operation phase are mainly domestic in nature. The Proponent is expected to observe EMCA (Waste Management) Regulations, 2024.

1. An Integrated Solid Waste Management System (ISWMS) is recommended for management of all solid wastes generated throughout the projects phases. The following shall be given preference in its descending order:
2. The developer shall give priority to waste reduction at source of the materials. This option will demand a solid waste management awareness program in the management and the residents.
3. Secondly, Reducing, Recycling, Reuse and composting of the waste. This calls for a source separation program to be put in place. The recyclables will be sold to waste buyers within Nakuru County or donated.
4. Finally, sanitary land filling will be the last option for the developer to consider.

6.3 Justification of the Preferred Alternative - Proposed Mixed-Use Masterplan Use

Given the results of the analysis above, this master plan has opted for the Proposed Mixed-Use Masterplan Use (Option 5). This will result to optimal use of the proposed plan area to reap maximum sustainable benefits. Considering that the preferred option is going to have sustainability features, such as incorporation of renewable energy and eco-designs, this will go a long way in ensuring wise use of resources and boost conservation efforts in the region.

Agriculture will continue to be practiced in the agricultural zones thus not eliminating this practice in the area. The open spaces/green areas/parks will provide a refuge habitat to the existing fauna. This zone will support the preserved indigenous trees in other zones together with those planted during the proposed afforestation programmes to act as carbon sinks in the area.

The proposed RVDT TC project is thus expected to integrate all the facets of a sustainable development by ensuring that the economic, social and environmental factors are the guiding principles in the design, construction and management of the mixed-use development.

CHAPTER SEVEN: CONSULTATIVE PUBLIC PARTICIPATION

7.1 Introduction

The Consultation and Public Participation Process is a policy requirement by the Government of Kenya and a mandatory procedure as stipulated by EMCA 1999 section 58, on EIA for the purpose of achieving the fundamental principles of sustainable development. This chapter describes the process of the public consultation and public participation followed to identify the key issues and impacts of the proposed project.

Public consultation was carried out in this Project with the objectives of minimizing probable adverse impacts of the project through alternate working hours and to achieve speedy implementation of the project by creating awareness amongst the community on the benefits of the project. The purpose of the public consultation includes the following:

- To ascertain the public views on various environmental issues related to the proposed development.
- To encourage and provide for people's participation in project development.
- To Obtain suggestion from stakeholders on possible ways that potential negative impacts can be effectively mitigated
- To facilitate and open and inclusive approach to consultation that provided timely and transparent information to the stakeholders;
- To provide an opportunity for stakeholders to provide feedback on the project raise their concerns;
- To aid project planning and development of mitigation measures and monitoring plans to address issues raised.

7.2 Stakeholder Engagement Plan

7.2.1 Objectives of the Stakeholder Engagement Plan (SEP)

The SEP seeks to define an environmentally, technically and culturally appropriate approach to stakeholder consultation and public participation process. The goal of this SEP is to improve and facilitate decision making and create a platform for communication that actively involves, and fosters in a timely manner, a common understanding between all project stakeholders and project affected persons/neighbors.

The SEP ensures that all groups of affected persons are provided sufficient opportunities to voice their opinions and concerns in regard to the proposed project, which will importantly

help the Authority with decision making on the sound development of the proposed project. The key objectives of the SEP can be summarized as follows:

1. Understand the stakeholder engagement requirements
2. Identify key stakeholders that are affected by the development project
3. Identify the most effective methods and structures through which to disseminate project information (potential environmental impacts and proposed mitigation measures) to ensure regular, accessible, transparent and appropriate consultations and public participation
4. Develop a stakeholders' engagement and public participation process that provides stakeholders with an opportunity to positively influence project planning and design
5. Establish formal grievance/resolution mechanisms,
6. Define roles and responsibilities for the implementation of the SEP
7. Define reporting and monitoring measures to ensure the effectiveness of the SEP and periodical reviews of the SEP based on ESIA study findings:

Key elements for a successful stakeholder engagement and consultations include the following:

- ✓ Proponent to ensure adequate engagement with affected communities throughout the project cycles by disseminating and disclosing relevant environmental and social information,
- ✓ Take account of the outcome of the engagement process with affected communities in the identification of risks and impact associated with the project,
- ✓ Provide affected communities with access to relevant information on:
  - ➢ The purpose, nature, and scale of the proposed project
  - ➢ The duration of the proposed project activities,
  - ➢ Any risks to and potential impacts on such communities and relevant mitigation measures
  - ➢ The envisaged stakeholder engagement process, and the grievance mechanism

7.3 Stakeholder Analysis and Identification

Stakeholder analysis determines the likely relationship between stakeholders and the proposed project and helps to identify the appropriate consultation methods for each stakeholder group during the various project phases. To this purpose, a process for identifying the environmental and social risks and impact of the proposed project will be

established, along with identification of affected persons and the proposed mitigation measures.

- The stakeholder analysis will be carried out to identify:
- Who will be adversely affected by the impacts of the proposed project?
- Who are the most vulnerable among the potentially impacted persons and where special engagement efforts are necessary,
- At which stage of the Proposed Project development will stakeholders be most affected (e.g., planning, construction, operations, decommissioning or both?)
- Which stakeholders might help to enhance the proposed project design,
- Which stakeholders can best assist with the early scoping of issues and impacts?
- Who strongly supports or opposes the changes that the project will bring and why?
- Who is critical to engage with first, and why?

Stakeholders Analysis and Categorization

No.	Community Category	Actual Community
1	Landowners whose property is impacted by the proposed project	Immediate neighbors, Apartment facilities & businesses within project site
2	Local Media	They include; • 2 Local Nation-wide Newspaper/ Dailies • One Local Nation-wide Radio station • The Kenya Gazette Important for carrying the media adverts informing the public of the proposed development project
3	National & County Government Administrative Authorities	• National Gov't: Ministry of Environment • National Environment Management Authority (NEMA) • National Gov't: Interior ✓ County Comm., Nakuru Office (Deputy ✓ County Comm./Asst. County Comm.) ✓ Ward Administration ✓ Area Chief, • County Government of Nakuru Ministries ✓ Lands Physical planning, housing and Urban Development ✓ County roads and Public Work Department ✓ County Environment, energy and Natural Resource ✓ Water Resource Authority (WRA)
4	Infrastructural Sector	They include

	Government Agencies	• National Construction Authority (NCA)
5	Local Political Class	• Area Member of Parliament & County Assembly (MP/MCA)
6	Community Based Organizations (CBOs)	• Churches, mosques
7	Business Groups	• KAMATUSA association
8	Residence Associations	• New Njoro Area Resident Association

7.4 Methodology used for Public Participation and Consultation

Views and concerns from the local residents, local leaders, surrounding institutions and development partners to RVDT, who in one way or another would be affected or have interest in the proposed RVDT TC was sought through interviews, key stakeholder and public meetings as stipulated in the Environmental Management and Coordination Act, 1999 (Cap 387). During the consultation process, the stakeholders were taken through the Master Plan including their objectives and possible impacts associated with implementation activities. Stakeholders were then given time to ask relevant questions regarding the Proposed Master Plan to enable the consultants clarify on any issues that they may not have understood properly. Stakeholders were consulted during screening and scoping.

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

- Identification and compiling a database of interested and affected individuals and institutions
- Interview schedules to different target groups and local community members in the proposed development site.
- Technical Meetings with Key stakeholders

The public consultation and participation were conducted through;

1. Key stakeholder consultation and interviews
2. Key Stakeholder Consultative Meeting
3. Household socio-economic survey

The procedures used for each of the above are outlined below:

7.4.1 Key Stakeholders Consultation and Interviews

During the scoping exercise, fifteen (15) key stakeholders from proponent management team and lead agencies, private investors, interested and affected individuals and institutions within and neighboring the proposed RVDT TC development were identified, consulted and interviewed from 7th December to 8th December 2025

The public participation exercise was conducted by experienced experts via interviews and discussions under the guidance of interview schedules developed to capture the general and specific concerns, comments and issues comprehensively. The completion of such schedules subsequently allowed for the synthesis and analysis of issues that arose which provided basis upon which the environmental, economic and social aspects of the study was undertaken.

The purpose for such interviews was to identify the positive and negative impacts that have been studied in detailed in this report. A standard public consultation and participation form was administered to the stakeholders to obtain their views, comments and concerns and the minutes were attached as annex.

Board of Directors stakeholders meeting within RVDT boardroom

7.4.2 Public Participation and Key Stakeholder Technical meeting

To ensure adequate public participation was undertaken consultative invitation letters were sent to stakeholders including key ministries, government departments operating in Nakuru, local leaders, local authority amongst others who in one way or another interact with the proposed Master Plan development and the technical key stakeholders meeting held on Friday, 19th December 2025 at Nuru Palace Hotel in Nakuru City the key stakeholders meeting and the respective minutes are attached as annex 3 of this report.

Stakeholder's meeting with government departments at Nuru Palace resort

7.4.3 Household Interviews and Survey

Household surveys were conducted within the entire neighborhood of the proposed development. Survey tools were prepared for effective and systematic interviews by the environmental and socio-economic consultants assisted by a team of technical field assistants from the area on the baseline survey. The tool included; structured and non-structured household interview schedules, key informant guidelines, mapping, sampling of the areas to be surveyed, field visits and observations, and triangulation of field data which focused specifically on the communities who stay within and around the proposed site. Two meetings were conducted on 22nd December 2025.

Public Disclosure of at Rift Valley National Polytechnic main hall

7.5 Positive comments made by the respondents

7.5.1 Employment Opportunities for the Locals

The respondents interviewed/consulted were optimistic that the proposed RVDT TC development activities will create numerous employment opportunities for skilled, semi-skilled and unskilled labour during implementation of the master plan. Even though most of the development will need skilled labour force during operation, the participants expressed hope that they will be able to access employment once the development commences mostly as casual workers.

The respondents were also optimistic that they will be trained in advance by the proponent to take up jobs during construction and operational stages to ensure social investment to the community.

Employment opportunities are of benefit both economically and socially. Generally, employment will lead to multidimensional development in the area and improve several people's living standards.

7.5.2 Poverty Alleviation

The respondents were positive that the proposed RVDT TC project activities would improve the living standards for several individuals and households hence it is expected to alleviate poverty in Nakuru County and its environs, boost the country GDP and improve the living standards of Kenyans.

7.5.3 Increased Business Opportunities

The respondents were optimistic that business opportunities will arise during construction of RVDT TC project. Small scale business people such as food vendors and kiosk owners will benefit greatly during construction and operation stages due to the expected population increase.

7.5.4 Increase in Land Value

Land rent and standard of living of the populace will increase due to high demand for space for urban development thus increasing the value of land and property within and surrounding the RVDT TC project. This in turn will improve the standards of living of the locals.

7.5.5 Attraction of Investors

With the proposed RVDT TC project investors will be attracted to invest their money in the proposed development through enterprises, business among others.

7.5.6 Development of Infrastructure and Social Amenities in Nakuru

Respondents were optimistic that the proposed RVDT TC project activities would improve infrastructure in the area. The area will develop from a peri urban area to an urban area with improved transport and communication infrastructure, power distribution network, water and sewerage networks, education, health and recreational facilities among other social amenities.

7.5.7 Improved and Accessible Education

The respondents were optimistic that the proposed RVDT TC project activities will improve the value of education and accessibility to research institutions.

7.5.8 Improved Security

The respondents were optimistic that the proposed Master Plan development activities will lead to improved security situation in the neighborhood due to the numbers that will reside in the areas and the possible synergistic effects that populated neighborhoods bring along with them.

7.5.9 Improved and Increased Housing in the Area

The development will attract better housing within Nakuru area since there would be high demand due to increased population. Better housing will be required in the proposed mixed-use development to cater for various classes of residents (high, medium and low).

7.5.10 Improve Networking and Culture Exchange

The development will attract various people from different counties and countries and this will promote cultural integration of knowledge and exchange of a wide range of ideas.

7.5.11 Economic Growth / Increased revenue

The use of locally available materials and labour for the proposed Master Plan development activities will contribute towards growth of the local and national economies by contributing to the gross domestic product. The consumption of these materials like sand, cement, steel, building stones, timber, oil and others will attract taxes including VAT which will be payable

to the government hence increasing government revenue while the cost of these raw materials will be payable directly to the producers.

7.5.12 Promote Urbanization in Nakuru County

The proposed RVDT TC project will accelerate economic growth and serve as a catalyst for further urban development in Nakuru County and environs.

7.6 Negative impacts highlighted by the respondents

7.6.1 Habitat loss, alteration and fragmentation of Land

The respondents were concerned that the proposed RVDT TC project activities will result in alteration and disruption to terrestrial habitats. Construction activities may adversely affect wildlife habitats depending on the characteristics of existing vegetation, topographic features, and waterways.

Habitat alteration may include fragmentation of forested habitat and other wildlife habitat through bush clearing, disruption of watercourses, establishment of non-native invasive plant species, creation of barriers to wildlife movement and visual and auditory disturbance due to the presence of machinery, construction workers, and associated equipment.

7.6.2 Environmental Degradation on change of land use

Respondents were concerned with the change of land use from agricultural land to a built environment. Conversion of land in the proposed RVDT TC project from purely agricultural to a mixed-use development will degrade the environment and alter the environmental conditions of the area. impact to the environment through loss of biodiversity in the area.

7.6.3 Noise Pollution and Vibrations

The respondents expressed fear over high noise and vibrations levels produced by the construction machines and other moving machines because of excavation, construction and demolition works and this has likely effects on the strength of the buildings nearby.

7.6.4 Air Pollution

The people expressed concern over possibility of generation of large amount of dust and fumes within the development and surrounding areas because of excavation works and transportation of construction materials and industries.

7.6.5 Water Pollution

The residents fear that due to increased population in the town, the streams would be polluted through sewage effluent and water from industries. This will also affect the quality of water that is being utilized by the locals in Nakuru County and environs.

7.6.6 Increased pressure on infrastructure

Some participants were concerned that due to magnitude of the proposed RVDT TC development, there is a potential of increasing pressure on existing infrastructure such as roads, water supply system, waste handling facilities, electricity etc. This would be due to increased volumes on human and vehicle traffic along the access road.

7.6.7 Increased Insecurity

There were concerns that due to an influx of many people during construction and operational phases, insecurity is likely to increase.

7.6.8 Increased Social vices

Respondents interviewed complained about the emergence of social issues such as drug abuse, immorality, teenage pregnancy and crime.

7.6.9 Dumping of Solid Waste

The people expressed concern over possibility of generation of large volumes of waste during the construction and operation stages.

7.7 Conclusion and Recommendation

The concerns and recommendations raised/provided by the neighbors were recorded and are herein enumerated in this report to help NEMA make an informed decision regarding the proposed RVDT TC project. However, it's the environmental assessment experts' opinion that the approval be given to the proposed project as long as the proponent is willing and adheres to the mitigation measures provided. All the issues raised by the opposing neighbors can be mitigated.

CHAPTER EIGHT: ENVIRONMENTAL AND SOCIAL MANAGEMENT AND MONITORING PLANS (ESMMP)

7.1 Introduction

The environmental management plan involves risk management strategies that should be undertaken by the project proponent and all the stakeholders to mitigate environmental degeneration. They are approaches to monitor, control, reclaim and restore the environment to a sustainable state. EMPs for projects thus provide logical frameworks within which the identified issues of environmental concern can be mitigated or monitored i.e. provide a checklist for project monitoring and evaluation.

The environmental management and monitoring plans have been developed and outlined to bring home the key findings of the Environmental Impact Assessment; recommending necessary mitigation actions, defining roles, monitorable indicators and the estimated cost.

The EMPs outlined here after addresses the identified issues of concern (potential negative impacts) and mitigation measures as well as roles, costs and monitorable indicators that can help to determine the effectiveness of actions to upgrade the quality of environment; as regards the proposed project/new flats. The EMPs have considered both construction and occupation phase

7.2 The Environmental and Social Management and Monitoring Plan for Construction & Occupation Phases

Environmental/Social Impact	Proposed mitigation and aspects for monitoring	Responsibility During Design, Construction and Defects Liability Period	Responsibility After Defects Liability Period	Monitoring Means (C) = Construction (O) = Occupation	Estimated Costs (Kshs)	Monitoring Indicators and Frequency
Soil disturbance	▪ Control earthworks & compact loose soils ▪ Install drainage structures properly ▪ Landscaping on project completion ▪ Control and manage excavation activities ▪ Control activities especially during rainy conditions ▪ Provide soil erosion control and conservation structures/means where necessary. ▪ Ensure standard appropriate practices on the provided gardens.	Contractor	Proponent	(c) Inspection (o) Routine maintenance (c) Inspection (o) Routine maintenance	50,000,000	▪ Vegetation cover ▪ Type of machinery and equipment ▪ Paved area
Changes in land use- extent	▪ Plant vegetation after project completion ▪ Ensure compliance with existing planning policy. ▪ The project shall be approved by the	Proponent and contractor	Proponent	Inspection and records inspection	5,000,000	▪ Conserved vegetation ▪ Records

	relevant government bodies before commencement.					
Changes in hydrology/ impended drainage/deep excavations	▪ Proper Installation of drainage structures ▪ Install cascades to break the impact of water flowing in the drains ▪ Ensure efficiency of drainage structures through proper design and maintenance ▪ Provide gratings to the drainage channels ▪ A geotechnical survey shall be conducted and the recommendations thereof followed. ▪ There shall be no blasting during excavation. ▪ A methodology for excavation shall be generated as required by NCA prior to excavation	Contractor	Proponent	(c) Inspection (o) Routine maintenance	9,000,000	▪ Amounts of storm water ▪ Efficient storm water drains
Air pollution	▪ Enclose the site with dust-proof net during construction. ▪ Water should be sprayed during the construction phase of excavated areas during dry conditions. ▪ Control speed and operation of construction vehicles ▪ Prohibit idling of vehicles. ▪ Ensure sound condition of construction machinery and equipment. ▪ Engage sensitive construction workers.	Contractor	Proponent / Contractor	c) Inspection/ observation	15,500,000	▪ Amounts of dust ▪ Extent of paved area ▪ Type of machinery ▪ Amounts of emission
Noise pollution	▪ Erect suitable barriers to control noise.	Contactor	Proponent	c) Inspection/	8,040,000	▪ Ear muffs/

	▪ Sensitize drivers of construction machinery on effects of noise. ▪ Maintain plant equipment (if present). Construction activities to be restricted to daytime. ▪ Workers in the vicinity of or involved in high-level noise to wear safety & protective gear.		/ Contractor	observation		Buffers/ Mufflers
Water quality and sewerage infrastructure	▪ The design of the entire sewerage system should consider the estimate discharges from individual sources and the cumulative discharge of the entire project even during peak volumes. ▪ Provide for adequate drainage systems. ▪ Ensure effluents are discharged responsibly to the sewerage system. ▪ Monitor quality of wastewater to ensure compliance with the Environmental Management & Coordination (Water Quality) Regulations, 2024 and other relevant Laws.	Contractor	Contractor / Proponent	(c) Inspection/ observation	38,000,000	▪ Water amounts used ▪ Roof catchments and storage
Oil pollution	▪ Proper storage, handling and disposal of new oil and used oil wastes as per waste regulations. ▪ Maintain plant and equipment to avoid leaks. ▪ Maintenance of construction vehicles should be carried out in the contractor's yard (off the site). ▪ Provide oil interceptors along the drains	Contractor	Contractor	(c) Inspection/ observation	960,000	▪ Incidences of spillage ▪ Poorly disposed wastes

	leading from car park and potentially oil risk areas.					
Road safety	✚ Enforce speed limits for construction vehicles especially along roads leading to the site ✚ Provide bill boards at the site/entrance to notify motorists about the development	Contractor	Proponent , Traffic & roads Dept/transporters	(c) Inspection/ observation	2,000,000	✚ Bill boards ✚ Safe access
Public health, occupational health and safety	✚ Train staff/workers on occupational health and safety. ✚ Provide full protective gear & workmen's compensation cover in addition to the right tools and operational instructions & manuals during construction. ✚ Adopt sound waste management system to ensure proper solid waste disposal and collection facilities. ✚ Adopt sound housekeeping practices. ✚ Sensitize residents on environmental management. ✚ Design of sewerage system should be as provided in the plans and should be constructed to approved size and design, standard and of approved materials. ✚ Engage the services of qualified personnel and/or ensure training. ✚ Ensure use of standard construction materials and to the specifications. Avoid	Contractor, supervising Foreman	Proponent where relevant	(o) Observation (o) Observation	37,600,000	✚ Training records ✚ Waste receptors Clean sanitary facilities ✚ First aid kits and training ✚ Sensitive workers

	undesirable, substandard, hazardous or unauthorized materials during construction & maintenance. - Sensitized staff on social/health issues such as drugs - Ensure machinery and equipment servicing and maintenance as per schedules & legal requirements - Post strategically the Factories and Other Places of Work Act Abstract & provide material safety data sheets - Post clear warning signs e.g. 'No unauthorized use of machines', ensure there are guards on moving parts etc. - Provide fully equipped First Aid kits & train staff on its use - Ensure adherence with the legal requirements Factories Act. - Sensitize residents on environmental management. - Ensure Nakuru County Government certifies and issues occupation certificates.					
Vegetation	- Avoid unnecessary removal of vegetation. - Landscaping and planting vegetation in all disturbed areas.	Contractor	Proponent	(o) Observation (o) Observation	6,970,000	- State of waterways - State of landscape

						vegetation
Record Keeping	▪ Collection and analysis of relevant environmental data of the site	Proponent/ contractor	Proponent	Data collection & analysis	4,890,000	▪ Relevant environmental records
Fire safety and preparedness	▪ Install firefighting equipment as provided elsewhere in the report. ▪ Conduct training on firefighting, evacuation and emergency response. ▪ Sensitize the residents on fire risks i.e., conduct regular fire drills. ▪ Adapt effective emergency response plan. ▪ Maintain/service firefighting machinery regularly. ▪ Provide emergency numbers at strategic points.	Contractor	Proponent	Observation	7,320,000	▪ Firefighting equipment ▪ Training records ▪ Display of emergency numbers
Water quality	▪ The design of the entire sewerage system should consider the estimate discharges from individual sources and the cumulative discharge of the entire project even during peak volumes. ▪ Provide for adequate drainage system. ▪ Ensure effluents are discharged responsibly to the sewerage system. ▪ Install an oil water interceptor to trap oils that may be present in wastewater. ▪ Apply and obtain an Effluent Discharge License (EDL) for effluent released into the environment.	Proponent/ contractor	Proponent	Data Collection	3,000,000 per year	▪ Records

	▪ Monitor quality of wastewater to ensure compliance with the Environmental Management & Coordination (Water Quality) Regulations, 2024 and other relevant Laws.					
Waste Management	▪ During construction phase, designate an area for temporarily holding waste materials. ▪ All wastes should be disposed of in accordance with the Environmental Management & Coordination (Waste Management) Regulations, 2006and other relevant Laws. ▪ Segregation of wastes at the source for ease of handling and disposal. ▪ Contract a NEMA licensed waste transporter to transport solid waste from the proposed site during construction and occupation phases. ▪ Sell recyclable waste to recyclers. ▪ Provide bins for temporarily holding waste before collection by licensed transporters during occupation phase.	Proponent	Proponent	Records	2,000,000 per year	▪ Protected environment
Traffic Management	▪ Conduct a traffic Impact Assessment and generate a traffic management plan ▪ The Traffic management plan should be followed throughout the project cycle.	Traffic Engineer	Proponent	Records	5,600,000	▪ Perfect flow of traffic
Security and social	▪ Provide security guards, CCTV cameras and other security apparatus during the entire	Contractor	Proponent	(o) Observation	7,800,000	▪ Security guards

impacts	project cycle. - Construction work timings shall only in line with the NEMA licensing conditions					- Security lights and records

7.3 Occupational Health and Safety Environmental and Social Management and Monitoring Plan for the proposed project during construction and operational phase.

KEY ISSUES	MITIGATION MEASURE	RESPONSIBILITY	TIME FRAME	COST KSH.
Registration of the premises	Register the premises under the Occupational Health and Safety Act Cap 514, of the Laws of Kenya.	Proponent	One-off	5,000
General register	Keep a general register of all workers within the facility as stipulated in Sec 62 (1) of the Occupational Health and Safety Act.	Proponent, contractor	Construction	500
Incidents and accidents	Report any incidents and accidents using prescribed forms obtainable from the Occupational Health and Safety Office.	Site Safety Officer	Continuous	20,000/month
	Conduct regular safety education and training.	Site Safety Officer	Quarterly	5,000,000
	Prepare a contingency plan for emergency response before the start of the project.	Site Safety Officer	One-off	1,000,000
Insurance	Insure the premises as per statutory requirements (third party and workman's compensation).	Proponent and all occupants	Annually	-
Safety healthy environment (SHE) policy	Develop, document and display prominently an appropriate Safety and Healthy Environment policy.	Site Safety Officer	One-off	60,000
Sanitary conveniences	Provide suitable, efficient, clean, well-lit and adequate sanitary amenities at	Contractor,	One-off	1,000,000

	the site taking care of gender division.	proponent and all occupants		
Machinery/equipment safety	Ensure that machinery, equipment, PPE, appliances and tools to be used comply with the prescribed safety and health standards and be appropriately installed, maintained and safeguarded.	Contractor, proponent and all occupants	One-off	-
Storage of materials	Ensure that materials are stored or stacked in such manner as to ensure their stability and prevent any fall or collapse.	Contractor, proponent and all occupants	Continuous	-
Safe of access in the buildings	All floors, steps, stairs and lift of the premises must be of sound construction and be properly maintained.	Contractor, proponent and all occupants	Continuous	-
Emergency preparedness and evacuation procedures	Design suitable documented emergency preparedness and evacuation procedures for emergencies.	Site Safety Officer	One-off	2,000,000
First Aid	On site a stocked first aid box which is easily available and accessible	Site Safety Officer	One-off	680,000
Fire protection	Regularly inspect and service fire-fighting equipment by a reputable service provider and maintain inspection records.	Site Safety Officer	Every 3 months	50,000
Ventilation	Provide adequate space within the premises to allow for adequate natural ventilation through circulation of fresh air.	Contractor, occupants	One-off	-
Lighting	Provide adequate artificial or natural lighting in all parts of the premises where persons are working or passing.	Contractor, occupants	One-off	-

Electrical safety	Do not overload circuits. Clearly mark distribution board switches to indicate respective circuits and pumps. Ensure that no live electrical wires are exposed. Earth all electrical equipment.	Proponent and Contractor	Continuous One-off Continuous One-off	100,000
Diseases	Provide complete refuse collection and handling service.	Proponent and Contractor	Continuous	100,000
Security	Fence the site and employ security personnel operating 24 hours. Install security alarms and/or surveillance systems.	Proponent and Contractor	Continuous	500,000

7.4 The Environmental and Social Management and Monitoring Plan for the Decommissioning Phase

The necessary activities, mitigation measures, and allocation of costs and responsibilities pertaining to prevention, minimization and monitoring of significant negative impacts and maximization of positive impacts associated with the decommissioning phase of the project are outlined in the table below.

EXPECTED NEGATIVE IMPACTS	RECOMMENDED MITIGATION MEASURES	RESPONSIBLE PARTY	MONITORING MEANS	TIME FRAME	COST (KSH)
Demolition waste management					
Demolition waste	Use of an integrated solid waste management system i.e., through a hierarchy of options: i. Source reduction ii. Recycling iii. Reuse iv. Sanitary land filling.	Project Manager and Contractor	Inspection and Observation	One-off	2,000,000
	All structures and partitions that will not be used for other purposes must be removed and recycled/reused as far as possible.	Project Manager and Contractor	Inspection and Observation	One-off	500,00
	All foundations must be removed and recycled, reused or disposed of at a licensed disposal site.	Project Manager and Contractor	Inspection and Observation	One-off	500,000
	Where recycling/reuse is not possible, the materials should be taken to a licensed waste disposal site.	Project Manager and Contractor	Inspection and Observation	One-off	500,000
Rehabilitation of project site					

Vegetation disturbance	Implement an appropriate re-vegetation program to restore the site to its original status.	Project Manager and Contractor	Observation	One-off	200,000
	Consider use of indigenous plant species in re vegetation.	Project Manager and Contractor	Observation	One-off	-
Minimization of occupational health and safety impacts					
Increased occupational health and safety risks	Adherence to the Occupational Health and Safety Rules and Regulations stipulated in the Occupational Safety and Health Act, 2007.	Health and Safety Manager	Inspection, Meeting and Observation	Throughout decommissioning period	100,000
	Provision of appropriate personal protective equipment as well as ensuring a safe and healthy environment for demolition workers.	Proponent	Inspection and Observation	Throughout decommissioning period	500,000
	Mitigate demolition workers' accidents by enforcing adherence to safety procedures and preparing contingency plan for accident response.	Health and Safety Manager	Meeting and Observation	Throughout decommissioning period	200,000
Minimization of demolition noise and vibration					
Noise and vibration	Sensitize demolition vehicle drivers and machinery operators to switch off engines of vehicles or machinery not being used.	Project Manager and Contractor	Meeting	Throughout demolition period	No added cost

	Sensitize demolition drivers to avoid gunning of vehicle engines or hooting especially when passing through sensitive areas such as churches, offices, hospitals, residential houses and schools.	Project Manager and Contractor	Meeting	Throughout demolition period	-
	Ensure that demolition machinery is kept in good condition to reduce noise and vibration generation.	Project Manager and Contractor	Inspection	Throughout demolition period	-
	Ensure that all generators and other equipment used are insulated or placed in enclosures	Project Manager and Contractor	Inspection	Throughout demolition period	
	The noisy demolition works will be planned to be during the day.	Project Manager and all site foremen	Observation	Throughout demolition period	No added cost

CHAPTER 9: CONCLUSION AND RECOMMENDATION

9.1 Conclusion

In conclusion the proposed project will have several positive economic impacts during its different phases that include: creation of employment; stimulating development through revenue, taxes and income, and creating markets for goods and services. In general, several environmental impacts during the construction and operation phase will be encountered. Notable these impacts include noise pollution, exhaust and dust emission, increased water demand, energy consumption and increased waste water, solid waste generation and occupational health and safety impacts, among others. However, these impacts are synonymous with development and can adequately be mitigated through implementation of the EMP prepared. In addition, the contractor and proponent are committed on implementing the measures as outlined in the EMP as well as adhering to all relevant County, National and International environmental, health and safety standards, policies and regulations that govern such developments. Several environmental concerns were also been raised by area residents, specifically those residing within the area. These impacts can be adequately mitigated through implementation of the EMP.

Our conclusion is that the project is important for social and economic development and it benefits out weight its shortcomings. We therefore recommend that the project be licensed.

This project should be licensed subject to annual environmental audit once it has been commissioned. This will be in compliance with the EMCA Act of 1999 (revised 2015) and EIA/EA Regulations 2003 (Amended 2019).

8.2 Recommendation

In ensuring proper mitigation measures are instituted, the proponent and contractor will need to ensure the following:

i) They are involved in every stage of the project implementation and particularly on the management of the anticipated wastes and emissions into the environment as well as other concerns that may touch on the neighboring residents especially control of dust, noise and management of construction waste.

ii) All solid waste and debris resulting from the construction activities must be disposed of at approved dumpsites.

iii) All construction materials that include sand, metals, treatment chemicals must be sourced from known and approve dealers and manufacturers who have environment sign of quality.

iv) Landscaping of the site will be providing habitat to other small animals' bird life.

v) Warning/informative signs should be erected when construction works are about to begin signs should indicate when works are likely to begin and end.

vi) The proponent should ensure that construction activities must be undertaken only during the day, this will minimize anticipated disturbance and nuisance to the adjacent residents and general public.

vii) The proponent should ensure that the development has been approved by the relevant regulatory department and should follow guidelines as set by the departments during construction and operation.

viii) Ensure that the contractor installs all the systems to the specifications developed and agreed upon in the building plan.

ix) The workers should be provided with PPE and safety gear and a fully equipped first aid kit must be within their reach.

x) The proponent should look into ways of enhancing water supply especially to artificial shortage that will be created during construction.

xi) Drainage system will be properly designed installed and regularly maintained.

REFERENCE

i. *Environmental Management and Coordination Act 1999, (revised 2015)*

ii. *Source: www.Nakuru go.ke*

iii. *Kenya gazette supplement number 56, EIA/EA regulations 2003 & Amended 2009 Government printer, Nairobi*

iv. *Government of Kenya: Environmental Management and Coordination Act (EMCA) – 1999*

v. *Environmental Impact Assessment (EIA) Review guide for Communities, December 2014*

vi. *Kenya gazette supplement Acts public health Act (cap 242) government printer, Nairobi.*

vii. *Kenya gazette supplement Acts local authority Act (cap 265) government printer, Nairobi*

viii. *Kenya gazette supplement Acts Physical planning Act 1999 government printer, Nairobi*

ix. *Kenya gazette supplement Acts Water Act 2002 government printer, Nairobi*

x. *Kenya gazette supplement Acts Penal Code Act 9cap.63) government printer, Nairobi*

xi. *Kenya gazette supplement Acts Building Code Act 2000 government printer Nairobi*

xii. *UNEP (1994) an Environmental Impact Assessment –framework for Africa Nairobi*

xiii. *Google; https://en.climate-data.org*

ANNEXES

1) ANNEX 1: SOCIO ECONOMIC IMPACT ASSESSMENT (SEIA)

RVDT SEIA FINAL REPORT-2.pdf

2) ANNEX 2: BIODIVERSITY REPORT

BIODIVERSITY REPORT.docx 3 (1).pdf