



# SIAYA MUNICIPALITY SPATIAL PLAN

2024-2034

*An Economically, Vibrant,  
Prosperous, Socially, Cohesive and  
Interlinked Municipality.*



# CERTIFICATION

## Preparation

I certify that this Plan has been prepared and published as per the requirements of the Physical and Land Use Planning Act, Cap 303; County Governments Act, Cap 265; the Urban Areas and Cities Act, Cap 275; and other Planning standards and guidelines.

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**James Orengo**

**Governor**



## FOREWORD

The Fourth Schedule of the Constitution of Kenya assigns County Governments the mandate to develop land use plans for areas within their jurisdiction. The Local Physical and Land Use Development Plan for Siaya Municipality (2024-2034) herein referred to as the Siaya Municipality Spatial Plan (2024-2034) is a ten-year GIS-based plan that will guide the development of the Municipality. This development blueprint is a statutory requirement, as outlined in part IX of the County Governments Act, Cap 265 and the Physical and Land Use Planning Act, Cap 303. The Plan aspires to make Siaya Municipality " **An economically vibrant, prosperous, socially cohesive, and functionally interlinked Municipality.**"

This Plan reflects the desired spatial form of the Municipality and the desired land use zoning within the 2024-2034 plan period. The desired patterns of land use have been synchronized to other existing National and County plans including the Siaya County Physical and Land Use Development Plan. Siaya Municipality has a rich natural resource base in the form of rivers, forests, fertile soils, and a favourable climate. This Plan has mapped these resources and provided strategies for their conservation, utilization and management. In addition, the spatial structure of the population, existing infrastructure, economic activities, and human settlements have been mapped out and inadequacies identified. The Plan also identifies areas where priority strategic intervention and funding are required and phases out the developments within the short, medium and long term.

The preparation of this Plan was carried out through a participatory process. The process involved representation from the public, the County Government, and the National Government. This Plan will be an important pillar in stimulating economic growth, infrastructural, and social economic development in Siaya Municipality towards the desired Vision.

I urge the people of Siaya to support the implementation of this Plan in line with our desired transformation agenda and hereby commit myself together with the municipal board to appropriate funding for its implementation. I look forward to the Plan's transformation of Siaya Municipality.

**James Orengo**

***Governor***



## PREFACE

Urbanization is a global trend that is accelerating rapidly, with over half of the world's population now living in cities. In Kenya, the urban population has grown from 20% in 2000 and is projected to reach 50% by 2030. Uncontrolled urbanization can have a negative impact on both urban and rural areas. In urban areas, it can lead to overcrowding, slums, and a lack of basic services. In rural areas, it can lead to the loss of agricultural land and the depletion of natural resources. To address the challenges of urbanization, it is essential to prepare plans to guide development in urban areas.

In Kenya, the County Governments Act, Cap 265 and the Physical and Land Use Planning Act, Cap 303 require counties to prepare Local Physical and Land Use Development Plans for urban areas. These plans provide a framework for guiding development in urban areas in a sustainable and orderly manner. The Siaya Municipality Local Physical and Land Use Development Plan has been prepared in accordance with these requirements.

This Plan provides a framework to address the land use challenges in Siaya Municipality through optimization and utilization of the available resources and opportunities. It forms a basis for public and private investments, coordination of sector programmes and projects including land development and management. The Plan seeks to reduce proliferation of informal settlements, improve shelter and water supply, manage sanitation and waste disposal, and improve connectivity within the Municipality. The planning process has ensured adequate citizen participation, establishment of adequate governance structures in the urban areas, and promoted financing of infrastructure and service provision to improve the living standards of Siaya Municipality residents.

The Plan also provides a basis for the management of the changing dynamics of land use and ensure that the town's growth and development take place in a sustainable manner. It has provided a land use mix that strikes a balance between the conservation of agricultural land and modern urban developments. In this way, the plan will help the town to smoothly balance the duality of its rural and urban linkages. The Plan also provides zoning and development guidelines which will be the basis for development control by the municipal board and will contribute to orderly development.

I call upon the people of Siaya and development partners to support the implementation of this Plan, which will significantly assist in achieving our desired Vision.

**Mr. Maurice Otieno McOrege**

***County Executive Committee Member (CECM),  
Lands, Physical Planning, Housing, and Urban Development***



## ACKNOWLEDGEMENT

The Siaya Municipality Spatial Plan (2024 -2034) has been realized through the collaborative effort of various stakeholders who have worked diligently to develop a plan that shall guide land use developments in the Municipality. I therefore wish to express my appreciation to the stakeholders involved; ranging from the actors in the Siaya County Government, representation from various National Government Agencies and Institutions including the National Land Commission (NLC), Ministry of Interior, National Environmental Management Authority (NEMA) among others, the residents of Siaya Municipality, NGOs & CSOs operating within the County, religious leaders, the business community, women & youth representation, PLWDs, and the lead consultant tasked with developing the Plan.

Specifically, I appreciate the great leadership and stewardship offered by our Governor, H.E. James Orengo, EGH, throughout the Planning process. I also acknowledge the invaluable guidance and input of Mr. Maurice Otieno McOrege, the CECM for Lands, Physical Planning, Housing and Urban Development, in the Siaya County Government; the Chief Officer, Mr. Joseph Omondi, the entire Siaya Municipal Board and the Municipal Manager. In addition, I would like to appreciate the spirited coordination and technical expertise offered by the County departments led by the Director Physical Planning Morris Ochieng, Ag. Director of Survey Vincent Oluoch and their teams. We appreciate all section heads and representatives of county departments participating in the plan preparations.

My sincere appreciation extends to the consulting team at Supreme Plans Consultants who worked tirelessly with all acknowledged stakeholders throughout the preparation of this Plan. In particular, I would like to acknowledge the Lead Planner Silas Mbaabu Gichuru, and his team who included Planner Augustine Mulinge Mutuku, Planner Kelvin Ritho Gitonga, Planner Marvin Mutwiri Mugambi, Surveyor Wilson Kamau, Joseph Mwanthi Mutuku, Emily Kagendo Gituma, Charles Muriithi, Brenda Naliaka Wafula, Stephen Kyalo Kaghi, Mercy Mbingu Kilelu, Doreen Kawira Mugambi, Sylvesters Owino Ouka, Serah Muthoni Gituma, Edwin Ndambo Mukeni, Martine Opiyo Ouma and Seli Becky Atieno Otieno.

Finally, I wish to thank the people of Siaya Municipality for sharing their dreams, ideas, and proposals during the numerous stakeholders' workshops and key informant interviews undertaken in the planning process. Your vibrant and invaluable contribution informed the outputs envisaged in this Plan.

**Prof. Paul Waw Achola**

*Chairman*



## EXECUTIVE SUMMARY

The Siaya Municipality Spatial Plan (2024-2034) has been prepared in accordance with the Constitutional, Policy, Legislative and Institutional framework within the jurisdiction of Physical and Land Use Planning. This Plan provides a development framework for Siaya Municipality for a period of 10 years. This is in response to the current development challenges within Siaya Municipality such as uncoordinated linear developments, road encroachments, inadequate basic and support infrastructure, inadequate health infrastructure, education and recreational spaces and other public utilities. In Guiding the Municipality into a desired future, the Plan has outlined priority strategic interventions and the required funding for development projects for short-, medium- and long-term projects. The process of the Preparation of Siaya Municipality Spatial Plan has been guided by Procedures, standards and guidelines with emphasis on stakeholder participation aimed to realize the collective Vision for Siaya Municipality for the period 2024-2034.

The Specific Objectives of the preparation of Municipal Spatial Plan for Siaya Municipality are;

- a) To prepare and submit GIS-based thematic maps for the Municipality
- b) To collect, analyze and present, physical, socio-economic and environmental data
- c) To analyze, pictorialize and illustrate the spatial and non-spatial data collected
- d) To give recommendations that will guide land use planning within the municipality
- e) To prepare land use zoning for Siaya Municipality
- f) To conduct and demonstrate public participation during the plan preparation

The Planning process was carried out in five major phases namely Inception phase, Awareness and Mobilization phase, Data collection and Mapping phase, Situational analysis phase and Spatial Plan Formulation Phase. All the phases were participatory and involved consultation with the stakeholders and the technical team.

The inception phase involved project commissioning where an Introductory Meeting was convened to introduce the Planning team to the County officers. During the Awareness and Mobilization Phase, the stakeholder's workshop was held where stakeholders were sensitized and their roles explained. Additionally, a notice of intention to plan was placed as a legal requirement in ensuring public participation through the Planning Process. The data collection and Mapping Phase was marked by field surveys, mapping and Key Informant



Interviews for primary data collection whereas Land use surveys were utilized in mapping land uses from the satellite imagery. The Situational Analysis is a combined analysis of the following sectors;

- 1) Physical and Natural Environment
- 2) Environment and Natural Resources
- 3) Population and Demography
- 4) Land and Land Use Analysis
- 5) Human Settlements, Urbanization and Housing
- 6) Physical Infrastructure and Services
- 7) Social Infrastructural Facilities and Amenities
- 8) Economic Analysis

The above analysis formed a basis for Preparation of the Municipality Spatial Plan. Aspects of the situational analysis such as the trend analysis, SWOT analysis, planning implications and suitability analysis informed proposals and development strategies at the Spatial Plan preparation phase. Poor drainage within some parts of the Municipality, inadequate water supply, lack of a solid waste management facility, encroachment on riparian reserves are among the challenges identified within the Municipality. On the other hand, Siaya Municipality offers opportunities which the Plan has leveraged upon. Hills and ridges that provide scenic value, soils and rocks that are a source of raw materials for construction and agricultural industries, available dams that can be utilized for irrigation purposes, fertile soils that favor agricultural activities, availability of labour force and rich cultural heritage are among the opportunities within the Municipality; a basis for which its vision can be realized.

The Spatial Plan has considered the Development Vision for Siaya Municipality and Land Suitability Analysis. The Municipality Motto, **A Municipality of Choice for settlement, investments, work and recreation** was adopted in this process. The development strategies on Physiography and Natural Environment are aimed to promote protection and conservation of water sources and forests, promote climate change adaptation through establishment and enhancement of early warning systems for extreme weather events, sustainable waste management practices through zoning of the waste collection and management areas and land rehabilitation through strategies such as Mapping and rehabilitation of the quarrying sites. Strategies in Physical Infrastructure include road



widening, road transformation and improvements, creation of new roads and provision of parking facilities for improved vehicular transport. Provision of 4 additional ECDE Facilities, Provision of an additional primary school within Ojuando A area, upgrading of one dispensary in each ward to a level 3, Acquisition of land and construction of two police posts, establishment of fully serviced fire stations are the recommended Improvement Strategies for Social Infrastructure. The Economic Improvement Strategies include Improved Extension Services, Improved Land Management Practices, Provision of Farm Inputs, Value addition and marketing, Training and Capacity Building in the economic sectors within the Municipality. To improve the quality and supply of housing, strategies to be implemented are Promoting Land Use Planning by allocating sufficient land for new housing development and Public Facilities, Densification of existing residential neighbourhoods, Initiating Urban Renewal (Redevelopment) Programmes within the Urban Centers, Provide and Improve Infrastructure and Services within the Municipality. The above strategies form the basis for the Development of Siaya Municipality Spatial Plan.

The Spatial Plan comprises a Zoning Plan, Detailed Land Use Plan and Action Area Plans and detailed land use plan which indicates the detailed land use zones. The Municipality is divided in twenty-two (22) zones. Within the zones created are types of developments allowed, Ground Coverages and Plot Ratios, Minimum Plot Sizes, Number of Floors Allowed and Special Conditions. The Detailed Land Use Plan builds on the existing uses and the proposed structure plan. The Action Area Plans prepared are for Siaya Town, Ndere Urban Centre, Ulafu Urban Centre, Bar Agulu Urban Centre and Uhuru Urban Centre where development guidelines are specified in accordance with the locations for the zones. The Plan Implementation Framework for various projects and programmes are within the time frames of Quick wins; below 1 year, Short-term; 1 year-2 years, medium-term; 3 years-5 years, long-term; 5 years-10 years and continuous projects spanning through the 10 years. The Capital Investment Plan reflects a financial strategy for projects proposed in the Plan.

Ultimately, the Plan details out a development framework for Siaya Municipality to achieve its vision for the benefit of its people. Implementation of the strategies and actions as outlined in this Plan calls for collaborative efforts by all stakeholders for the Municipality to realise its potential and maximise on the opportunities to achieve sustainability.



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## ACRONYMS

<b>ABDP</b>	Aquaculture Business Development Program
<b>ASDSP</b>	Agriculture Sector Development Support Programme
<b>ATDC</b>	Agricultural Technology Development Center
<b>CBD</b>	Central Business District
<b>CGA</b>	County Governments Act
<b>CIDP</b>	County Integrated Development Plan
<b>CIP</b>	Capital Investment Plan
<b>COVID-19</b>	Corona Virus Disease of 2019
<b>CPR</b>	Cardiopulmonary Resuscitation
<b>CRA</b>	Commission on Revenue Allocation
<b>DEM</b>	Digital Elevation Model
<b>DHIS2</b>	District Health Information Software 2
<b>DP</b>	Development Plan
<b>ECD</b>	Early Child Development
<b>ECDCs</b>	Early Child Development Centres
<b>EMCA</b>	Environmental Management and Coordination Act
<b>FAO</b>	Food and Agriculture Organisation
<b>FBO</b>	Faith Based Organization
<b>FP</b>	Family planning
<b>GIZ</b>	German Agency for International Cooperation (The Deutsche Gesellschaft für Internationale Zusammenarbeit)
<b>Ha</b>	Hectares
<b>HIV/AIDS</b>	Human Immunodeficiency Virus / Acquired Immunodeficiency Syndrome
<b>IBA</b>	Important Bird Area
<b>ICT</b>	Information and Communication Technology
<b>IEBC</b>	Independent Electoral and Boundaries Commission
<b>ISP</b>	Internet Service Provider
<b>ISUDP</b>	Integrated Strategic Urban Development Plan
<b>IT</b>	Information Technology
<b>ITCZ</b>	Inter-Tropical Convergence Zone



<b>JOUST</b>	Jaramogi Oginga Odinga University of Science and Technology
<b>KAA</b>	Kenya Airports Authority
<b>KCAA</b>	Kenya Civil Aviation Authority
<b>KCSAP</b>	Kenya Climate Smart Agriculture Project
<b>KDHS</b>	Kenya Demographic and Health Survey
<b>KeNHA</b>	Kenya National Highways Authority
<b>Kenya Power</b>	Kenya Power & Lighting Company
<b>KeRRA</b>	Kenya Rural Roads Authority
<b>Kg</b>	Kilogramme
<b>KISIP</b>	Kenya Informal Settlement Improvement Project
<b>Km</b>	Kilometers
<b>KMD</b>	Kenya Meteorological Department
<b>KMTC</b>	Kenya Medical Training College
<b>KNBS</b>	Kenya National Bureau of Statistics
<b>Ksh</b>	Kenyan Shilling
<b>KTBH</b>	Kenya Top-Bar Hive
<b>KURA</b>	Kenya Urban Roads Authority
<b>KWS</b>	Kenya Wildlife Services
<b>LPLUDP</b>	Local Physical and Land Use Development Plan
<b>LVSWWDA</b>	Lake Victoria South Water Works Development Agency
<b>MICS</b>	Multiple Indicator Cluster Survey
<b>MoH</b>	Ministry of Health
<b>MTP</b>	Medium-Term Plans
<b>NE</b>	North East
<b>NGEC</b>	National Gender and Equality Commission
<b>NGO</b>	Non-Governmental Organization
<b>NHC</b>	National Housing Corporation
<b>NLC</b>	National Land Commission
<b>NMT</b>	Non-Motorized Transport
<b>NSP</b>	National Spatial Plan
<b>NW</b>	North West



<b>OECD</b>	Organisation for Economic Co-operation and Development
<b>p.a.</b>	Per Annum
<b>PDP</b>	Part Development Plan
<b>pH</b>	Potential of Hydrogen
<b>PLUPA</b>	Physical and Land Use Planning Act
<b>PMA</b>	Performance Monitoring for Action
<b>PRSP</b>	Poverty Reduction Strategy Paper
<b>PSV</b>	Public Service Vehicle
<b>SACCO</b>	Savings and Credit Cooperative Organization
<b>SDGs</b>	Sustainable Development Goals
<b>SE</b>	South East
<b>SIBOWASCO</b>	Siaya-Bondo Water and Sanitation Company Limited
<b>SPA</b>	Service Provision Agreement
<b>SW</b>	South West
<b>SWOT</b>	Strengths, Weaknesses, Opportunities and Threats
<b>TB</b>	Tuberculosis
<b>TFR</b>	Total fertility rate
<b>ToRs</b>	Terms of References
<b>TVET</b>	Technical and Vocational Training
<b>UACA</b>	Urban Areas and Cities Act
<b>UNDP</b>	United Nations Development Programme



# SECTION I

## INTRODUCTION



# 1 CHAPTER ONE: INTRODUCTION

## 1.1 Overview

The Preparation of Siaya Municipality Spatial Plan is part of the County Government of Siaya's compliance with the provisions of the County Governments Act Cap 265 – 2012 (Revised 2022), part IX, Section 104, 105, 111 & 112; Physical and Land Use Planning Act, Cap 303 – 2019 (Revised 2022), and also the Urban Areas and Cities Act (UACA) (No. 13 of 2011, (Revised 2022)). These three Acts of Parliament give provisions on the County's mandate of ensuring proper planning which facilitates coordinated development of urban and peri-urban areas in terms of housing, commercial, industrial and infrastructural development with the purpose of accommodating changes in economic, social, cultural and political dynamics of the area under study.

Siaya County is one of the Counties in the Lake Region Economic Block in the South-West of Kenya. It lies between Latitude  $0^{\circ} 26'$  South and  $0^{\circ} 18'$  North and from Longitude  $33^{\circ} 58'$  East to  $34^{\circ} 33'$ . The County borders Busia County to the North, Vihiga and Kakamega Counties to the Northeast, Kisumu County to the Southeast and Homabay County across the Winam Gulf to the South. The land surface area of Siaya County is  $2,530\text{km}^2$  and the water surface area is  $1,005\text{ km}^2$  (CIDP, 2014). Siaya County covers an area of 3,535 square kilometers and is divided into six Sub Counties, which are further divided into thirty wards.

Siaya Municipality is one of the 59 municipalities established across 45 counties in Kenya under the provision of UACA 2011 (Revised 2022). This was done in a bid to further devolve functions to lower levels to make easier the administration of urban areas. This report therefore presents the Siaya Municipality Spatial Plan which is aimed to guide developments for a period of 10 years. The Plan shall be reviewed after 3 years or as need may arise in accordance with Section 51 part (3) of the Physical and Land Use Act, No. 13 of 2019. By promoting orderly development, effective land use, alleviation of urban challenges and optimization of strategic strengths in the Municipality, this plan ensures that the Municipality is properly planned and provision of vital public utilities as presented in this report.



## 1.2 Problem Statement

Siaya Municipality faces a number of development challenges including: uncoordinated linear developments, road encroachments, inadequate basic and support infrastructure, inadequate health infrastructure, education and recreational spaces and other public utilities; lack of land information management system; undeveloped road network; low levels of access to portable water and other basic services.

High population densities in the urban area have strained facilities and opportunities leading to shortage of housing, unemployment, traffic nuisance, pollution, land over subdivision, land dispute related conflicts, fading opportunities in tourism and manufacturing, and combating adverse effects of climate change.

To address these myriads of challenges, the County Government requires a clear land use and urban development framework for the Municipality which will not only provide practical solutions but also project a desired future state for the Municipality. This will help in promoting development within Siaya Town thus increasing the administrative and strategic importance of Siaya Town. Preparing the Spatial plan also provides a basis for investment and funding and at the same time guide decision-making for both government and non-governmental agencies and the private sector.

## 1.3 Objectives of the Assignment

The objective of this task is to prepare a Municipal Spatial Plan for Siaya Municipality.

The Specific Objectives of the assignment are;

- g) To prepare and submit GIS-based thematic maps for the Municipality
- h) To collect, analyze and present, physical, socio-economic and environmental data
- i) To analyze, pictorialize and illustrate the spatial and non-spatial data collected
- j) To give recommendations that will guide land use planning within the municipality
- k) To prepare land use zoning for Siaya Municipality
- l) To conduct and demonstrate public participation during the plan preparation

## 1.4 Planning and Geographical Scope

### 1.4.1 Project Scope

The planning horizon for the plan is set at 10 years which is in line with the provision of Physical and Land Use Planning Act (PLUPA) section 36 (1), read with section 45 (1&2), which



provides that once in every ten years a county government shall prepare a county physical and land use development plan for that county, city, municipality, town or unclassified urban area as the case maybe.

The plan is meant to address the following broad areas of concern:

- a. Physical and social infrastructure development
- b. Environmental management
- c. Housing and settlement upgrading
- d. Local and economic development
- e. Urban transportation and mobility
- f. Urban design and aesthetics
- g. Development regulations and standards
- h. Mapping the whole area under planning
- i. Carry out feasibility studies
- j. Carry out stakeholders' engagement
- k. Formulation of the plans.

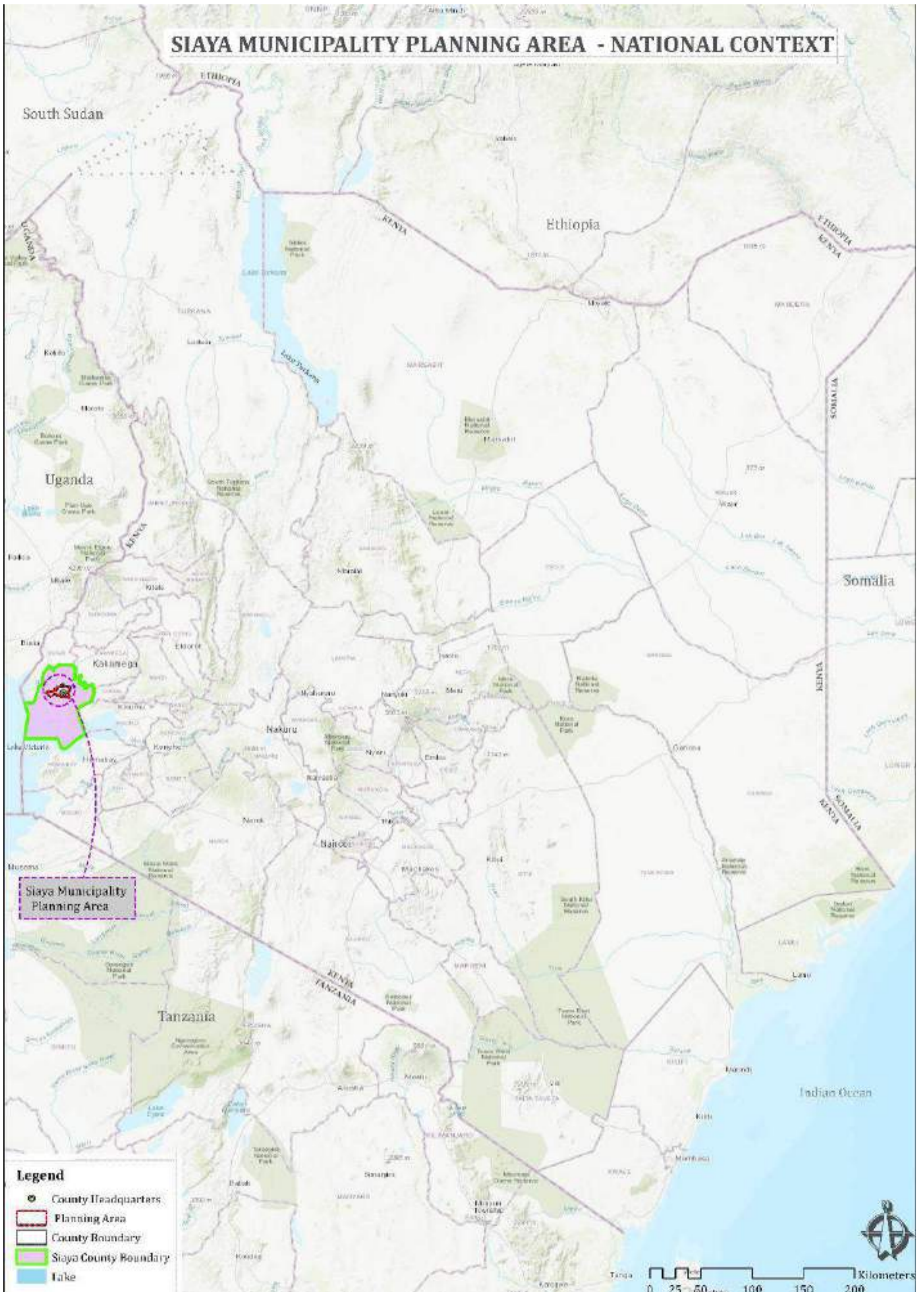
#### **1.4.2 Geographical Scope**

Siaya County is located in the Nyanza region of Kenya. It borders Busia County to the North, Kakamega County, and Vihiga Counties to the Northeast and Kisumu County to the Southeast. It shares a water border with Homa Bay County which is located South of the County. The total area of the County is approximately 3535km<sup>2</sup> and a population of 993,183 people, KNBS 2019.

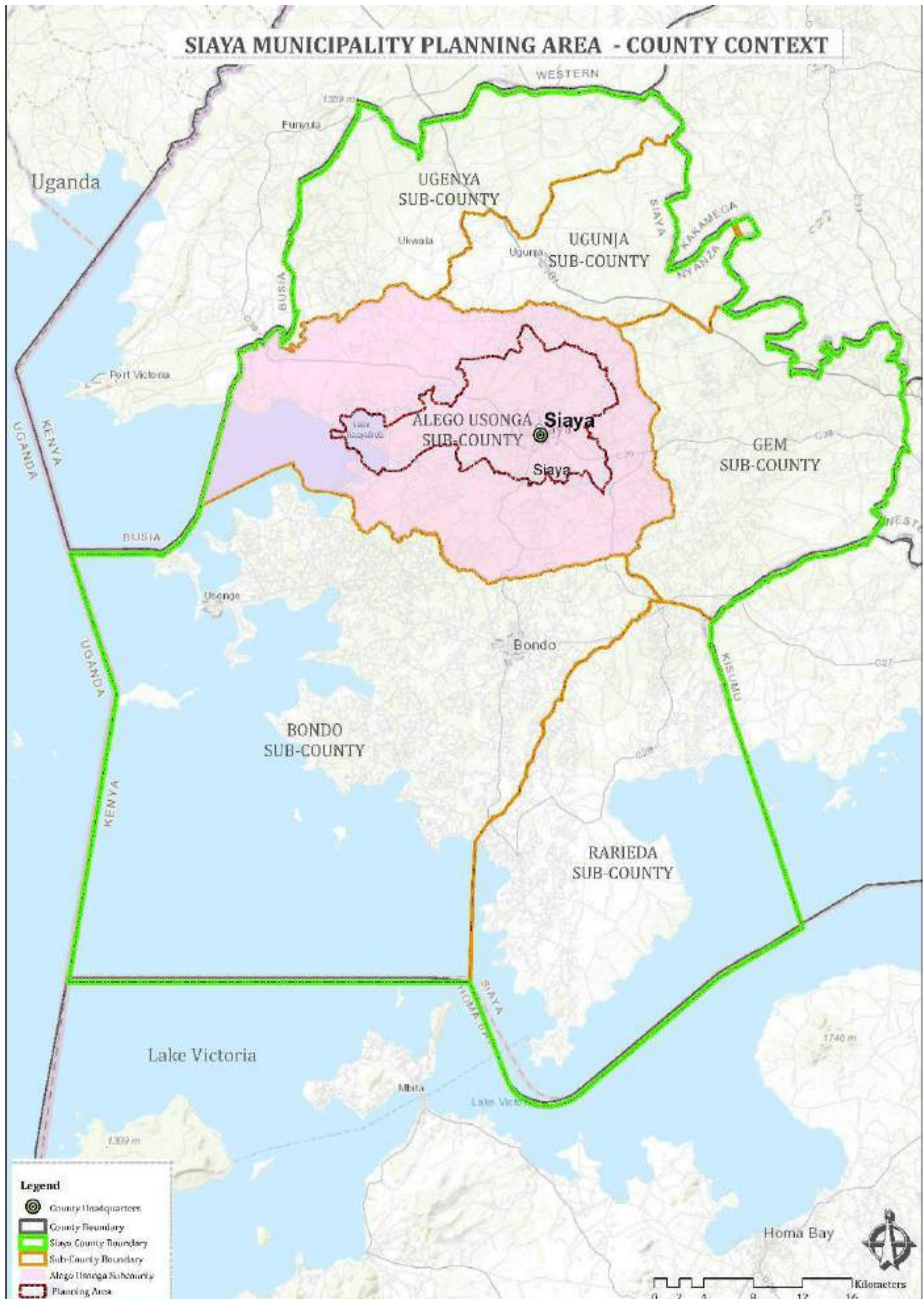
The Siaya Municipality Spatial Plan will cover a total of 156.52 km<sup>2</sup>. The planning area covers a total of 17 sublocations namely Karapul, Ulafu, Bar Agulu, Mulaha, Nyandiwa, Koyeyo, Ojuando A, Hono, Gangu, Nyandiwa, Kaugagi Hawinga, Kakumu Kombewa, Ojuando B, Obambo, Komolo, Nyalgunga and Kadenge. The planning area includes several markets and Urban centers. The location of the Municipality is as shown below.



Map 1-1: Locational Map - National Context



Map 1-2: Locational Map - County Context





## 1.5 Administrative Units

Siaya Municipality is within Alego Usonga Subcounty. The municipality covers the sublocations outlined in the table below.

Table 1-1: Sublocations within the Municipality

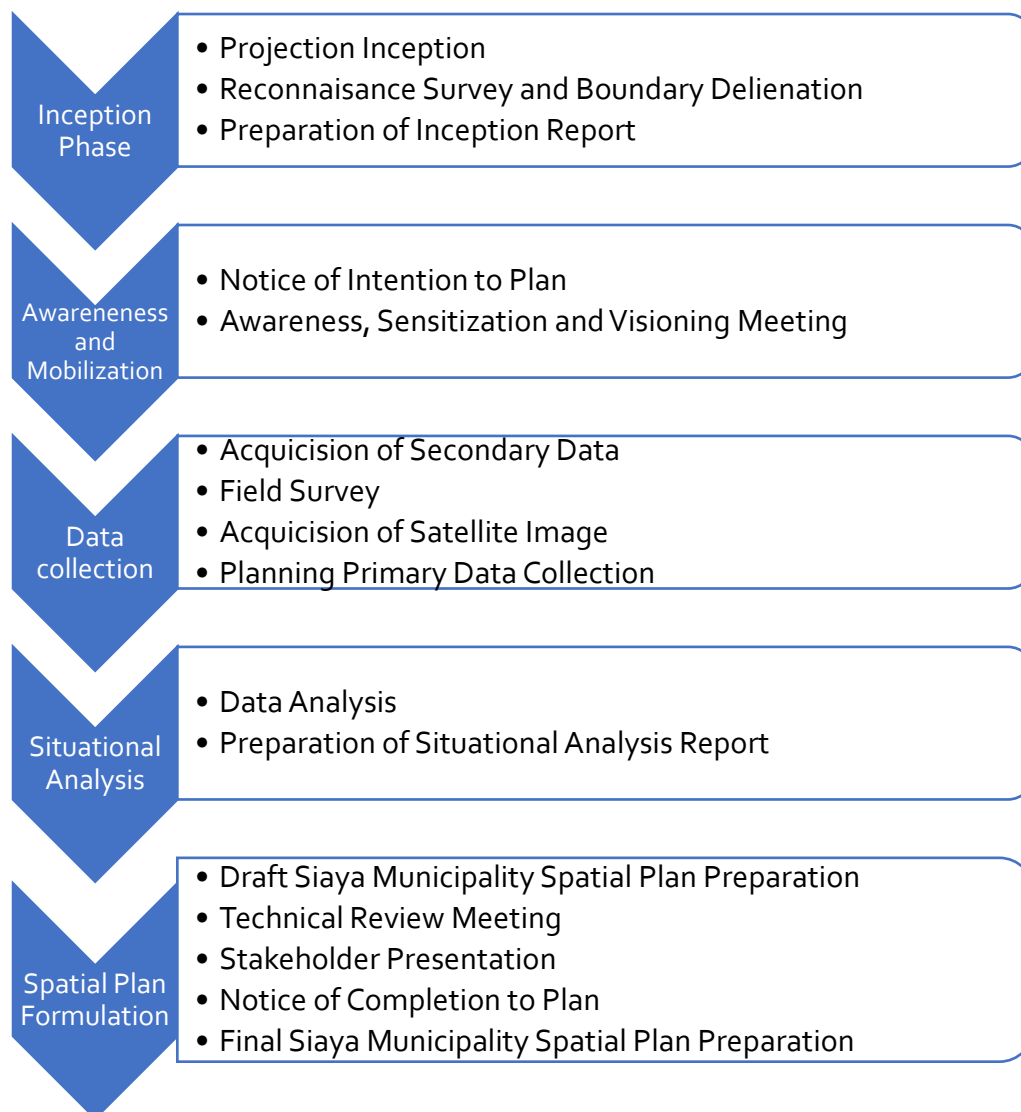
Sub-Location	Area within the Planning Area (Km <sup>2</sup> )
Karapul	10.70
Ulafu	8.22
Bar Agulu	12.80
Mulaha	13.55
Nyandiwa	14.59
Koyeyo	6.36
Ojwando A	17.84
Ojwando B	5.99
Obambo	14.42
Komolo	10.82
Nyalgunga	12.63
Kadenge	3.51
Nyamila	4.20
Hono	8.54
Gangu	3.08
Kaugangi/Hawinga	3.20
Kakumu/Kombewa	5.87
<b>Total Area</b>	<b>156.52</b>



## 1.6 Methodology

The process of preparation of Siaya Municipality Spatial Plan was phased into five major phases namely Inception phase, Awareness and Mobilization phase, Data collection and Mapping phase, Situational analysis phase and Spatial Plan Formulation Phase. The figure below shows a summary of the methodology applied in carrying out the assignment at hand. All the phases were participatory and involved consultation with the stakeholders and the technical team.

Figure 1-1: Methodology Summary



### *1.6.1 Inception Phase*

This phase basically involved project commissioning. Preliminary discussions were held between the Client and the Consultants. The main aim was to build consensus on the planning area, defining the methodology and work plan. The Terms of Reference were also defined to regulate the project and its outputs. Within this phase, an Introductory Meeting was convened to introduce the Planning team to the County officers.

### *1.6.2 Awareness and Mobilization Phase*

Pursuant to the Constitution of Kenya and the Urban Areas and Cities Act, of 2012, public participation is a key component of this project. In this regard, stakeholders to be engaged in this project were identified through consultation among various actors including Siaya County Government and Consultants. The stakeholders were sensitised and their roles into the project were outlined during a stakeholder's workshop held on March 21<sup>st</sup> March 2023. A notice of intention to plan was placed on the Standard Newspaper on 19<sup>th</sup> January 2023.

### *1.6.3 Data Collection Phase*

The initial data collection process for the project took place during the month of March 2023. Several field works and key informant interviews were carried out during the plan preparation in efforts to resolve identified data gaps and update emerging issues. The data was obtained from both primary and secondary sources. Primary data was obtained through field surveys, mapping and Key Informant Interviews.

Methods involved; Land use surveys, where land uses were mapped from the satellite imagery. Other attributes of the land use were collected and filled in a mapping sheet during field work. The consultants also conducted key informant interviews for purposes of acquiring first-hand information.



Plate 1-1: Data collection exercise



Source: Fieldwork, 2023

Plate 1-2: Part of the data collection team deployed within the Municipality



Source: Fieldwork, 2023



Plate 1-3: Data collection within Siaya Town



Source: Fieldwork, 2023

Secondary data collection was obtained through a desktop survey. Secondary sources reviewed included various policy and legal documents, previous plans, maps from credible and authoritative sources.

#### **1.6.4 Situational Analysis Phase**

Following data collection, an assessment of the development trend within the Municipality was done. This was necessary to identify areas with similar character. Physical and social infrastructure facilities analysis was undertaken alongside the projected population demand. The findings of the Situational Analysis have been presented in form of a report.

#### **1.6.5 Municipality Spatial Plan Preparation Phase**

Based on the situational analysis, including trend analysis, SWOT analysis, planning implications, and suitability analysis, a draft Spatial Plan was developed. The draft Spatial Plan included a Zoning Plan, a Detailed Land Use Plan, and an Action Area Plan. The Detailed Land Use Plan specifically outlined the various land use zones. The draft plan was accompanied by a report detailing the proposed plan and was submitted for review.



A validation workshop for the draft plan was conducted on 31st January 2024, during which the plan was presented to various stakeholders. Feedback from this validation exercise informed subsequent revisions to the plan. A notice of completion was then published in the Kenya Gazette, Standard Newspaper, and The Star Newspaper, providing a 60-day window for public comments on the updated plan. Feedback received from these notices was incorporated into the preparation of the final draft plan. A schedule of all comments received and how they were addressed is attached to this report.

## **1.7 Policy and Legal Framework**

### **1.7.1 Policy Framework**

#### **1.7.1.1 Sustainable Development Goals, 2015**

The Sustainable Development Goals (SDGs) are the blueprint built on the Millennium Development Goals set to achieve decent lives globally by 2030. While all 17 SDGs are relevant, those significantly guiding the LPLUDP are; ending poverty (SDG 1); eradicating hunger (SDG 2); ensuring sustainable management of water and sanitation (SDG 6); availing reliable and sustainable energy (SDG 7); to achieve sustainable economic growth (SDG 8); building resilient and sustainable infrastructure (SDG 9); make sites and human settlements inclusive, safe, resilient and sustainable (SDG 11) and finally protect, restore and promote sustainable use of terrestrial ecosystems by managing forests, combating desertification, reversing land degradation and halting biodiversity loss (SDG 15).

The Spatial Plan will provide a development framework for the municipality by eliminating poverty, rekindling the local economy, attracting investors, and creating job opportunities through the development and implementation of economic improvement strategies.

#### **1.7.1.2 The Kenya Vision 2030, 2007**

Vision 2030 seeks to create a globally competitive and prosperous country by transforming Kenya into a newly industrialising, middle-income country providing a high-quality life to all its citizens by the year 2030. It is founded on three pillars i.e., the economic, social, and political pillars. The three pillars are anchored on six foundations namely infrastructure; science, technology, and innovation; land reform; human resource development; security; and public service reform. It is estimated that 50% of Kenyans will be urban dwellers come



2030. Therefore, the Vision underscores the importance of planning to achieve high-quality urban livelihoods, a decently housed nation and environmental sustainability.

Vision 2030 implementation is phased in successive five-year Medium-Term Plans (MTP). The First MTP covered 2008 to 2012 while the second ran from 2013 to 2017. They sought to implement the flagship projects and took due cognizance of the devolved structure of government following the promulgation of the Constitution of Kenya in 2010. The Third MTP, 2018-2022 prioritizes policies, programs, and projects which will support the implementation of the Big 4 Agenda initiatives focusing on manufacturing, affordable housing, access to universal health, and achieving food security. Implementation of the Big 4 will contribute to broad-based inclusive sustainable economic growth, foster job creation, reduction of poverty and inequality.

#### **1.7.1.3 National Land Use Policy, 2017**

The Constitution of Kenya 2010, Kenya Vision 2030 and the Sessional Paper No. 3 of 2009 on National Land Policy all justify the formulation of a framework for effectively addressing the challenges related to land use. It is in response to this call that the National Land Use Policy was developed, incorporating all activities that have an impact on the use of land and its resources. The overall goal of the National Land Use Policy is to provide a legal, administrative, institutional and technological framework for optimal utilization and productivity of land-related resources in a sustainable and desirable manner at the national, county and community levels. The Policy is premised on the philosophy of economic productivity, social responsibility, environmental sustainability and cultural conservation.

Key principles informing it include efficiency, access to land use information, equity, elimination of discrimination and public benefit sharing. The National Land Use Policy seeks to balance different, yet related, concerns such as food security, human settlements, environmental protection and climate change; and other economic pursuits. The policy takes cognizance of social, cultural, economic, political and spatial dimensions of development.



#### **1.7.1.4 National Spatial Plan 2015 – 2045 (NSP), 2017**

The National Spatial Plan (NSP), which covers a long-term period of thirty years, (2015-2045), addresses land use, socio-economic and environmental issues to achieve balanced and sustainable spatial development and optimal land use across the country. The Plan provides comprehensive strategies and policy guidelines to deal with issues of rural and urban development, modernizing agriculture, infrastructure, energy production, mining and industry, and sustainable human settlements. It will provide a spatial framework for anchoring Vision 2030 flagship projects. The Plan is also a coordinating framework for various sectors involved in spatial planning and implementation. The NSP forms the basis upon which lower-level plans in the country shall be prepared which include regional plans, county spatial plans and other spatial plans.

#### **1.7.1.5 The National Land Policy, Sessional Paper No. 3 of 2009**

The National Land Policy advocates for sustainable land use which is also the goal of the plans. This will be achieved through prudent allocation and distribution of land uses. The policy notes that 75% of the national population lives in medium to high potential agricultural areas and hence the challenge of balancing urban development with the preservation of agricultural land. The policy thus proposes development control as a tool in ensuring equitable and sustainable use of land. The policy recognizes land use planning as a tool in land use management that can address the current challenges and create new opportunities for sustainable human settlements.

The provisions of this policy will inform the plan strategies. Development strategies, guidelines, and regulations with regard to the environment, housing, transportation, economic, environment, and agriculture among other sectors will be developed. These guidelines will act as the development control instruments to be used by the relevant agencies so as to ensure equity and sustainable land utilization.

#### **1.7.1.6 Integrated National Transport Policy, 2012**

This policy paper is anchored on 'Moving a Working Nation'. It identifies challenges besetting the transport sector in Kenya as a whole. However, since the policy's vision is to achieve an integrated transport system, the plans will seek to open up the transportation sector in a way of achieving an efficient transport system for the municipality.



### **1.7.1.7 Poverty Reduction Strategy Paper (PRSP), 2005**

The PRSP outlines priorities and the necessary measures for poverty reduction and economic growth. It identifies measures geared towards improved economic performance and priority actions that will be implemented to reduce the incidences of poverty among Kenyans. The strategy gives measures to alleviate poverty as one of the outputs of an Economic recovery strategy. The plan will thus guide poverty alleviation and steer the economic performance of the project area through the implementation of the economic and investment strategies formulated.

### **1.7.2 Legal Framework**

A number of legal provisions mandate the County Governments, as the planning authority, to initiate and prepare plans that will guide development within their jurisdiction.

#### **1.7.2.1 Constitution of Kenya 2010**

The Constitution of Kenya 2010, fourth schedule, tasks the County Governments with the responsibility of county planning and development including statistics, land survey and mapping, boundaries and fencing, and housing. The realization of the fundamental rights and freedoms as enshrined in the constitution (Chapter 4) on the bill of rights which include; a clean and healthy environment, housing, sanitation, food, water, education, and social security all depend on proper physical planning. Article 60 of the constitution provides that land in Kenya shall be held, used, and managed in a manner that is equitable, efficient, productive, and sustainable and in accordance with the principles such as equity in access to land, security of land rights, sustainable and productive management of land resources, transparent and cost-effective management of land, sound conservation and protection of ecologically sensitive areas.

Article 66 (1) provides for regulation of the use of any land, interest in or right over land in the interest of defense, public safety, public order, public morality, public health or land use planning. The actualization of these principles and mandates requires that the land resource in the counties be properly utilized or managed which can only be attained with the preparation and implementation of spatial plans



### **1.7.2.2 *The County Governments Act, Cap 265 – 2012 (Revised 2022)***

The County Government Act (CGA) strengthens and operationalizes the county's role to plan by requiring the preparation and implementation of county spatial plans as provided for in Section 110 of the CGA. Section 104. (1) and 108. (2)(b)(iii) of the County Government Act, 2012 states that the county government and its agencies shall prepare all projects, plans and programs to be implemented by any organ of state within the county, and that no public funds shall be appropriated outside a planning framework developed by the County.

The municipal spatial plan is also a tool for the enhanced achievement of the development goals outlined in the Kenya Vision 2030 blueprint. It will also provide a basis for harnessing county's development potentials and opportunities and addressing the challenges which include among others; rapid population growth, poverty, high rates of unemployment, environmental degradation, unbalanced/skewed development, unplanned urbanization, among others factors.

### **1.7.2.3 *The Urban Areas and Cities Act, Cap 275 – 2011 (Revised 2022)***

The Act broadly speaks on the role of the County Government and specifically urban entities in the preparation of urban plans to manage land use and development within their jurisdiction. Section 40 of the Urban Areas and Cities Act 2011 (amended in 2019), provides that an integrated urban area or city development plan shall reflect, among other things; the Board's vision for the long term development of the city or municipality with special emphasis on the most critical development needs; an assessment of the existing level of development in the city including identification of communities which do not have access to basic services; the determination of any affirmative action measures to be applied; the Board's development priorities and objectives during its term in office, including its economic development objectives, community needs and its determination on the affirmative action in relation to the marginalized groups access to services; and a spatial development framework which shall include.

### **1.7.2.4 *Physical and Land Use Planning Act, Cap 303 – 2019 (Revised 2022)***

Section 20 of the Act gives mandate to the County Government, to prepare physical and land use plans aimed at informing and guiding development throughout the county. Section 37 of the Act provides that such plans should provide an overall physical and land use development framework for the planning area; provide the basis for infrastructure and service delivery;



guide the use and management of natural resources and enhance environmental protection and conservation. Section 45 and 47 of the Act provide for the preparation of a Local Physical and Land Use Development Plan in respect to a municipality which can either be a long-term or short-term plan and which may be initiated by the County Executive Committee member. Within this context, and read with the provisions of the County Government Act 2012, which provides for the preparation of county spatial plans, the County Government of Siaya has prepared, through a consultancy, a Municipal Spatial Plan covering a period of 10 years intended to guide the development of the Siaya Municipality.

#### **1.7.2.5 National Land Commission Act, Cap 281 – 2012 (Revised 2022)**

Section 5(2) gives the NLC the responsibility of managing and administering all unregistered trust land and unregistered community land on behalf of the County Government. The commission is supposed to ensure that all unregistered land is registered. NLC also forms County Land Management Boards to manage public land within the counties. This means that the National Land Commission is an important stakeholder in the process of preparing the plan as an oversight authority. The provisions of the Urban Land Use Planning and Oversight Guidelines prepared by NLC in 2016 have been observed in the preparation of the Spatial Plan.

#### **1.7.2.6 The Land Act Cap 280 – 2012 (Revised 2022)**

The Land Act gives effect to Article 68 of the Constitution that calls for revision, consolidation and rationalization of land laws to provide for the sustainable administration and management of land and land-based resources. The Act calls for equal recognition and enforcement of land rights arising under all tenure systems and non-discrimination in ownership and access to land under all tenure systems. The provisions of this Act apply to all stakeholders in the project area as all the developments are carried out on land. The Act stipulates equitable access to land; security of land rights; sustainable and productive management of land resources; transparent and cost effective administration of land; conservation and protection of ecologically sensitive areas; elimination of gender discrimination in law, customs and practices related to land and property in land; encouragement of communities to settle land disputes through recognized local community initiatives, among other principles in regard to utilization of land.



It provides for the conversion of land from one category to another for the various listed purposes which include land use planning. It also prohibits the allocation of public land that has not been planned and that does not have development guidelines.

Part 8 of the Act further outlines the land acquisition process and procedure which must be adhered to by the relevant agencies, where the NLC certifies that the land is required for public purposes or is necessary for the fulfillment of the stated public purpose. The provision seeks to balance the public interest for which the land is being acquired for with private interest.

#### **1.7.2.7 *Environmental Management and Coordination Act, Cap 387 – 1999 (Revised 2022)***

Part II of the Act states that every person in Kenya is entitled to a clean and healthy environment and has the duty to safeguard and enhance the environment. Part VIII, Section 72, prohibits discharging or applying poisonous, toxic, noxious, or obstructing matter, radioactive or any other pollutants into aquatic environments. Section 74 demands that all effluent generated from the sources are discharged only into the existing sewerage system upon issuance of the prescribed permit from the local authorities (preceded the County Governments) (Government of Kenya, 1999). The provisions of this Act will be echoed by the environmental protection strategies that have been formulated during the preparation of the municipal plan.

#### **1.7.2.8 *Water Act, 2016***

This is an Act of Parliament to provide for the management, conservation, use and control of water resources and for the acquisition and regulation of rights to use water. Further, it provides for the regulation and management of water supply and sewerage services. It also provides guidelines for the establishment and running of institutions involved in the management and provision of water services (Government of Kenya, 2016).

#### **1.7.2.9 *Land Control Act Cap 302 of 2010 (amended 2012)***

This Act gives the process of land registration for the different land categories. It gives the process for the establishment of land registration units and for the establishment of land registries (Government of Kenya). Though the survey output of this project will not be regarded as an authority on boundaries, it will yield important data for the land register.



#### **1.7.2.10 Survey Act Cap 299 (amended 2012)**

The Act makes provisions in relation to surveys and geographical names and licensing of land surveyors. Existing survey data has been used to prepare the base map which forms the basis for the formulation of other plan outputs. Siaya Municipality Base map was prepared to the standards outlined in the survey act and were in conformity with Kenya data infrastructure systems.

#### **1.7.2.11 Public Health Act, Cap 242 (Amended 2012)**

This is an Act of Parliament that makes provisions for securing and maintaining public health. It sets standards to be observed by people who wish to carry out trade in foodstuffs and the conditions under which the trading should be done (Government of Kenya). The provisions of this Act are relevant to plan preparation. It is on the basis of provisions in the Act that local leaders may prohibit informal traders from transacting business in unsanitary conditions.

### **1.8 Linkage to Other Plans**

The preparation of Siaya Municipality Spatial Plan has not been in isolation but has incorporated proposals, programs and projects contained in other existing Plans. The Municipal Spatial Plan has incorporated programs and projects within the municipality as contained in the County Integrated Development Plan 2023 – 2026. Other Plans that the spatial plan has paid attention to are the Siaya County Spatial Plan, Boro Market Centre Local Physical and Land Use Development Plan, Kenya Informal Settlement Improvement Project (KISIP) initiative at Awelo.

#### **1.8.1 National Spatial Plan 2015 – 2045 (NSP), 2017**

The National Spatial Plan (NSP), which covers a long-term period of thirty years, (2015-2045), addresses land use, socio-economic and environmental issues to achieve balanced and sustainable spatial development and optimal land use across the country. The Plan provides comprehensive strategies and policy guidelines to deal with issues of rural and urban development, modernizing agriculture, infrastructure, energy production, mining and industry, and sustainable human settlements. It provided a spatial framework for anchoring Vision 2030 flagship projects. The Plan is also a coordinating framework for various sectors involved in spatial planning and implementation. The NSP forms the basis upon which lower-level plans in the Country shall be prepared which include Regional Plans, County Spatial Plans, Urban Plans and Physical and Land Use Development Plans.



### ***1.8.2 Siaya County Spatial Plan 2023-2033 (CSP)***

This Plan, covering a period of 10 years is aimed at guiding the environment, economic and social spatial development framework in Siaya County. The Siaya County Spatial Plan provides a framework for efficient, productive and sustainable use of land as advocated for in both the Constitution and the National Land Policy. Issues such as rapid and unregulated urbanization, environmental degradation of the county's diverse ecosystems, skewed/unbalanced development in favor of high potential areas, poor economic performance in the areas of agriculture, tourism and industry due to sub-optimal use of land and underutilization of the rich natural resource endowment have been highlighted as those addressed by the Plan. Strategies and policies to facilitate sustainable exploitation of the huge potentials that Siaya County possesses in agriculture, tourism, energy, water and forestry sectors have been adopted in this Siaya Municipality Local Physical and Land Use Plan.

### ***1.8.3 County Integrated Development Plan 2023 – 2027***

The Plan provides a basis for transitioning from the first and second generation CIDPs, as a foundation for sustained economic development, where a platform for implementing the transformative agenda of good governance; improvement of healthcare services, promotion of mechanized agriculture, trade and industrialization. Additionally, the plan promotes empowerment of special interest groups for the people of Siaya. In line with the realization of this Plan, strategies and proposals have been recommended for sectors such as agriculture, industry, education, health among others to aid in fulfilling the aspirations of the people of Siaya County and the County Government at large.

### ***1.8.4 Boro Market Centre Local Physical and Land Use Development Plan***

This Plan provides a spatial development framework for Boro Market Centre to guide land use developments as part of Siaya Municipality. The Siaya Municipality Local and Physical Land Use Plan therefore adopts the Plan for the Centre as part of spatial development framework for the Municipality.



## 2 BASE MAP PREPARATION

### 2.1 Overview

This section outlines the process of preparation of base map for Siaya Municipality and the content. The main function of a base map is to provide background detail necessary to orient the location of the map, though they also add to the aesthetic appeal of a map.

### 2.2 Process of Base Map Preparation

The preparation of Siaya Municipality Base Map involved compilation of data from 4 sources as outlined below.

#### 2.2.1 Satellite Image

The consultant acquired an up-to-date satellite image of the planning area. The image acquired is dated December 2022 and has a resolution of 0.5m. After processing of the image, features appearing in the image were digitized. Various layers have been prepared.

- a) Buildings and Structures: Permanent buildings are shown by rooflines. Ruins, partially demolished buildings, buildings under construction and other structures are shown in outline.
- b) Roads, Tracks and Footpaths: Road edges or kerb lines. Tracks are shown by edges. Footpaths are shown by double broken lines or edges. Drives and tracks in private property are also shown.
- c) Rivers, streams, dams and ditches have been captured as double or single lines as appropriate to their width and scale and indicated by symbols or annotations as appropriate. Intermittent streams where significant have been shown by broken lines.
- d) Vegetation. The representation of major types of terrain, vegetation and land use are limited to simple classifications of significant and extensive topographical features. Features have been mapped by symbols or annotations as appropriate. Terrain features shown include rock outcrops, swamps and marshes. Vegetation and land use features mapped are limited to major categories of woodland, bush, scrub, cultivation and plantations as appropriate. Woods were mapped by either the canopy or conventional symbols. Scattered trees are represented by scattered symbols and



only prominent isolated trees are mapped individually. Man-made features mapped include, quarries, cemeteries, parks and recreation grounds.

- e) Names and Annotations: Names of places, buildings, districts, streets, natural features and prominent institutions are indicated where available.

### 2.2.2 Digital Elevation Model

A digital Elevation Model with a contour interval of 3m was acquired. This was used to generate contours for the entire planning area.

### 2.2.3 Registry Index Maps, Survey Plans, Previous DP and PDPs

The parcel boundaries within the Municipality were generated from RIMS, Survey Plans, Development Plan and Part Development Plans. The RIMS were georeferenced and Digitized. The table below shows the registration sections that cover the Municipality.

Table 2-1: RIMS Registration Sections within the Municipality

No.	RIM Registration Section	No. of Sheets
1.	Karapul Ramba	10
2.	Koyeyo	15
3.	Mulaha o2	10
4.	Nyandiwa	8
5.	Ojuando A1	10
6.	Ojuando A2	10
7.	Ojuando B1	13
8.	Komolo	18
9.	Kakumu-Kombewa	15
10.	Bar Agulu	15
11.	Nyalgunga	6
12.	Hono	17
13.	Nyalgunga	26
14.	Ulafu	12
<b>Total</b>		<b>185</b>

Some RIMS were unavailable for digitalization. These includes part Obambo, Mulaha, Hono and Nyalgunga.



#### 2.2.4 Mapping

Data on place names, land uses was collected by physically visiting the planning area and carrying out mapping. The resultant base map from this process is shown below.

#### 2.3 Datum

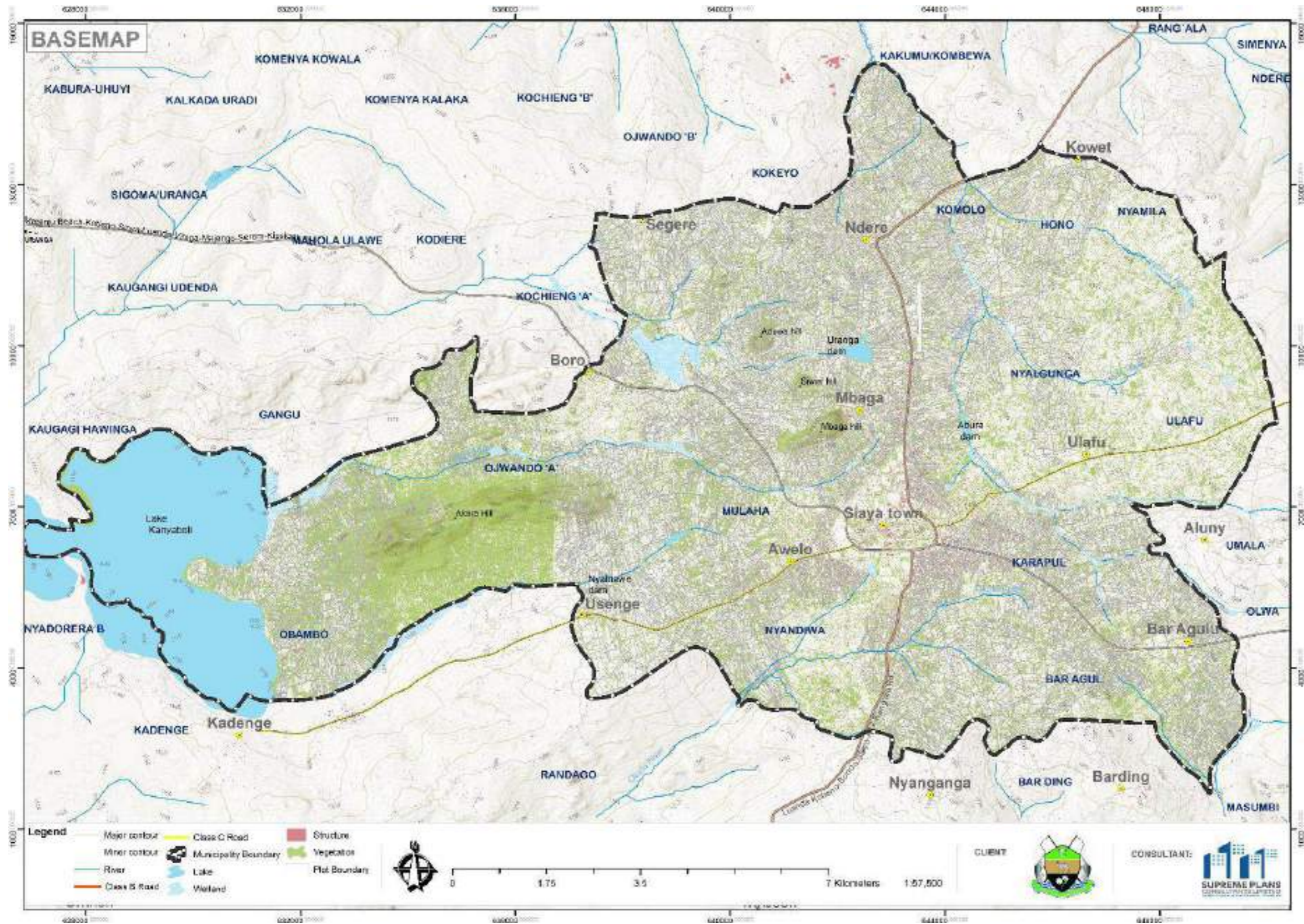
The base map and other thematic maps have been prepared in a GIS environment. The map properties are as shown in the table below.

Coordinate System	WGS_1984_UTM_Zone_36N
Projection	Transverse Mercator
False Easting	500000.0
False Northing	0.0
Central Meridian	33.0
Scale Factor	0.9996
Latitude of Origin	0.0
Linear Unit	Meter

All mapping data is available in shapefile (.shp) format and can be converted into other usable format on a need basis.



Map 2-1: Siaya Municipality Base Map



## SECTION II

### SITUATIONAL ANALYSIS



## 3 CHAPTER THREE: EXISTING SITUATION

### 3.1 Overview

The chapter presents the collected and analysed physical, environmental and socio-economic data within the Siaya Municipality. The existing situation forms a fundamental base for actions, inactions, mitigation measures, enhancement measures and proposals in the plan making.

### 3.2 Physical and Natural Environment

This section discusses the natural and physical environment in Siaya Municipality. A clear understanding of the physical and natural environment provides a basis on analysis of the natural constraints that may hamper development and endowments that can be leveraged to promote sustainable development. This section covers the climatic conditions, topography, hydrology, drainage, vegetation, geology, soils, agro ecological characteristics, natural resources, and environmentally fragile areas. The section further analyses the implications of the various components to planning and the development of Siaya Municipality.

#### 3.2.1 Topography

The altitude of the County rises from 1,140m above sea level on the shores of Lake Victoria to 1,400m above sea level on the North. There are a number of hills found in the County namely; Mbagha, Odiado, Akara, Regea, Nyambare, Usenge, Ramogi, Rambugu, Abiero, Sirafuongo, and Naya hills. River Nzoia and Yala traverse through the County and drain into Lake Victoria through the Yala Swamp.

Alego Usonga Sub County within Siaya County is among the low-altitude areas within the County. The Planning area drains towards Lake Kanyaboli located on the South West of Municipality. The highest point within the Municipality lies within Mbagha Hills at an altitude of 1360m while the lowest point is along Lake Kanyaboli with an altitude of 1105m. The municipality has undulating topography with several hills forming the high points. Some of the hills are Mbagha and Akara. Some parts of Akara Hills have steep slopes and are covered with rock outcrops thus limiting development.



Plate 3-1: Mbaga Hills located within the Municipality

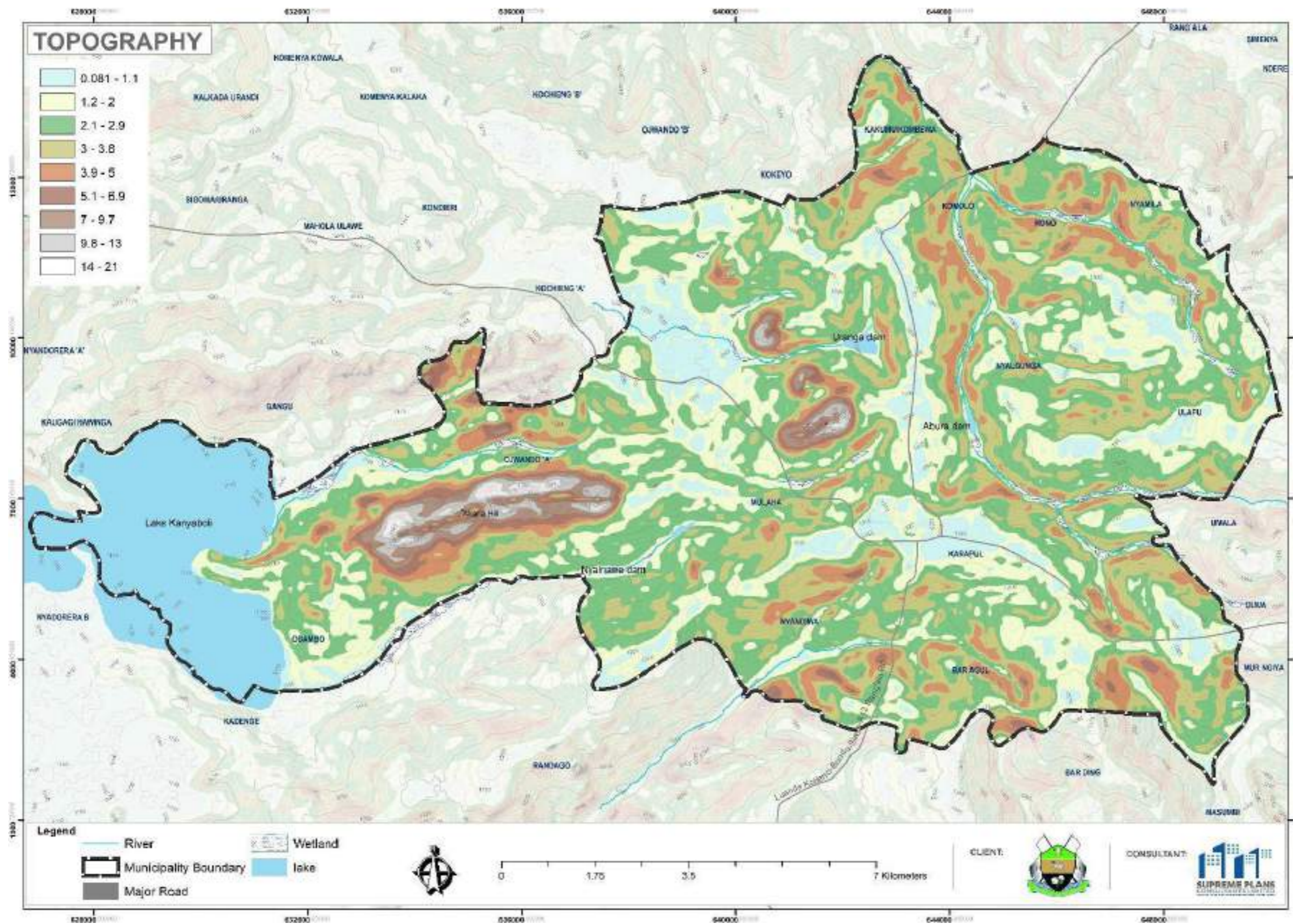


Source: *Fieldwork, 2023*

Map 3-1 on the next page shows the topography of the Municipality and its surrounding areas.



Map 3-1: Siaya Municipality Topography Map



### 3.2.2 Geology

The geology of Siaya Municipality is consistent with that of the Siaya County. It ranges from early Precambrian to Quaternary. Based on their relative age and lithology, they can be divided into the following well-defined groups;

- a) Precambrian Intrusive
- b) Nyanzian system rocks
- c) Kavirondian system rocks and
- d) Pleistocene to Recent formations

The Precambrian intrusives are a series of linear intrusive coarse grained quartz dolerite dykes invading both the Nyanzian and Kavirondian rock systems. They occur roughly as colinear groups with strikes either in NW-SE or NE-SW directions. They are normally dark green, fine to coarse grained rocks.

The Nyanzian system rocks consist of Granites, Rhyolites, Basalts and Andesites while the Kavirondian system rocks comprise of conglomerates, grits and mudstones which are sedimentary derivatives of the Nyanzian system as outliers.

Deposits of Pleistocene to recent age include hill wash gravels (alluvium), semi-consolidated river alluvium, quartz, rubble and lateritic ironstone capping. Alluvium flats and marshes are common along the courses of rivers in the area.

The geology of Siaya County is composed of Nyanzian and Kavirondian systems, known as the Nyanza Craton, considered as oldest rocks in the country (over 2,500 million years). The Nyanzian system is mainly composed of lavas and pyroclastics with minor sediments and banded ironstones. The Kavirondian, which overlies on the Nyanzian, consists of grits, sandstones, greywackes and conglomerates.

Both the Nyanzian and Kavirondian systems are isoclinally folded about axes that have an east-westerly trend. Kavirondian, only slightly younger than Nyanzian but folding in the two systems, with similar orientation. Numerous granitic bosses and batholiths have intruded the Nyanzian and Kavirondian. The Archean Nyanzian Craton in Siaya County with metallic mineralization of base and precious metals are known to occur: gold, copper and silver have been mined in the



past. These rocks include basalts, desites and rhyolites, that consist of coarse and fine aggregates used in the construction industry. They are also potential for ferrous and no-ferrous metals. Siaya County has three major geomorphologic areas namely: Dissected Uplands, Moderate Lowlands and the Yala Swamp. These have different relief, soils and land use patterns.

### 3.2.3 Hydrology and Drainage

The planning area is drained by five drainage basins which form part of the larger Yala drainage system. The planning area has several dams that play an important role in providing water for various purposes including irrigation, domestic use and livestock watering. Some of the dams include Ufinya, Mauna and Abura dams. These dams have experienced siltation leading to reduction in the amount of water held in them.

The low-lying areas are poorly drained and occasionally experience flooding during the rainy season. Due to increased development within the town coupled heavy rainfall received within the area, Siaya Town often experiences instances of flooding.

#### Plate 3-2: A section of Ufinya Dam



Source: Fieldwork, 2023



Plate 3-3: A Section of a river within Siaya Municipality



Source: Fieldwork, 2023

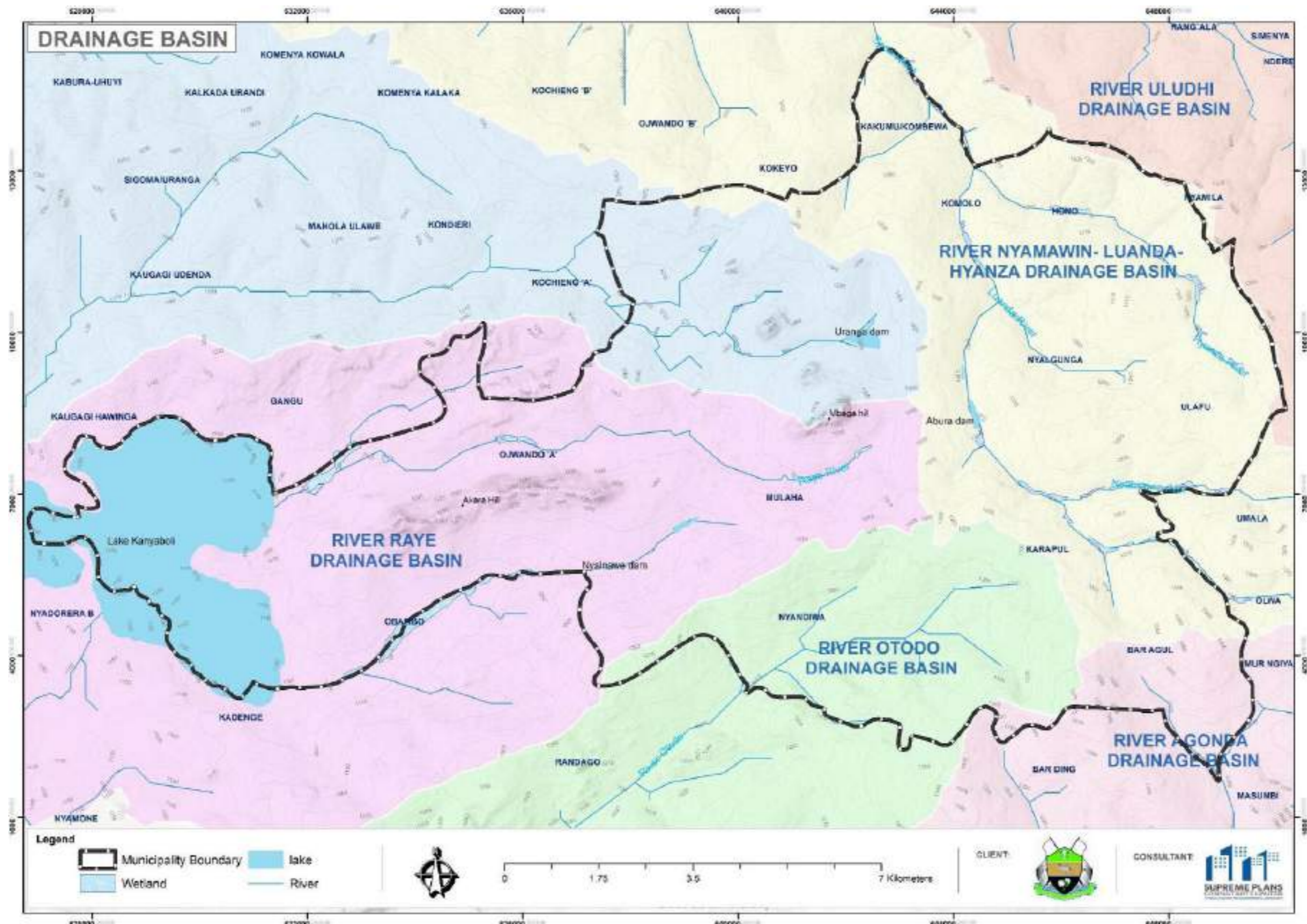
Plate 3-4: Part of Lake Kanyaboli within Siaya Municipality



Source: Fieldwork, 2023



Map 3-2: Drainage Basin



### 3.2.4 Soils

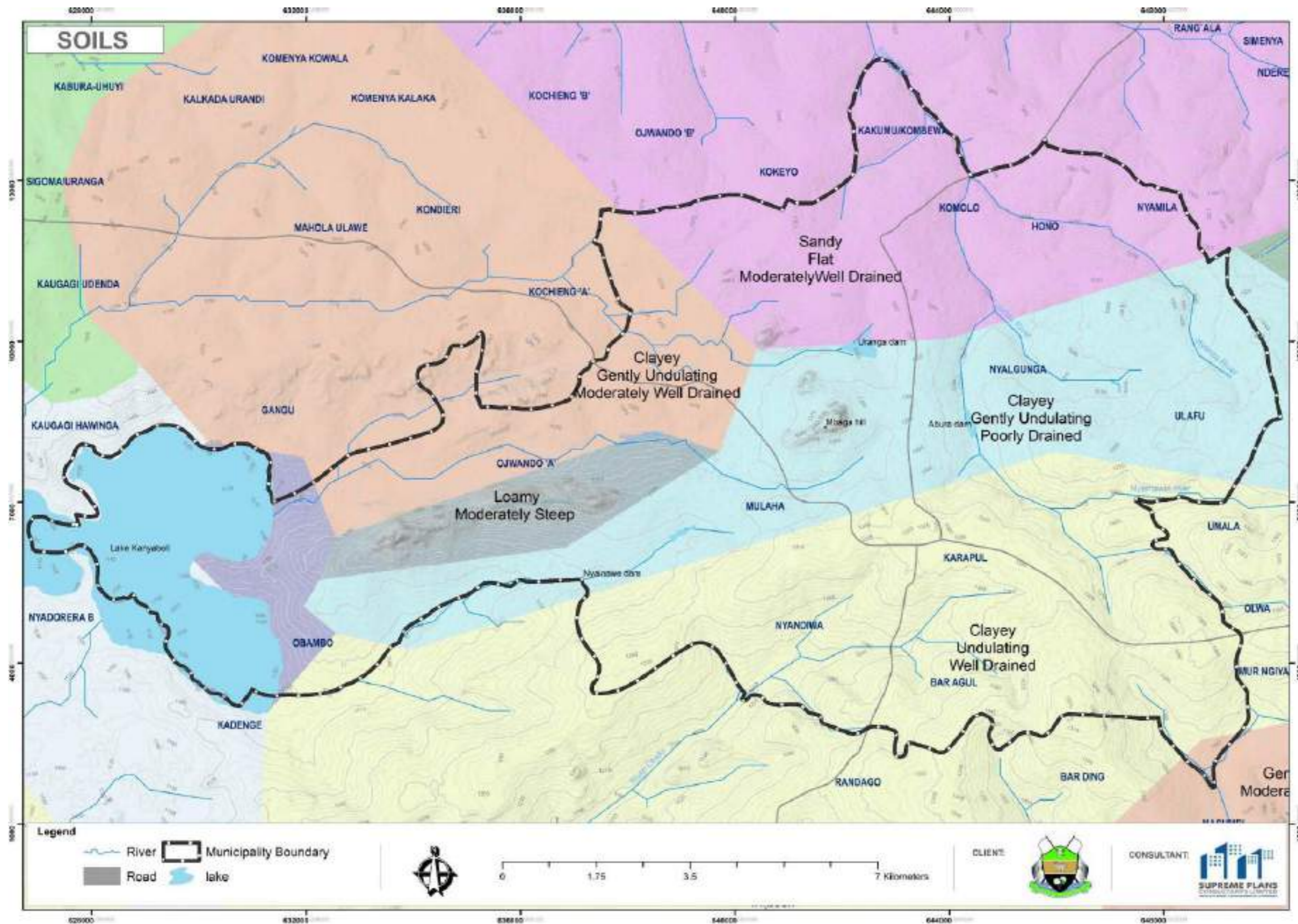
Soils in the planning area are classified into sand, loam and clay soils. The clay soils are further classified into undulating and those that are gently undulating. The clay undulating soils are generally well drained and cover areas of Bar Agulu, Nyandiwa, and Karapul. The gently undulating clay soils in Ulafu, Nyalgunga and areas around Mbaga Hills are poorly drained while those that are moderately drained cover areas of Ojwando A. The moderately steep loamy soils cover Mulaha and Obambo areas of the Municipality. Komolo, Hono, Nyamila are composed of flat moderately well drained soils.

The sandy loam soils in Siaya Municipality have a high sand content and are well-drained, making them suitable for cultivation of crops such as maize, beans, millet, and vegetables. However, they have low water and nutrient-holding capacity, which requires regular application of organic matter and fertilizers to maintain soil fertility.

The clay loam soils, on the other hand, have a higher water and nutrient-holding capacity than sandy loam soils, making them suitable for cultivation of crops that require more moisture, such as rice and sugarcane. However, they are more prone to waterlogging and soil erosion, which requires proper management practices such as terracing and mulching.



Map 3-3: Soil Map



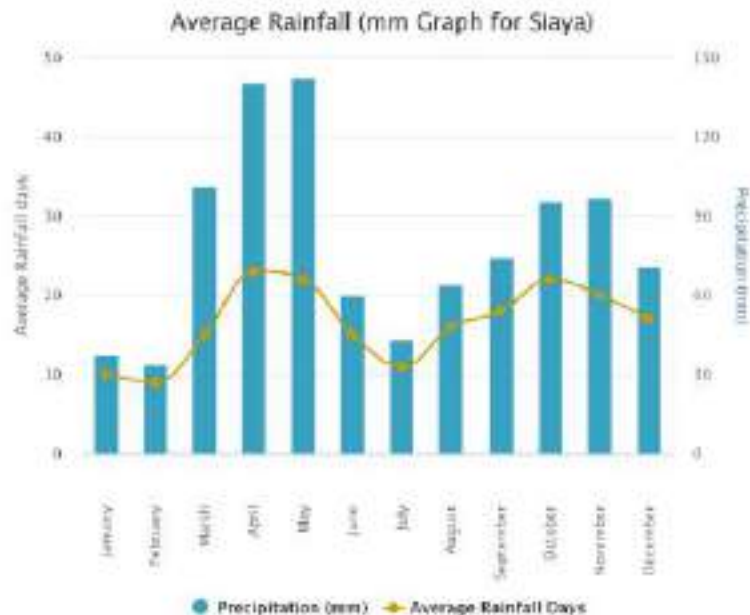
### 3.2.5 Climate

Siaya Municipality has a tropical climate with two rainy seasons and two dry seasons. The climate is influenced by the Inter-Tropical Convergence Zone (ITCZ) which shifts north and south of the Equator throughout the year (NOAA, 2023). The municipality's location near Lake Victoria and Lake Kanyaboli also affects its climate, with the lakes' large mass of water moderating the temperatures and providing moisture for rainfall.

#### 3.2.5.1 Rainfall

Due to the proximity to Lake Victoria and Lake Kanyaboli, Siaya Municipality receives a conventional type of rainfall which mostly falls in the afternoon. The long rains occur from March to June and the short rains occur from October to December (Conway, 1993). The two dry seasons occur from January to February and from July to September, with little or no rainfall. Rainfall received in Siaya is adequate to support agricultural activities such as farming. The figure below indicates the rainfall distribution throughout the year within the planning area:

Figure 3-1: Average Rainfall (mm)



Source: <https://www.worldweatheronline.com/siaya-weather-averages/nyanza/ke.aspx> 2023

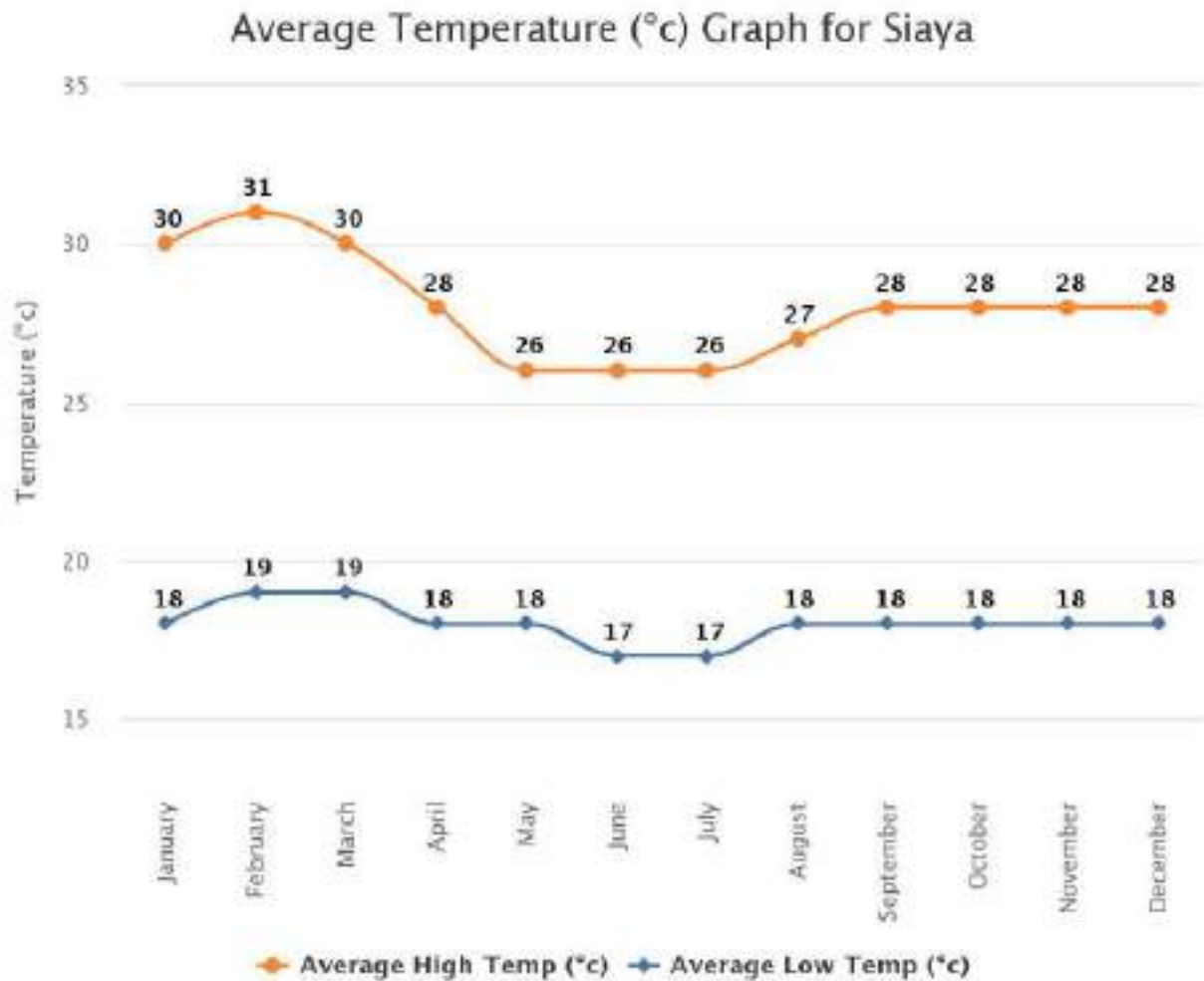
#### 3.2.5.2 Temperature

The average temperature in Siaya Municipality ranges from 20°C to 30°C (Weather Atlas, 2023). The hottest months are January and February, where temperatures can reach up to 32



degrees Celsius and the coolest months are June and July. The high temperatures throughout the year provide a potential for the generation and use of solar power within the Municipality

**Figure 3-2: Average Temperature (°C)**



Source: <https://www.worldweatheronline.com/siaya-weather-averages/nyanza/ke.aspx> 2023

### 3.2.5.3 Humidity

Siaya Municipality experiences high levels of relative humidity all year round, ranging from 60 to 80%. The dry season, which lasts from January to February and July to September, has lower relative humidity than the rainy season, which lasts from March to June and from October to December. Humidity levels during the dry season range from 40-60%, which can make the climate feel more comfortable despite the high temperatures.



#### 3.2.5.4 *Wind*

Winds in Siaya Municipality are generally light, with the prevailing winds blowing from the southeast. The region is occasionally affected by strong winds associated with thunderstorms during the rainy season.

#### 3.2.6 *Emerging planning issues opportunities and challenges*

- a) **Declining soil fertility.** This is due to factors such as increasing soil erosion; improper use of fertilizers; infrastructural developments; industrial activities; variations in climatic conditions; inadequate soil and water conservation measures, poor agricultural practices and low use of organic manure. There is lack of a comprehensive policy and legislation that focuses on restoration and maintenance of agricultural soils within the Municipality.
- b) **Soil erosion.** This causes effects such as loss of bio diversity, land degradation and environmental pollution.
- c) **Climate change.** Among the resulting effects of climate change include erratic rainfall, frequent and intense droughts, floods, frequent storms, and change in physical and chemical parameters of water, soil and unfavorable temperature and seasonal variations.
- d) **Pollution.** Water pollution on water bodies such as Lake Kanyaboli, rivers, springs and on water abstraction points.

### 3.3 **Environment and Natural Resources**

This section presents the environmental characteristics and natural resources aspects within the planning area. It also highlights the challenges, opportunities and threats in the sector.

#### 3.3.1 *Environment*

This section highlights the vegetation and ecological characteristics within the Planning area.

#### 3.3.2 *Vegetation*

This is composed of planted and natural vegetation. The vegetation within the Municipality is also composed of terrestrial and aquatic vegetation. The terrestrial vegetation is characterized by both planted and natural plant species while natural species of aquatic



plants such as algae, duckweeds, papyrus reeds make up the Aquatic vegetation. These are found along rivers and dams.

**Plate 3-5: Aquatic Vegetation on a wetland located off Mabinju Beach -Siaya Luanda Road within the Municipality**



Source: Fieldwork, 2023

The planted and natural terrestrial vegetation is characterized by trees, grasslands, food and fruit crops. The major tree species include Nile tulip, also known as *Markhamia lutea*, Gravellier, whistling pine and eucalyptus grandis, commonly known as eucalyptus are found within the planted forests. Fruit trees such as avocado, mulberries, banana, mango trees are planted within the hinterland areas of the Municipality.



Plate 3-6: Nile tulip (*Markhamia lutea*) in Obambo area within the Municipality



Source: Fieldwork, 2023

Plate 3-7: Eucalyptus trees in Boro area within the Municipality



Source: Fieldwork, 2023

The planted forest species are exploited for timber and wood fuel therefore deforestation is a major human activity within the Municipality.



### 3.3.2.1 Vegetation Cover

Vegetation cover in Siaya Municipality is composed of forests, farmland and grasslands. These occupy a total area of 12,581Ha accounting to 80.72% of the total planning area.

Table 3-1: Vegetation Cover Analysis

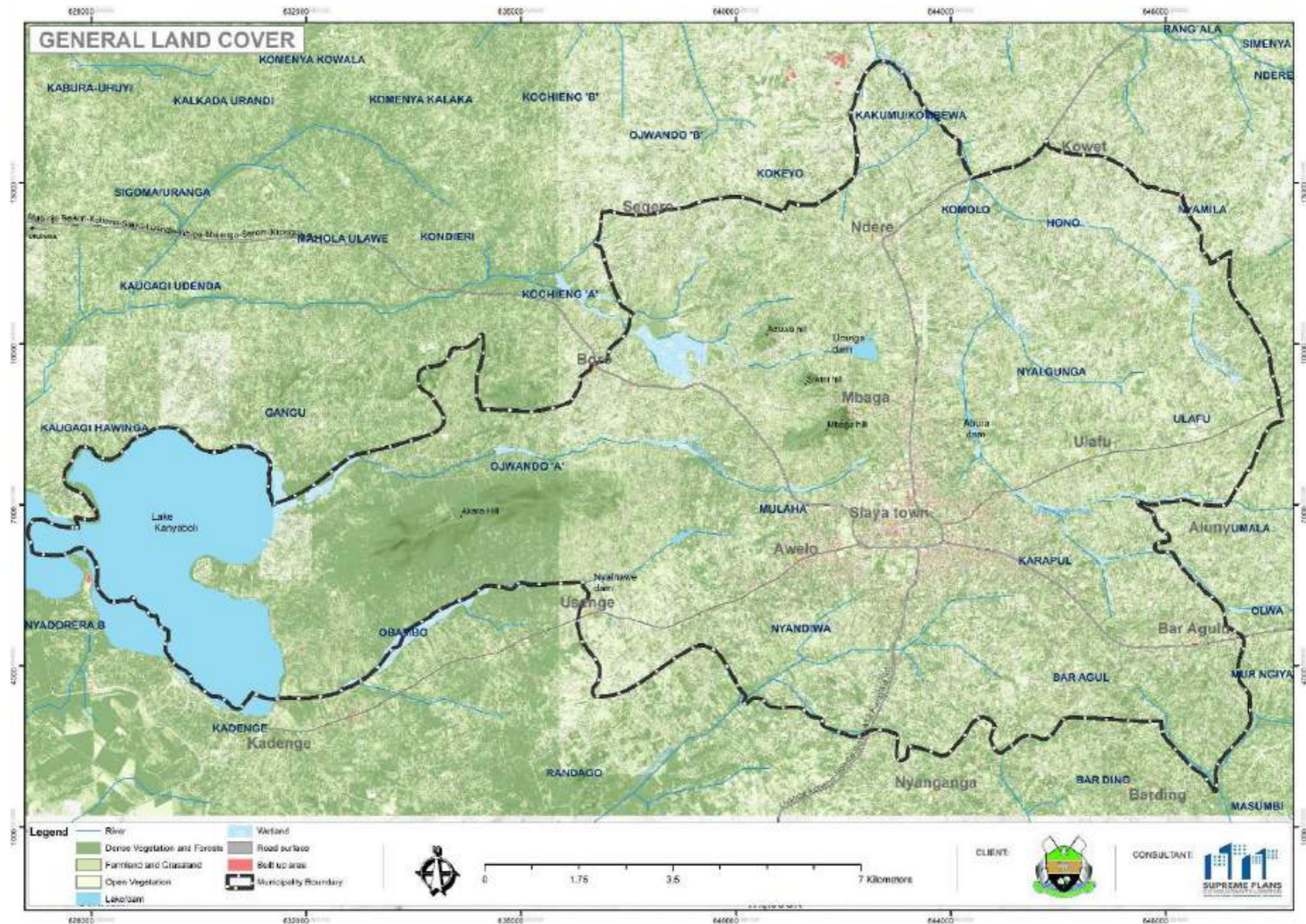
Type of Land Cover	Amount in Ha	Percentage (%)
Water Body	1,736.00	11.13
Built Up	225.02	1.44
Roads Surface	834.25	5.35
Wetlands	208.00	1.33
Rivers	15.55	0.10
Vegetation (forests, farmlands and grasslands)	12,581.51	80.72
Total Planning Area	15,600	100

Measures such as implementation of forestry conservation policies, protection and expansion of environmentally sensitive areas particularly forests and nature reserves should be also encouraged within the Municipality.

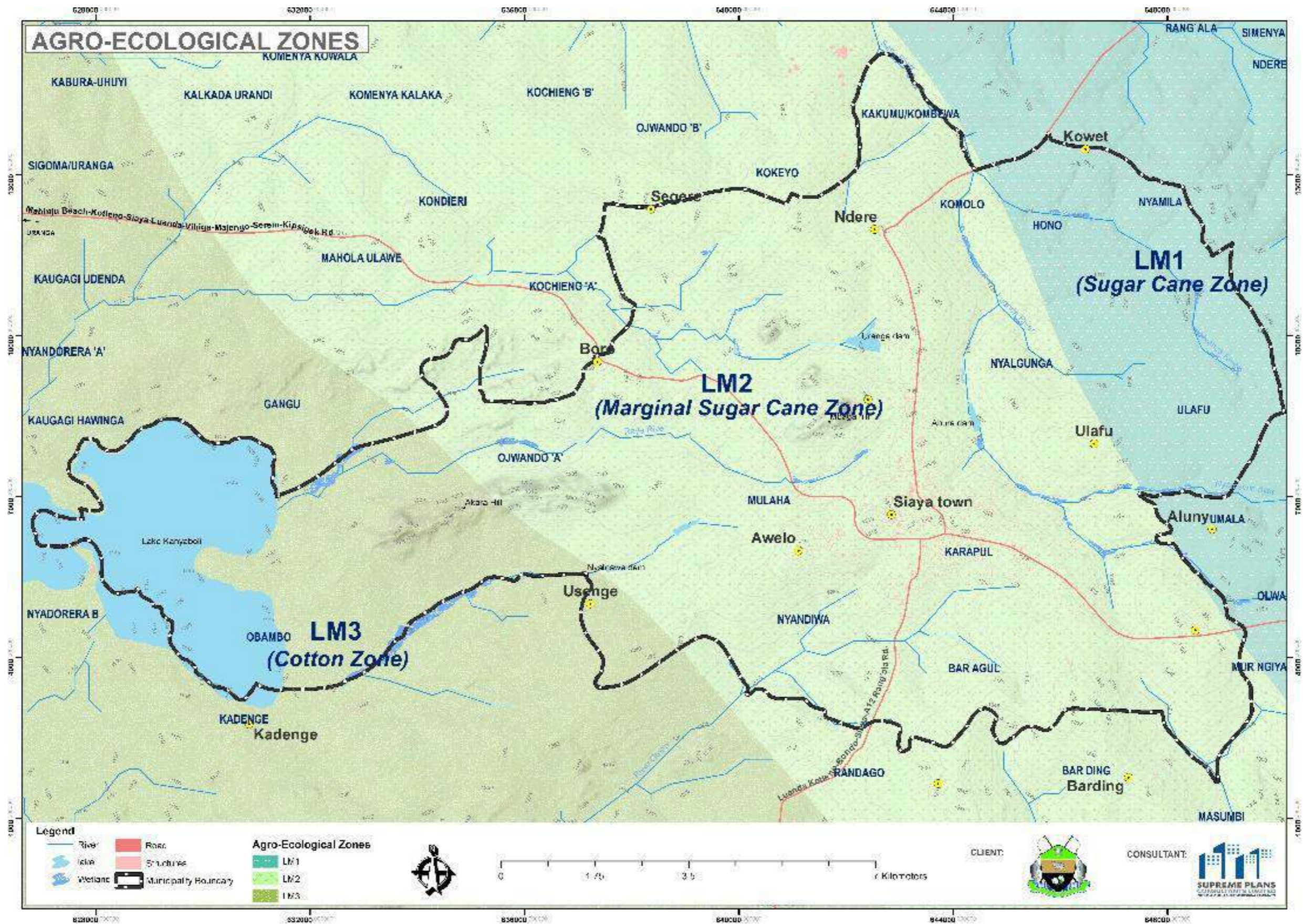
The Map below shows the vegetation cover within the planning area.



Map 3-4: Vegetation Cover



Map 3-5: Siaya County Agro-Ecological Zones



### 3.3.3 Ecological Conditions

Agro ecological zones within Siaya County spread from LM<sub>1</sub> to LM<sub>5</sub>. The planning area lies between Zone LM<sub>2</sub> and LM<sub>3</sub> that are classified as the low-midland zones. These are sub-humid and humid zones with reliable precipitation therefore high potential for agricultural activity. Crops with high potential in productivity in these zones include maize, hybrid maize, irrigated rice, finger millet, groundnuts and cotton.

### 3.3.4 Green and Open Spaces

These are composed of forests, hills, river reserves and protected green areas. They also include recreational spaces such as public parks. There are several green spaces available in town and within the peri urban areas of Siaya Municipality.

Provision of quality open spaces in urban areas plays an important role in the socio-economic, environmental and physical well-being of a population. They provide a quiet, breathing space enabling a range of open-air activities and social interactions. Some of the open spaces have the potential to form suitable growth centers for recreational facilities. Examples of the open spaces within the Municipality include Ahindi Gardens and reserves of rivers.

#### Plate 3-8: Ahindi Recreational Garden within Siaya town



Source: Fieldwork, 2023



### 3.3.5 Climate Change and Disaster Management

Climate change is a global issue that affects the entire world including Siaya Municipality in Kenya. Some of the impacts of climate change are drought, floods, water scarcity, and food insecurity. These impacts of climate change are already affecting the lives and livelihood of Siaya Municipality residents, and they should be addressed to prevent far-reaching consequences. Raising awareness about the impacts of climate change and promoting climate-resilient practices is crucial for building resilience in the face of climate change. The main disasters in the area are floods in the built-up areas, droughts, landslides, and fires. There is a need to put in place measures to manage these disasters and improve disaster preparedness and response.

### 3.3.6 Natural Resources

#### 3.3.6.1 Arable Land

Most of the land within the municipality is used for agriculture. The fertile soils coupled with good amounts of rainfall support agricultural activities. However, continued land fragmentation threatens agricultural productivity. There is thus a need to control land subdivision and land uses within the municipality and its hinterland.

#### Plate 3-9: land under Agricultural Use within the Municipality



Source: Fieldwork, 2023



### **3.3.6.2 Lake Kanyaboli**

Part of Lake Kanyaboli measuring approximately 9.79 km<sup>2</sup> is within Siaya Municipality. Lake Kanyaboli is the largest oxbow lake in Kenya and the second largest in Africa. The Lake is a vital ecosystem that provides water, and regulates global climate by acting as a carbon sink. The lake is home to different birds' and fish species.

The lake ecosystem is a habitat with rare species of mammals and birds. Some fish species declared endangered by the World Conservation Union in the year 1988 are found in the lake. The lake is also home for the rare Sitatunga antelope. Fishing, agriculture, eco-tourism and handicrafts are some of the main economic activities practiced around the Lake and its surroundings. There are several opportunities that can be explored to boost economic growth and development around the lake.

#### **Challenges**

- a) Loss of the lake waters during the heavy rains due to collapse of dykes.
- b) Climate change: this is affecting the Lake's ecosystem, leading to changes in water levels, temperatures, and rainfall patterns. This has affected the lakes biodiversity and productivity.
- c) Water hyacinth infestation: the invasive plant species blocks sunlight and oxygen from entering the water. This has led to decline in the number of fish and has also affected other aquatic species.
- d) Overfishing: the fishermen use unsustainable fishing practices such as using illegal fishing gear and catching immature fish. This has led to decline in the number of fish.
- e) Environmental degradation: human activities such as deforestation, agriculture, and fishing have contributed to the degradation of the lake's ecosystem.



### Plate 3-10: Section of Lake Kanyaboli



Source: Fieldwork, 2023

#### **3.3.6.3 Game Reserves**

The Municipality has only one gazetted game reserve; Lake Kanyaboli National Reserve under the Kenya Wildlife Services (KWS). The area around Kanyaboli was gazetted as a protected area to conserve endangered species within it. The game reserve is yet to be fully developed to attract more tourists, though it has high potential.

#### **3.3.6.4 Forests**

There are both natural and planted forests within the Municipality. There are however no gazetted forests within the Municipality. Mbaga forest located within Mbaga Hills is a community forest. This forest is under threat from encroachment and deforestation. The forests are majorly characterized by tree species such as blue gum, commonly known as eucalyptus grandis, grevillea and cypress in some parts of the planning area.



### **3.3.6.5 Rivers and Springs**

The main rivers within the Municipality are Nyamawin and Luanda Rivers. The temporary and permanent rivers provide sources of water for livestock and households within the Municipality. Although the river water is low in physical and biological quality, spring water has good quality with exceptions where pollution has taken place upstream.

#### **Challenges**

- a) Encroachment by human activities resulting to destruction, pollution and contamination.
- b) Pollution by upstream users through waste dumping.
- c) Lack of conservation measures specifically for the existing rivers within the Municipality.

### **3.3.6.6 Rocks**

There are several rocks within the Municipality that play a key role in enhancing aesthetics, preservation of living organisms, regulating the areas climate, source of building materials, storage for underground water among others.

#### **Plate 3-11: Rocks within the hinterland area of the Municipality**



*Source: Fieldwork, 2023*



### **3.3.6.7 Hills and Ridges**

Among the hills and ridges include Got Aduwa, Konyiego Ridge and Got Akara Hills. They are major natural resources within the Municipality that enhance aesthetics and the scenic value of the area.

**Plate 3-12: Konyiego Ridge located within the Municipality**



*Source: Fieldwork, 2023*

### **3.3.6.8 Surface Water Resources**

The major water resources within the Municipality include Lake Kanyaboli, Nyamawin River, springs and dams. Among the dams within the Planning area include Nyal Nawe Dam, Abura and Ufinya Dam. These provide water for domestic use, irrigation and for commercial use. The dams are under threat from soil erosion which has led to siltation thus reducing the capacity of the dams.



Plate 3-13: Part of Lake Kanyaboli within Siaya Municipality



Source: Fieldwork, 2023

Plate 3-14: Nyalnawe Dam located within the Municipality



Source: Fieldwork, 2023

### 3.3.6.9 Ground water resources

This refers to water below the surface of the earth. It also includes soil water and is among the most used component of the hydrologic systems. The ground water interacts with the surface water throughout the landscape. Ground water within Siaya Municipality is abstracted through boreholes and wells. There are several boreholes within the Planning area some which are permitted and while others are not.



Plate 3-15: A borehole in Komolo area within Siaya Municipality



Source: Fieldwork, 2023

### 3.3.7 Uses of Natural Resource

The uses of the natural resources within the municipality are summarized in the table below.

Table 3-2: Functions of the Natural resources within Siaya Municipality

Resource	Name /location	Functions	Challenges
Lake Kanyaboli		<ul style="list-style-type: none"> <li>• Biodiversity</li> <li>• Water for Irrigation</li> <li>• Fisheries</li> <li>• Eco-tourism</li> </ul>	<ul style="list-style-type: none"> <li>• Encroachment</li> <li>• Climate change</li> <li>• Pollution</li> </ul>
Water resources (Rivers, and Dams)	Rivers Yala, Nyal Nawe, Abura & Ufinya dams	<ul style="list-style-type: none"> <li>• Provides water for domestic, livestock and commercial use</li> <li>• Farming (irrigation)</li> <li>• Industrial uses such as water bottling</li> </ul>	<ul style="list-style-type: none"> <li>• Climate change</li> <li>• Encroachment on river riparian</li> <li>• Pollution of dams, rivers and springs</li> <li>• Low compliance levels</li> </ul>



		<ul style="list-style-type: none"> <li>• Groundwater recharge</li> </ul>	
Hills & Ridges	Konyiego & Got Akara Ridges	<ul style="list-style-type: none"> <li>• Scenic views</li> </ul>	<ul style="list-style-type: none"> <li>• Lack of conservation measures</li> </ul>
Forests	Along the ridges and hills Parts of the hinterland areas	<ul style="list-style-type: none"> <li>• Water catchment areas</li> <li>• Animal habitants</li> </ul>	<ul style="list-style-type: none"> <li>• Deforestation</li> <li>• Lack of gazetted forests</li> <li>• Deforestation</li> <li>• Over exploitation of Eucalyptus species</li> </ul>
Rocks	Parts of the hinterland areas	<ul style="list-style-type: none"> <li>• Environment preservation</li> <li>• Building and construction</li> </ul>	<ul style="list-style-type: none"> <li>• Lack of conservation and preservation measures within the Municipality</li> <li>• Under exploitation of rocks</li> </ul>

### 3.4 Environmental Challenges

- a) **Climate Change;** Drastic Climate change due to human activities like the clearing of trees and toxic vehicular emissions.
- b) **Natural and Human Disasters;** Disasters such as flooding are experienced on fairly flat grounds within the Project Area.
- c) **Deforestation;** Clearing of forests for timber and wood fuel resulting to reduction in forest and tree cover. The low forest cover within the planning area and the county at large is as a result of high population growth rates that increase demand for human settlements therefore need for building materials that can be obtained locally.



### Plate 3-16: Deforestation within the Municipality



Source: Fieldwork, 2023

- d) **Loss of Bio Diversity.** This is majorly caused by human and natural occurrences such as soil erosion, deforestation, low compliance levels by water abstractors will result to water pollution risks over time.
- e) **Encroachment.** Human activities along the river banks affect flow and possibly cause pollution on the downstream.
- f) **Pollution of both ground and surface water;** Dumping of soil waste materials on surface water such as rivers, springs, lakes and dams affects water quality.
- g) **Environmental Effects of Quarrying Activities;** The abandoned quarrying sites cause land degradation, loss of vegetation, contamination of the neighboring soils, possible risk accidents, declining soil fertility among other effects.
- h) **Poor solid waste management;** Lack of a dumpsite within the Municipality has resulted to poor solid management within the municipality. Haphazard dumping of solid wastes is also observed in some parts of the Planning area. The available waste collection points are exposed causing environmental pollution.



Plate 3-17: Soil erosion within parts of Siaya Municipality



Source: Fieldwork, 2023

Plate 3-18: Abandoned Quarry along Segere - Ndere Road within the Municipality



Source: Fieldwork, 2023



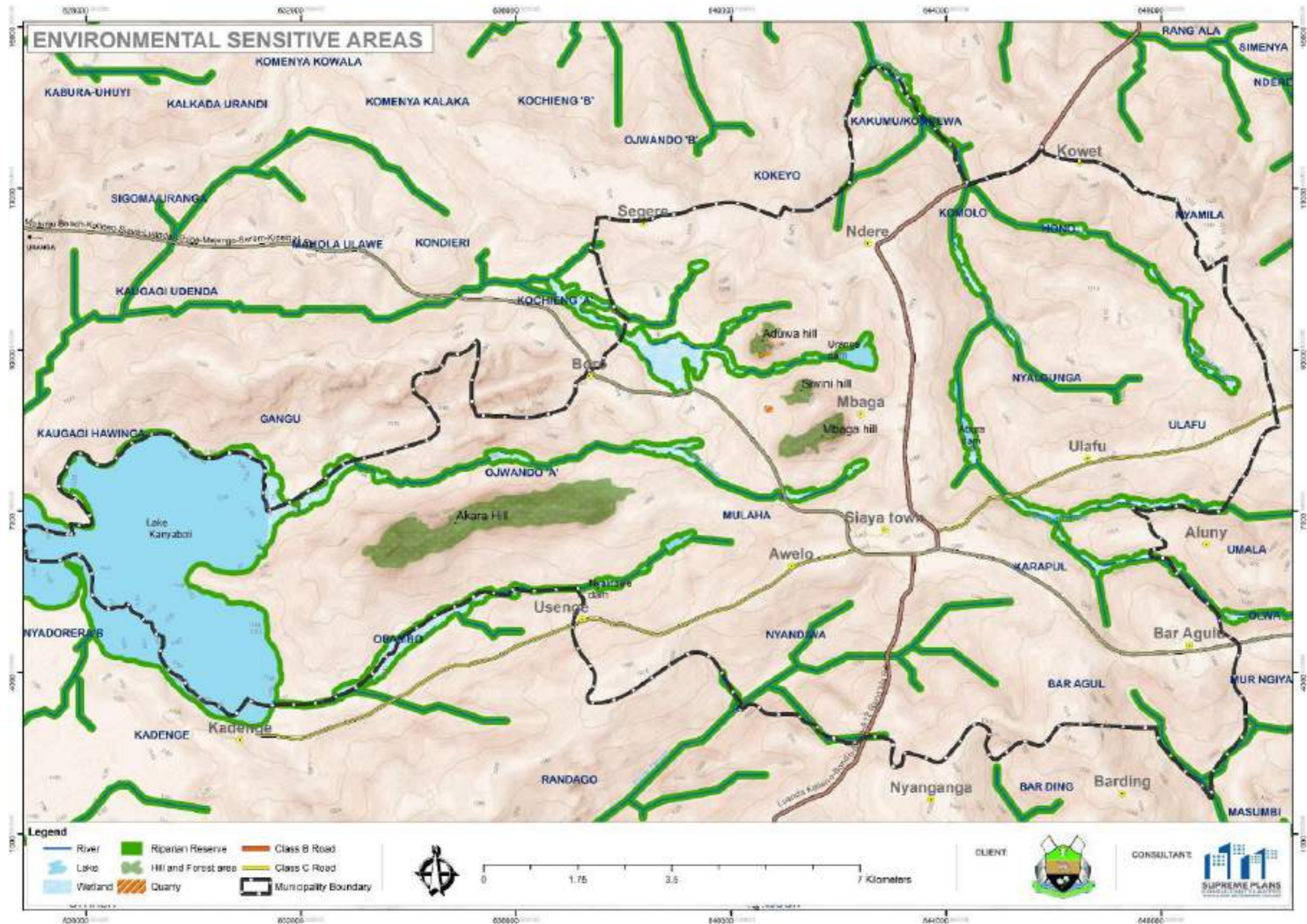
Plate 3-19: Poor solid waste management along a section of Luanda- Siaya Road



Source: *Fieldwork, 2023*



Map 3-6: Environmental Sensitive Areas



### 3.5 Population and Demography

This section outlines the population within the Municipality and analyses future trends in population change. The section also discusses the population demographics within the municipality and the larger Siaya County.

#### 3.5.1 Population

##### 3.5.1.1 Population Size

According to the 2019 Population Census, the population of Siaya County was 993,183 persons composed of 471,669 males and 521,496 females. It is estimated that the population grew at a rate of 2.2% (National Growth Rate) therefore the population is expected to be at 1,124,283 persons for the current year 2024 (KNBS, 2019).

The Planning area is within Alego Usonga Sub County that recorded a total population of 224,343 persons. That was the highest population size among the six sub counties within Siaya County. The total Planning area is made up of a total of 80,424 persons, higher than the threshold of a Population for a Municipality stated in the Urban Areas and Cities Act, No. 13 of 2011 (Amended 2019).

A comparison of the population at the Sub County level has been outlined in the table below;

Table 3-3: Alego Usonga Sub County Population Size

Sub County	Males	Females	Total
<b>Alego Usonga</b>	<b>105,906</b>	<b>118,433</b>	<b>224,343</b>
Gem	85,696	94,092	179,792
Ugenya	62,624	71,726	134,354
Unguja	48,912	55,329	104,241
Bondo	95,962	101,917	197,883
Rarieda	72,569	79,999	152,570
<b>Total</b>	<b>471,669</b>	<b>521,496</b>	<b>993,183</b>

Adopted from KNBS, 2019



Table 3-4: Population per Sublocations within Siaya Municipality

Sub-Location	Area within the Planning Area (Km <sup>2</sup> )	Density (persons per km <sup>2</sup> )	Males	Females	Total
Karapul	10.70	1,597	8,031	9,057	17,088
Ulafu	8.22	369	1,395	1,638	3,033
Bar Agulu	12.80	548	3,297	3,714	7,011
Mulaha	13.55	792	5,151	5,581	10,732
Nyandiwa	14.59	780	5,576	5,804	11,380
Koyeyo	6.36	380	1,136	1,281	2,417
Ojwando A	17.84	201	1,685	1,901	3,586
Ojwando B	5.99	423	1,193	1,345	2,538
Obambo	14.42	268	1,816	2,049	3,865
Komolo	10.82	468	2,431	2,633	5,064
Nyalgunga	12.63	431	2,613	2,831	5,444
Kadenge	3.51	-	-	-	-
Nyamila	4.20	353	697	786	1,483
Hono	8.54	533	2,185	2,367	4,552
Gangu	3.08	-	-	-	-
Kaugangi/Hawinga	3.20	-	-	-	-
Kakumu/Kombewa	5.87	380	1,048	1,183	2,231
<b>TOTAL POPULATION</b>			<b>38,254</b>	<b>42,170</b>	<b>80,424</b>

Adopted from KNBS, 2019

Sections Kadenge, Gangu and Kaugangi / Hawinga sub-locations are covered by Lake Kanyaboli.

The total area of the section of the Lake covering the Planning area is 9.79km<sup>2</sup>.



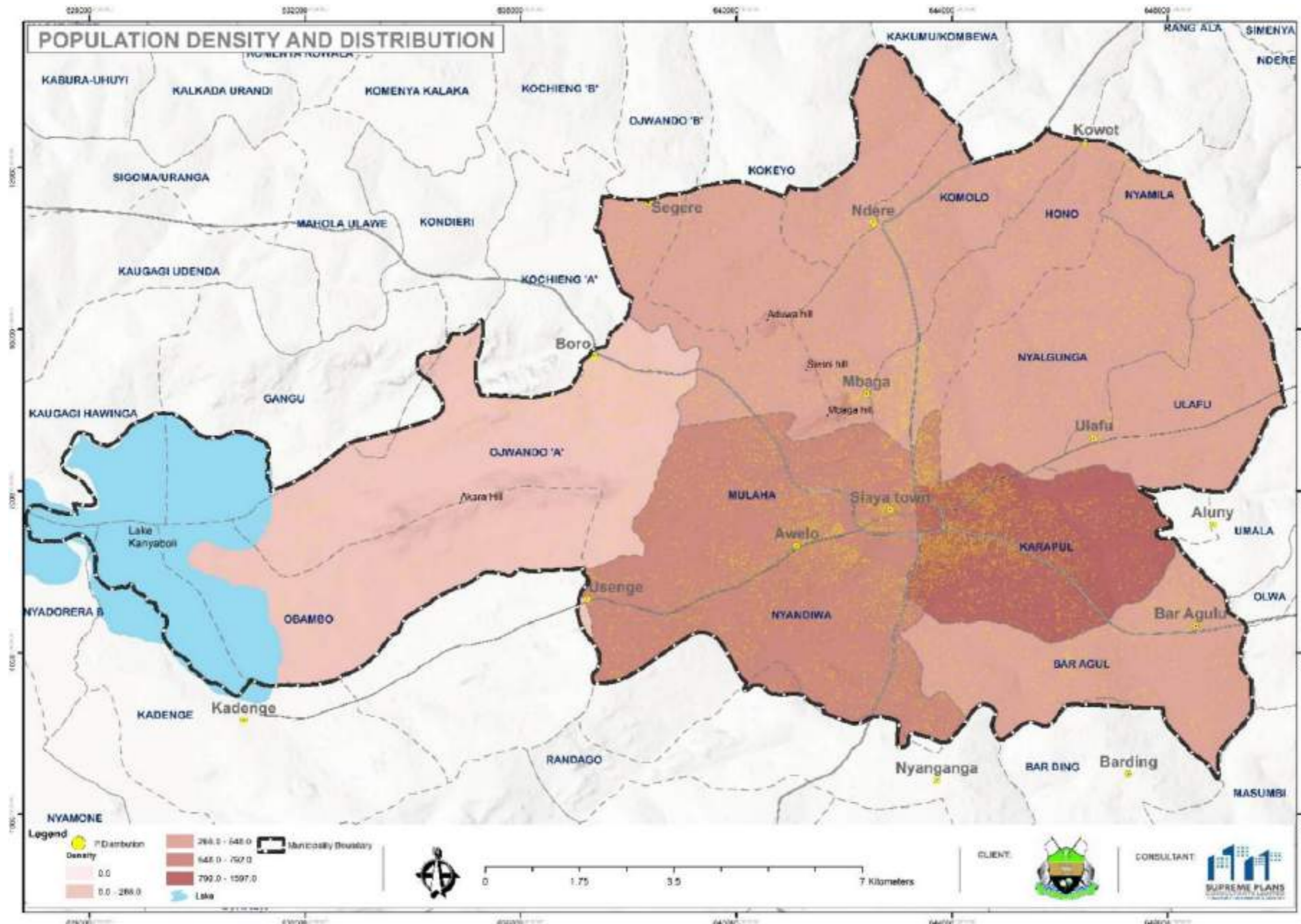
**Table 3-5: Section of Lake Kanyaboli within Siaya Municipality**

<b>Sub-Location within Lake Kanyaboli</b>	<b>Area covered (Km<sup>2</sup>)</b>
Kadenge	3.51
Gangu	3.08
Kaugangi/Hawinga	3.20
<b>Total Planning area covered by Lake Kanyaboli</b>	<b>9.79</b>

Adopted from KNBS, 2019



Map 3-7: Population Density and Distribution



### 3.5.1.2 Population Density

The map above illustrates that the population density in the planning area as in the year 2019 was 516 persons per km<sup>2</sup>. This is projected to increase to 586 persons per km<sup>2</sup> in the year 2025 and 651 persons per km<sup>2</sup> in the year 2030. The population distribution pattern as observed in Siaya Municipality is clustered. The populated areas within the Municipality include centers such as Obambo, Boro and Ndere.

### 3.5.1.3 Population projection

Siaya Municipality had a population of approximately 80,424 persons according to the 2019 Population and Housing Census. It's estimated that the population is currently at 89,426 persons and will increase to approximately 110,470 persons by the year 2034 at a growth rate of 2.2 % p.a.

The population projection has been calculated as;

$$P_t = P_o \times (1 + (r \times t))$$

Where;

$P_t$  = Total Population after time, 't'

$P_o$  = Starting Population

t = Time in years

r = % rate of growth. The national growth rate was 2.2% according to the 2019 Kenya National Population and Housing Census.

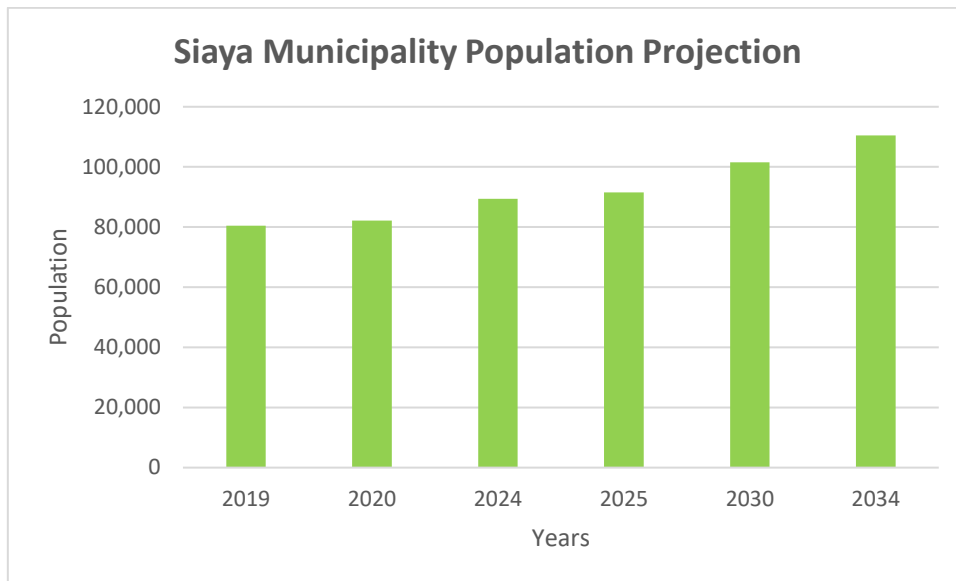
Table 3-6: Population Projection

Year	2019	2020	2024	2025	2030	2034
Population	80,424	82,193	89,426	91,473	101,535	110,470

Source: KNBS, 2019



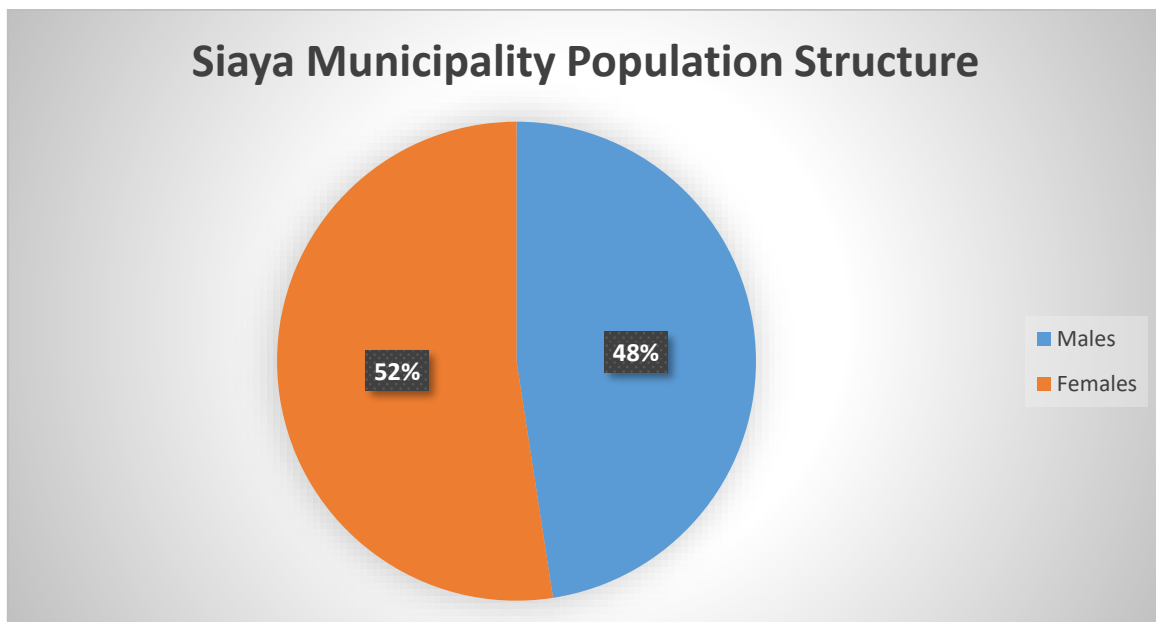
Figure 3-3: Siaya Municipality Population Projection



#### 3.5.1.4 Population Structure

The population within the planning area is made up of more females than males. Women account for 52% of the total population while men account for 48% of the total population. This is represented in the chart below;

Figure 3-4: Siaya Municipality Population Structure



### 3.5.1.5 Population composition

The population structure of Alego Usonga Sub County depicts a pattern as represented below. The Planning Area therefore will reflect a similar pattern. The population within the Planning area is a young population. It is composed of individuals within the school going bracket.

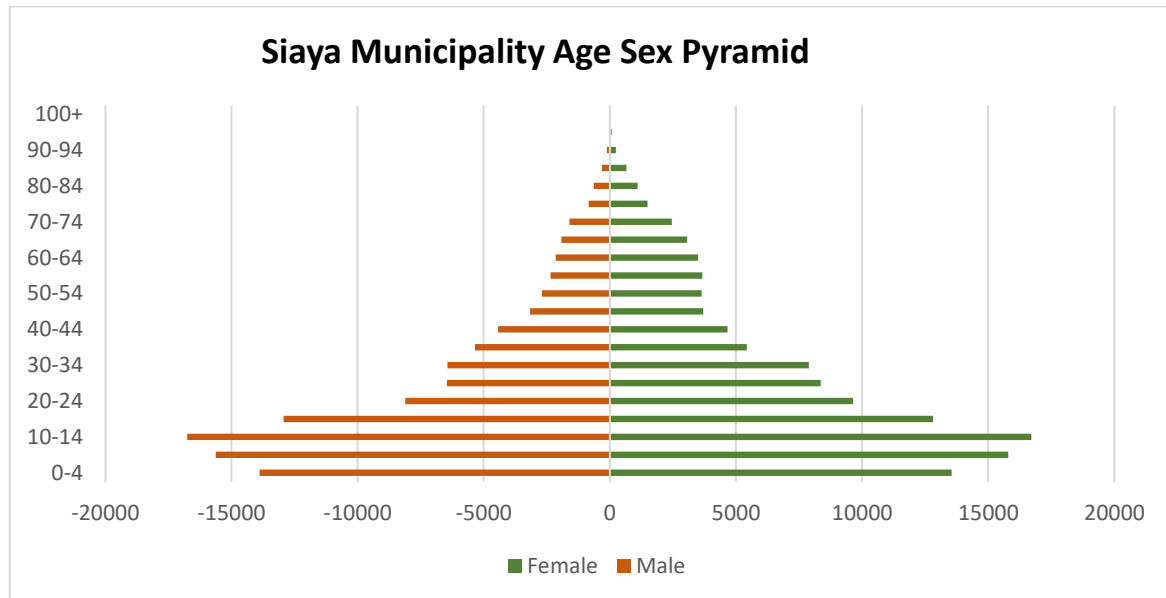
Table 3-7: Population Composition within Alego Usonga Sub County

Age	Male	Percentage (%)	Female	Percentage	Total	Percentage (%)
0 - 4	13,892	13.11	13,552	11.44	27,444	12.23
5-9	15,630	14.76	15,796	13.34	31,426	14.01
10 -14	16,755	15.82	16,707	14.11	33,462	14.91
15-19	12,942	12.22	12,814	10.82	25,756	11.48
20-24	8,119	7.67	9,637	8.14	17,756	7.91
25-29	6,463	6.10	8,351	7.05	14,814	6.60
30-34	6,442	6.08	7,886	6.66	14,328	6.39
35-39	5,352	5.05	5,431	4.58	10,783	4.80
40-44	4,431	4.18	4,665	3.94	9,096	4.05
45-49	3,171	2.99	3,695	3.12	6,866	3.06
50-54	2,702	2.55	3,641	3.07	6,343	2.83
55-59	2,349	2.22	3,664	3.09	6,013	2.68
60-64	2,152	2.03	3,491	2.94	5,643	2.51
65-69	1,926	1.82	3,068	2.59	4,994	2.23
70-74	1,610	1.52	2,458	2.07	4,068	1.81
75-79	848	0.80	1,489	1.26	2,337	1.04
80-84	640	0.60	1,095	0.92	1,735	0.77
85-89	324	0.30	659	0.56	983	0.44
90-94	114	0.11	236	0.20	350	0.15
95-99	32	0.03	67	0.06	99	0.04
100+	7	0.01	27	0.02	34	0.01



The intersex population makes a total of 348 which is too insignificant to be distributed by age groups.

Figure 3-5: Siaya Municipality Age Sex Pyramid



Source: Adopted from KNBS, 2019

### 3.5.1.6 Rural Population

It is observed that population within the Municipality is majorly composed of the rural setting. The County has a rural population of 47,271 (KNBS, 2019).

### 3.5.1.7 Urban Population

Out of the total Siaya Town population, 33,153 makes urban population that is composed of 15,855 males and 17,298 females (KNBS, 2019).

## 3.5.2 Demography

### 3.5.2.1 Indicators of Wellbeing

Globally, indicators of well-being cover areas such as income, jobs, housing, education, health, environment, safety, civic engagement and governance, access to services, community, and life satisfaction, *Regions at a Glance* (OECD, 2016).

Human development approach as an indicator of well-being can be both a goal and a process of enabling people to lead the lives, they value by expanding their capabilities, freedoms, and choices.



According to the County Integrated Development Plan, 2018-2022, the principles of human development include;

- a) Equity within and across groups,
- b) Efficiency in the use of resources,
- c) Empowerment in terms of provision of resources and opportunities for people to participate in the development process,
- d) Sustainability (environmental, social, economic and political policies) and
- e) Inclusiveness

The National life expectancy is 62.2 years and expected years of schooling is 11.1 years. In the report, categories include Very High human development, High human development, Medium Human Development and Low human development.

As observed in the CIDP review, human development has continually increased to improve at the global, regional and national levels yet uneven income distribution as well as human deprivations have persisted. These emerging inequalities and marginalization are among the catalyst for dispensation of the new constitution where the national in collaboration with the county governments to address such (CIDP, 2018-2022).

### **3.5.2.2 Literacy Levels**

Alego Usonga Sub County recorded a total of 20,426 persons in the Pre-primary educational level (KNBS, 2019). The highest enrollment level was the primary with a total of 110,970 persons. The secondary level recorded a total of 38,108 enrollments, a total of 8,335 in Middle Level/Technical and Vocational Training (TVET), 4,522 in a university, 154 persons enrolled for adult education and 7 for Madrasa/Duksi (KNBS, 2019).

### **3.5.2.3 Mortality and Morbidity Rates**

The main causes for Mortality and morbidity rates within Siaya County are malnutrition and illnesses such as Malaria, HIV/AIDS, diarrhea, respiratory infections and Tuberculosis (TB).

Within Siaya County, malnutrition is experienced among infants, children, Maternal, Geriatrics and people living with HIV/AIDS and TB (CIDP, 2018-2022). Malaria recorded a prevalence rate of 38% and 27% for the year 2010 and 2015 respectively for the Lake region (CIDP 2018-2022). 38% of the Morbidity causes in the area account to Malaria.



The rates have continually been declining as a result of initiatives by the County such as HIV care and treatment programs, improvement in healthcare, expanded immunization programs, improved maternal and child health care facilities. In addition to this, the County has been rallying the communities, religious leaders, Office of the first lady, religious women, partners and county leadership to say NO to preventable maternal and child death through the WADAGI Initiative”.

These priorities are aimed at reducing the mortality rates previously recorded as; (691/100,000 live births) -MICS4 2011; Neonatal mortality at 39/1000 live births, Infant Mortality at 111/1000 live births and under five mortalities is at 159/1000 live births (MICS4 2011).

#### **3.5.2.4 Fertility Trends**

According to (Ministry of Health, DHS2 2017), 65% of women within the Sub County delivered at a health facility while 35 per cent delivered at home. It was also recorded that only about 50 per cent of women receive the required four (4) antenatal visits (MoH DHS2 2017).

Family planning (FP) services are principal in ensuring that women practice healthy timing and spacing of pregnancies. Siaya County has also made significant progress in key FP indicators, including increasing CPR from 23% in 2013 to 55 % in 2017 and declining TFR from 5.5 in 2013 to 4.2 in 2017, as well as unmet need for FP from 25.4% in 2013 to 13.8% in 2017 (KDHS 2014: PMA2020 R5).

#### **3.5.2.5 Income Levels**

The level of inequality in income distribution in Kenya is comparatively high and has worsened over time.<sup>4</sup> Kenya’s Gini index increased from 45 percent in 1997 to 46.5 percent in 2005 before dropping to 40.8 percent in 2015 (High inequality levels in a country have a chance in diminishing its growth).

Inequality in household consumption is more pronounced in peri-urban areas. In peri-urban areas, the richest households consume 159 times higher than the poorest households in the first quintile, while at the national level, the richest household’s consumption level is 17 times higher than the poorest. However, inequality in household consumption is less severe in rural households, where the share of consumption of a household in the fifth quintile is just 4 times that of the first.



### 3.6 Social Analysis

#### 3.6.1 Religion

According to the National Population and Census report for the year 2019, the highest religions recorded in Siaya County were Catholics, Protestant, Evangelical Churches and African Instituted Churches. Other Christian and religions followed while the Hindu recorded the least no of persons in the County (KNBS, 2019).

Table 3-8: Religions within Siaya County

Religion	Population
Catholic	226,455
Protestant	224,860
Evangelical Churches	225,650
African Instituted Churches	236,416
Orthodox	7,426
Other Christian	34,443
Islam	4,994
Hindu	25
Traditionalists	2,526
Other Religions	16,993
No religion	8,614
Don't Know	1,073
Not Stated	233

Source: KNBS, 2019



### 3.6.2 Marginalized and Minorities

These are among special groups whose representation in Parliament is advocated by the State through the Constitution of Kenya, Article 100. Article 260 of the Constitution of Kenya defines a marginalized community as a relatively small population, a traditional community, an indigenous, pastoral persons and communities.

A marginalized group refers to a group of people discriminated on one or more grounds because of prevailing laws or practices. These constitutional provisions are a key step in putting in place strategies towards attainment of equity in society.

Generally, marginalized areas are disadvantaged from the national axis of growth as a result of distance and inaccessibility. These areas are characterized with poor road networks and limited access to electricity for uses such as educational, household, industrial and commercial uses. Additionally, inadequate access to major factors of economic growth such as basic services, quality water, sanitation and security is a common phenomenon in these areas. These areas therefore lack the endowment and significance to attract potential investors and tourists (CRA, Working Paper No. 2012/03)

According to the National Gender and Equality Commission (NGEC), 2018 the level of education, infrastructure, poverty index, food insecurity, health facilities, access to water and historical injustices should be used as criteria to identify the most marginalized areas.

Communities identified as minority and marginalized in the Siaya County:

Table 3-9: The Minority and Marginalized Groups within Siaya County

CATEGORY	NAME	LOCATION
Minority and Marginalized	Luhya	North Uholo, South Ugenya, Usonga, North Gem, Township, East Gem, West Ugenya, East Ugenya, Central Sakwa, South West Sakwa, Mageta Island
	Basuba	Central Sakwa, Ndeda and Oyamo Islands, South Uyoma, East Uyoma

Source: NGEC, 2018



Illiteracy, political underrepresentation, poor sanitation and infrastructure, inaccessibility to employment opportunities, and inadequate staffing of social amenities are the key issues affecting the minority and the marginalized communities in Siaya County.

These communities as stipulated in Article 56 of the Constitution, are to be provided with affirmative action programmes to ensure that they;

- a) Participate and are represented in governance and other spheres of life
- b) Are provided special opportunities in education and economic fields
- c) Are provided special opportunities for access to employment
- d) Develop their cultural values, languages and practices
- e) Have reasonable access to water, health services and infrastructure.

### **3.6.3 Culture and Heritage**

The cultural assets of the County such as the Cultural heritage centers express the culture through distinctive local customs, songs, dances, history, art and handicrafts.

Through cultural activities such as traditional dances, Nyatiti players, Orutu players, Dodo dancers, Dirges, Tero buru, people of Siaya County identify with their origin and culture.

## **3.7 Land and Land Use Analysis**

The section discusses land use and land cover analysis, determining the specific land use patterns and their compatibilities for provision of basic services and utilities. Broadly, the section provides details of land tenure systems within Siaya Municipality, land use patterns and land suitability analysis.

### **3.7.1 Land Size**

The planning area covers an approximate 156.52 km<sup>2</sup>. The land is occupied by human settlements, Lake Kanyaboli, rivers and urban centres. Over 87% of the land is available for human settlement while the rest is occupied by water bodies and wetlands. The table below summaries the land availability within the municipality.



Table 3-10: Land Use Categorization

Use	Area (Km <sup>2</sup> )	Percentage
Peri-urban	133.561	85.44
Urban Areas	3.319	2.12
Water bodies	17.36	11.11
Wetlands	2.08	1.33
<b>TOTAL</b>	<b>156.52</b>	<b>100.00</b>

### 3.7.2 Land Tenure

Food and Agriculture Organisation (FAO) defines land tenure as the relationship, legally or customarily defined, among people, as individuals or groups, with respect to land. Land tenure rules define the manner in which property rights are allocated, used, transferred, or managed in a particular society. They determine who can use what land resources for how long, under what conditions.

Siaya Municipality covers an area of approximately 156.52km<sup>2</sup>. Land tenure in the municipality is both private and public. Private land is the major form of land tenure within the Municipality. Land Tenure security is by way of possession of land ownership documents. The absence of the ownership documents limits investments in land and the owners are unable to use the properties as collateral to access credit. Formalization of tenure upon completion of the planning process should aid in addressing land tenure challenges.

### 3.7.3 Land Use

#### 3.7.3.1 Current land Use patterns

Major land uses include commercial, recreational, educational, agricultural, utilities, industrial, recreational, wetlands and water bodies, and conservation land uses. A land use analysis by Konyango *et al.* (2021) for the period between 1987 and 2017 revealed significant changes in land uses over the study period characterized by rapid expansion of the built-up areas over the period. The analysis demonstrated a decline in land cover, particularly in the fragile ecosystems, attributed to change from bare land/vegetation cover to built-up areas.



Land use patterns are characterized by: -

- a) Settlement/residential use – built up areas for both residential and commercial purposes
- b) Transportation use – land is used for roads, streets and pathways, and bus stations, railway and airstrip.
- c) Water bodies – this is land occupied by rivers, lakes, streams, wetlands, ponds, and shallow wells.
- d) Agricultural land – mainly in the periphery of Siaya town. This is land under crop and livestock production. It mainly consists of cultivated land, fallow land, crop fields, farm houses, rangelands and even horticultural land. Major food crops grown in these lands include vegetables, maize, millet, groundnuts, sorghum, beans, cassava, cowpeas among others. Major food crops consist of groundnuts, cotton, rice and sugarcane.

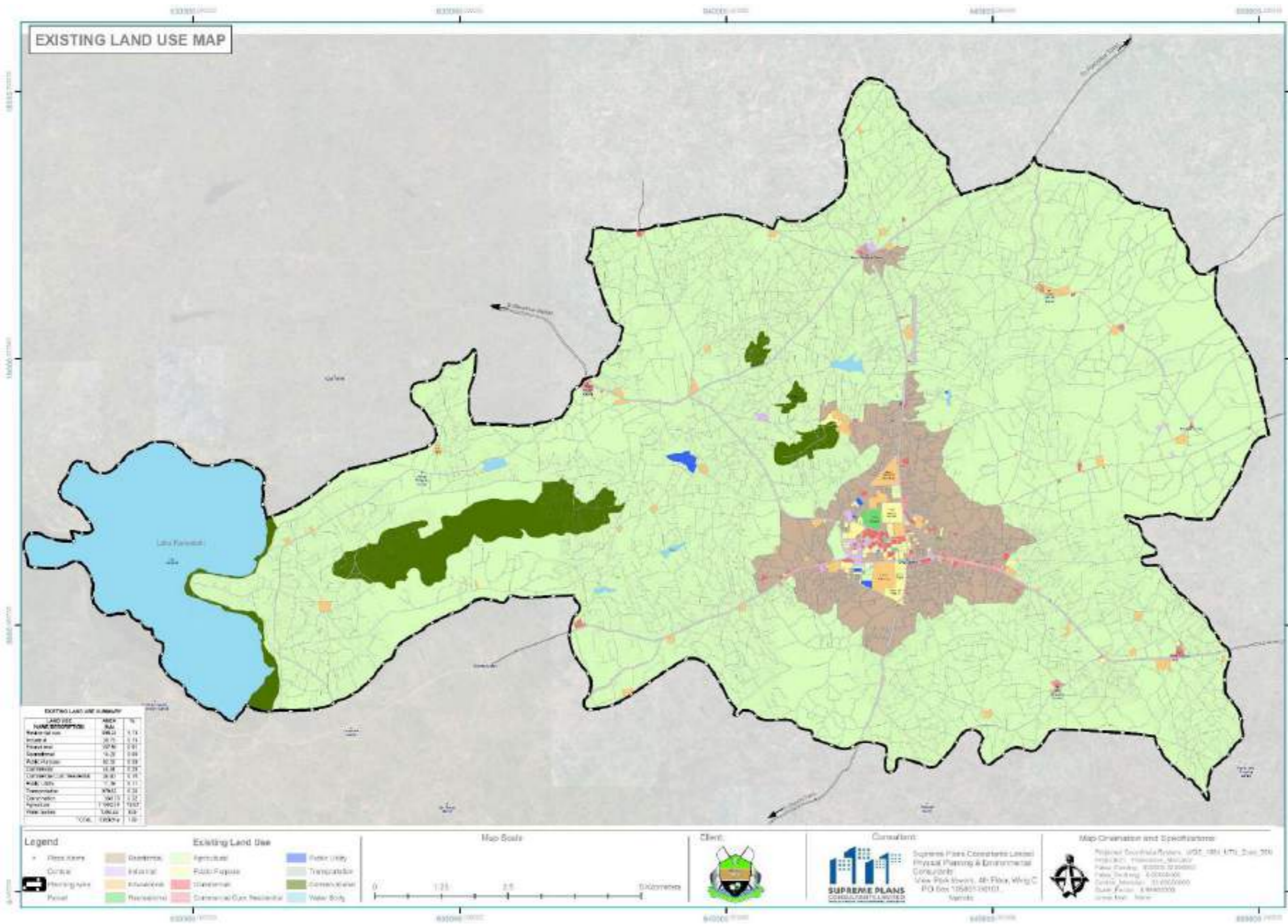
The proportion of prevailing land uses are shown in the table below while the map below gives a spatial distribution of the existing land uses.

**Table 3-11: Existing Land Use Budget – Siaya Municipality**

Land Use Name/Description	Area (Ha)	%
Residential use	896.24	5.73
Industrial	20.75	0.13
Educational	142.80	0.91
Recreational	14.23	0.09
Public Purpose	92.52	0.59
Commercial	44.44	0.28
Commercial Cum Residential	24.40	0.16
Public Utility	17.39	0.11
Transportation	979.82	6.26
Conservation	550.73	5.32
Agriculture	11562.36	73.87
Water bodies	1306.32	8.35
<b>TOTAL</b>	<b>15652Ha</b>	<b>100</b>



Map 3-8: Existing Land Use Map



### 3.7.3.2 Land Uses within Siaya Town

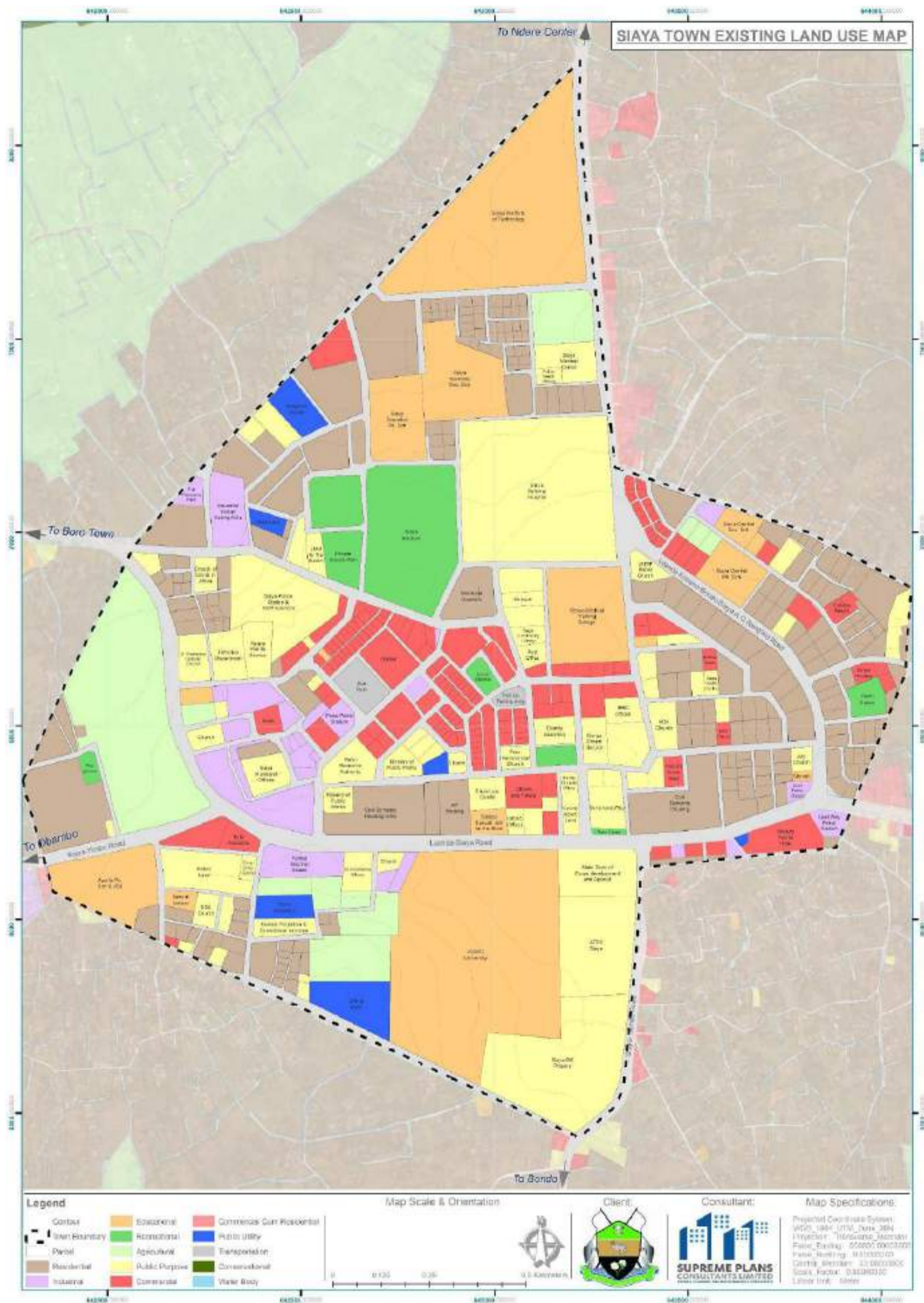
Siaya Town is an urban area within the County and within the municipality. Majority of the Land within Siaya town is occupied by public purpose facilities. The town has various uses as summarized in the table below.

Table 3-12: Existing Land Use Budget - Siaya Town

LAND USE NAME/DESCRIPTION	AREA (HA)	%
Residential use	61.03	19.14
Industrial	11.89	3.73
Educational	57.80	18.13
Recreational	13.47	4.22
Public Purpose	67.20	21.08
Commercial	19.06	5.98
Public Utility	4.99	1.56
Transportation	62.09	19.47
Agriculture	21.33	6.69
<b>TOTAL</b>	<b>318.86Ha</b>	<b>100</b>



Map 3-9: Existing Land Use Map - Siaya Town



#### *3.7.4 Land Values*

The values of land are highest at Siaya town central business district (CBD). The land values decrease further away from the CBD. However, the value of land has been on the rise, especially since 2012. This is attributed to devolution with Siaya County headquarters hosted at the Municipality. Land fragmentation is also on the rise owing to increasing urban population to serve new opportunities associated with the location of the county headquarters. This has witnessed rise in demand for residential and commercial housing infrastructure among other complimentary uses such as recreational, educational, and utilities. This has put pressure on land hence increase in land values.

#### *3.7.5 Land Suitability*

The average land holding size within Siaya Municipality is 0.5ha. Majority of the land within the Municipality remains freehold, limiting public investments. Haphazard land fragmentation and unregulated developments on land creates conflicting land use and high-level incompatibilities. The land is however suitable for agricultural production, hitherto, affected by rampant fragmentation and land use changes to accommodate new forms of use due to growth of the town. With an average gradient of 2%, the Municipality is fairly plain, with its topography suitable for development. The basement is mainly covered by Nyanzian and Kavirondian rocks that support development on land.

#### *3.7.6 Emerging planning issues opportunities and challenges*

- a) The Municipality is largely on a private freehold land, limiting public sector developments. County government acquire land via compulsory acquisition, purchase, surrenders, land swap among other methods for urban developments and other investments on land
- b) There are runaway land fragmentations within the Municipality to cater for increasing land demand and urbanization needs for housing, commercial, industrial, public use, utilities and educational land use needs
- c) Lack of land ownership documents limits investments on land. This runs a risk of growing landlessness within the municipality.
- d) Unplanned urban developments and urban sprawl.



### 3.7.7 Emerging Issues

#### a) Over Exploitation of the eucalyptus species.

The eucalyptus tree that is commonly grown in Siaya Municipality has long term effects on groundwater due to its intensive water demand nature. This reduces water availability for other plant species. Additionally, the plant lowers the soil pH therefore declining the soil total nitrogen and soil total organic carbon concentrations. This results to reduction in quality and quantity for agricultural yields if practiced on the same land.

#### b) Low Compliance levels with standards, procedures and regulations for water abstraction points

Illegal water abstraction points such as boreholes can cause contamination, reduction in quality and quantity of ground water. Several water abstraction points within the Municipality have not met the compliance standards, procedures and regulations.

## 3.8 Human Settlements and Urbanization

This section presents an analysis of patterns of human settlements and their trends within Siaya Municipality. Different centres where they have been classified according to the services available. Availability of services and major facilities determine whether an area is a town, local or market centre.

### 3.8.1 Historical Development of Siaya Municipality

#### 3.8.1.1 Early Settlement

Before the colonial settlement of Siaya Township, the region was primarily rural, characterized by Luo community engaged in subsistence farming, livestock rearing, and small-scale trade. The community had their own social structures and cultural practices, with communal land ownership and sustainable agricultural methods. The area had a strong sense of community and a rich cultural heritage.

#### 3.8.1.2 Colonial Era

Siaya constituted part of the vast Nyanza Province during the colonial era and was primarily characterized by its rural environment. The present-day Siaya Town was previously known as Bar-Siany Kochieng Adhege. The area derived its name from Ochieng Adhege due to its flat and



marshy topography. It is known that an error in typography or pronunciation may have led to the adoption of the name Siaya instead of Siany. This location has gained significant recognition for its ability to serve as a cohesive center for four prominent clans: Jo-Kakan, Jo-Karapul, Jo-Hono, and Jo-Kaluo. In recent times, the Bar-Siany district has gained notable acclaim for its thriving athletic and commercial pursuits. Formerly known as Ka-Ahindi Ododa, it is situated in the heart of the central business district.

The origins of commercial activities in Bar-Siany can be traced back to the outbreak of the war in 1914, which was instigated by Ahindi Ododa, a prominent member of the Jo-Karapul Clan. The current location of the County Administration Offices was previously utilized as a trading center. The establishment of Mulaha Primary School by the Church Missionary Society in 1906, followed by the creation of a health center (now known as Siaya MTC) in 1914, significantly elevated the status of the trading center. In 1937, the Greater Alego region underwent a division, resulting in the formation of two distinct areas: the East and West regions. Chief Ahenda's astute leadership in East Alego, with Bar-Siany as its epicenter, played a crucial role in driving the region's growth into a bustling commercial hub.

After Kenya achieved independence in 1963, Bar-Siany had already established itself as a pivotal center for administrative and commercial operations under the African District Council (ADC) of Kisumu. In 1969, the Kisumu District Council underwent a division, leading to the establishment of Bar-Siany as an independent administrative unit within the district. Due to inadequate infrastructure, administrative operations were temporarily conducted from the town of Ukwala.

### **3.8.1.3 Post-Independence**

The Siaya Township underwent significant upgrades in the years 1987 and 1995. However, it has been observed that the peri-urban areas of the township have been lacking in proper land use plans. The land use plan that was first established in 1971 was limited to public land areas. However, the township has since expanded into freehold lands without a comprehensive framework in place. In response to this issue, the Siaya Integrated Urban Structure Plan (IUSP) was formulated in 1993. However, it did not receive approval from the Minister for Lands.



The primary objective of the IUSP was to provide a comprehensive framework for the development of Siaya Township Ward, with a particular focus on establishing a cohesive and sustainable system of human settlements. Although the area in question exhibited potential for growth, it was found to be lacking in effective development control mechanisms and specific standards for regulating land use changes. While the identification of land use categories and the designation of sites for public purposes in freehold lands is a step in the right direction, it is important to note that the lack of detailed zoning or action area plans may hinder the effective guidance of developments in the area.

Due to the absence of an all-encompassing spatial planning framework, the need for the creation of the Innovative Urban Spatial Planning (IUSP) arose. However, its execution encountered obstacles in managing land use and procuring public-purpose areas on privately owned properties. The proposed plan outlines a strategic approach to growth, which involves expanding in four directions from the town Centre. In general, it is imperative to implement enhanced planning and control mechanisms to efficiently manage the expansion and progress of Siaya's peri-urban regions. Historically, there have been challenges with development applications in the peri-urban areas of Siaya Township, as they have been categorized as "isolated" plots. This has resulted in uncontrolled land use changes that fall outside of government regulation and established urban planning procedures. As a consequence, unplanned settlements have arisen, which suffer from insufficient infrastructure and services, leading to the outward spread of urban development. Acknowledging the limitations in capacity and inadequate funding for effective management and spatial organization, the 1993 Integrated Urban Development Structure Plan for Siaya Township Ward highlighted the volatile spatial structure of peri-urban areas.

The proposed plan is designed to attain a harmonious urban environment through the appropriate allocation of land uses and gradual development. The municipality faced difficulties in achieving a cohesive approach towards growth in rural areas that were brought under its jurisdiction, as well as in regulating development due to the presence of diverse land tenure systems. While the proposed plan effectively outlined the most efficient land use for the urban core and established general land use categories for the municipality, the lack of detailed zoning



plans led to unregulated urban expansion. The Integrated Development Plan for Siaya County spanning from 2013 to 2018 has duly recognized the issue of urban sprawl and the consequent unplanned expansion of urban areas, which has led to the encroachment of urban land upon agricultural areas. It is highly recommended to implement a spatial planning framework and advisory plans for satellite market centers in order to effectively address the issues at hand.

The peri-urban areas of Siaya Township present a unique set of challenges in terms of land use planning, primarily due to their predominantly rural character and the prevalence of freehold land tenure. Motivated by the demand for housing, private developers frequently alter land use without taking the necessary planning requirements into account. It is essential to recognize peri-urban areas as essential components of the urban development process and to embrace an integrated strategy to guide land use changes.

### *3.8.2 Patterns and Trends of Human Settlements*

The spatial distribution of settlements within a planning area, their interconnectivity and accessibility from the major urban center is important in distribution of resources, economic development and determining provision of services.

The settlement patterns within the planning area vary in form and character within the different centres. Areas within the hinterlands are sparsely settled. Areas with clustered settlements include Obambo, Ndere, Boro and Hono centres. The settlements within the centres have majorly been influenced by transit routes, human activities and natural environmental factors.



## Siaya Town

Location	Located at the core of the Municipality, along Siaya-Luanda Road
Land Use	Predominant land use is commercial. Others are public purpose, light industrial, public utility.
Building Typology	Hotels complex, commercial, offices,
Services Available (Urban Areas and Cities Act, No. 13 of 2011- Amended 2019)	<p>Street lighting</p> <p>Siaya County Referral Hospital</p> <p>Nyalego Nursing Home</p> <p>Guest houses</p> <p>Resorts</p> <p>Sewer network</p> <p>JOUST</p> <p>Kenya Medical Training College</p> <p>Siaya Institute of Technology</p> <p>Siaya G.K. Prisons</p> <p>Siaya Law Courts</p> <p>Siaya County Cemetery</p> <p>Solid waste management (Solid waste collection points)</p> <p>Refuse collection</p> <p>Gombe Airstrip</p> <p>Recreational Park</p> <p>Fire fighting vehicles</p> <p>Stadium</p> <p>Market</p> <p>Siaya Community Library</p> <p>Siaya County Governor's office</p> <p>Huduma Centre Siaya</p> <p>Siaya General Post Office</p> <p>Religious Institutions</p>



Plate 3-20: Commercial developments within Siaya Town



Source: Fieldwork, 2023



## Obambo

Location	Located off Nyamonye - Siaya-Madeya Road to the South West of the Municipality
Land Use	Residential, agricultural, ducational, commercial
Building Typology	Corner Shops, commercial (shopping centre)
Services Available	Primary school, Secondary school, market

## Ndere

Location	The centre is located off Segere Ndere road to the North East of the Municipality
Land Use	Residential, commercial, agricultural, educational, light industrial
Building Typology	Low-rise apartments, commercial (shopping centre), light industrial blocks, row houses
Services Available	Market, Dispensary, Vocational training centre, Secondary school, Light industry, security masks

Plate 3-21: Low-rise apartments in Ndere Centre



Plate 3-22: Commercial Developments within Ndere Centre



Source: Fieldwork, 2023

Plate 3-23: Staff Housing along Segere-Ndere Road



Source: Fieldwork, 2023



**Plate 3-24: Ndere Market within Siaya Municipality**



Source: Fieldwork, 2023

**Plate 3-25: Siaya Nuts Producers & Processors Coop Society Limited in Ndere area**



Source: Fieldwork, 2023



## Boro

Location	Located off Siaya-Rwambwa-Nyadorera and Boro-Lake Basin Road
Land Use	Commercial, residential, public purpose, agricultural, educational.
Building Typology	Row houses, corner shops, bungalows, maisonettes
Services Available	Dispensary, Secondary school, market, livestock market

Plate 3-26: Commercial Developments within Boro Market



Source: Fieldwork, 2023



Plate 3-27: Market in Boro Centre within Siaya Municipality



Source: Fieldwork, 2023



## Segere

Location	Located along Segere-Ambira Road
Land Use	Residential, commercial, public purpose
Building Typology	Corner shops, commercial (shopping centre), row housing
Services Available	Secondary school, Dispensary

Plate 3-28: Segere Market within Siaya Municipality



Source: Fieldwork, 2023

## Usenge

Location	Located off Nyamonye - Siaya-Madeya Road
Land Use	Residential, commercial, agricultural
Building Typology	Corner shops, commercial (shopping centre), row housing
Services Available	Market



Plate 3-29: Market Shade at Usenge Market



Plate 3-30: Commercial Developments in Usenge Market



Source: Fieldwork, 2023



## Harambee

Location	Located off Nyamonye - Siaya-Madeya Road to the South East of the Municipality
Land Use	Commercial, agricultural, residential
Services Available	Secondary school, Primary School Dispensary, street lighting

Plate 3-31: Harambee Centre within the Municipality



Source: Fieldwork, 2023



## Hono

Location	Located off Segere-Ndere Road to the North-East of the Municipality
Land Use	Educational, commercial, residential,
Building Typology	Corner shops, Rowhouses
Services Available	Primary School, Secondary school

Plate 3-32: Commercial Developments in Hono within Siaya Municipality



Plate 3-33: Commercial Developments in Hono within Siaya Municipality



Source: Fieldwork, 2023



### 3.9 Urbanization

Siaya Municipality has several centres that vary in size and intensity of developments. Developments are clustered within the major centres such as Obambo, Boro, Segere, Hono, Ndere. The centres growth pattern has been influenced by the transit functions. The Main roads: Luanda-Siaya Road, Siaya-Bondo Road, Siaya-Rwambwa-Nyadorera Road, Segere-Ndere Road have influenced the commercial, mixed use, administrative, educational, light industrial land uses along them. Since the advent of devolution, urbanization has increased at unprecedented rates. Siaya town is the major commercial node within the Planning area.

#### 3.9.1 Urban Centres categorization

The largest urban centre within the Municipality is Siaya Town. It is within Siaya Town that most services and public facilities are located. Other urban centres within the municipality are as outlined in the table below;

**Table 3-13: Classification of Urban Centres**

Urban Center Category	Name of Centre
Town	Siaya Town
Local Centre	Ndere, Boro, Segere
Market Centre	Obambo, Mbagga, Hono, Usenge, Harambee, Kowet

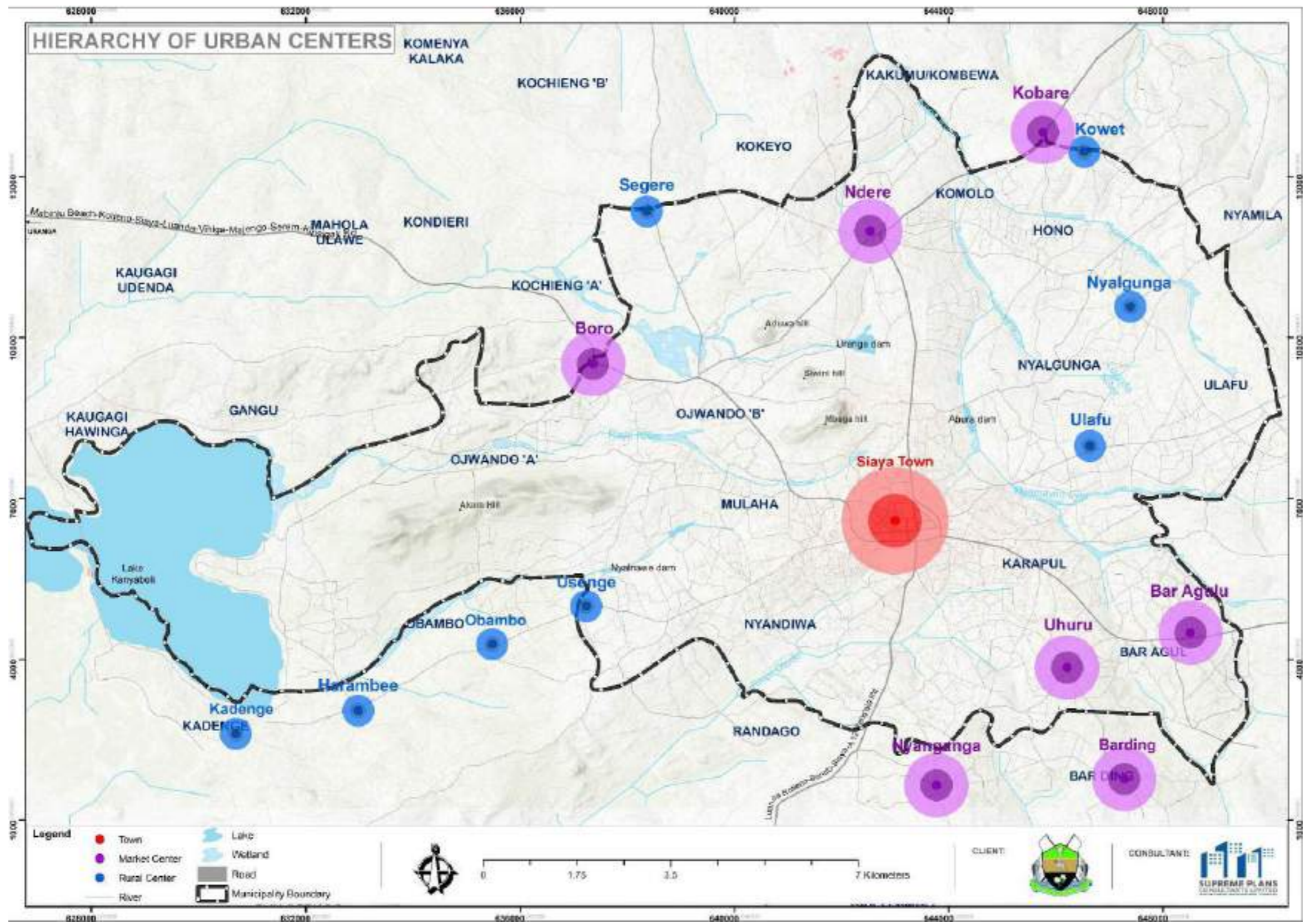
The following are the services available within the centres;

**Table 3-14: Services Provision per Urban Centre**

Estate Names	Liquid Waste Management			Solid Waste Management		Roads	
	Sewer	Septic	Pit latrines	Public dump site	Private entities	Tarmac	Earth
Siaya Town	Available	Available	In use	None	Available	Available	Available
Ndere	None	Available	In use	None	Available	Available	Available
Boro	None	Available	In use	None	Available	Available	Available
Segere	None	-	In use	None	-	Available	Available
Obambo	None	-	In use	None	-	Available	Available
Mbagga	None	-	In use	None	-	None	Available
Nyalgunga	None	-	In use	None	-	None	Available
Usenge	None	-	In use	None	-	Available	Available



Map 3-10: Hierarchy of Centres within the Municipality



### 3.9.2 Urban design and Aesthetics

Urban design and aesthetics are vital in shaping the appearance and physical environment of cities. They play a significant role in enhancing the visual appeal, functionality, and livability of urban spaces.

#### 3.9.2.1 Urban form

Urban form refers to the physical structure and organization of urban areas, which encompasses the arrangement of buildings, streets, open spaces, and transportation networks. It is influenced by factors such as history, culture, economics, and planning principles. The characteristics of urban form can vary across cities and regions, with key elements including building density, street networks, building heights and massing, public spaces, land use mix, and architectural styles. Urban form significantly impacts the functionality, livability, and sustainability of cities, influencing factors such as walkability, transportation efficiency, social cohesion, and environmental quality. Urban form can vary significantly across different cities and regions, reflecting the unique characteristics and needs of each place. Some common elements of urban form include:

**Layout and Street Network:** Siaya town boasts an organized layout with a grid-like street network. The roads are typically paved and interconnected, facilitating convenient access and connectivity throughout the town. The main streets are wider to accommodate heavy traffic, while smaller roads lead to residential and commercial areas. The main roads that traverse and provide accessibility to the municipality (Kisumu-Siaya-Nyadorera, Bondo-Siaya-Ugunja) are the primary transportation corridors that structure the municipality. They work in conjunction with the edges to define the possible activity and governance sub-areas. These are essential design elements upon which the transport system of the town will be hinged. Furthermore, rural roads act as structuring elements for rural development. The municipality has a fair coverage of roads but requires rehabilitation and expansion. Pedestrian development facilities are poorly developed.



Map 3-11: Siaya town street layout



**Density, housing and building typology:** density refers to the distribution of people and settlements within an urban area. Siaya Municipality offers a diverse range of housing options, from traditional single-story houses to modern multi-story buildings. The residential areas are densely populated, with houses typically situated close together. Developments in the major core are dense due to urban sprawl on the town's hinterland. The municipality is facing a significant demand for housing due to the rapid urban population growth, which is expected to double in a short period owing to a large influx of students attracted by the Jaramogi Oginga Odinga University campus. In certain parts of the urban and peri-urban areas, there are clusters of single-story buildings and a mixture of permanent and semi-permanent dwellings.

**Map 3-12: Siaya Town Built Form Layout**





Plate 3-34: Ahindi Recreational Garden within Siaya Town



Source: Fieldwork, 2023

**Transport System:** Siaya Municipality enjoys a well-connected transportation system. Buses, minibuses, and taxis serve as the primary modes of public transportation, facilitating travel to neighboring towns and villages. The municipality also has a central bus station where long-distance buses operate. Additionally, motorcycles, commonly known as boda-bodas, are a popular means of transportation for short trips within the town. Basic infrastructure such as electricity, water supply, and sanitation systems are present in Siaya Municipality. However, as is common in developing countries, the availability and quality of these services may vary across different areas of the town. Efforts have been made to enhance the infrastructure to meet the growing needs of the population.



**Land use:** Siaya Municipality has a diverse range of land uses, including residential, commercial, industrial, recreational, educational, agricultural, wetlands, and water bodies. However, there has been a noticeable decline in land cover, particularly in fragile ecosystems, over the years. The municipality's functionality and livability are a result of the careful integration of these different land uses. It encompasses administrative offices, governmental institutions, and a thriving commercial sector that stimulates economic activity and provides employment opportunities. Siaya Municipality is dedicated to improving the quality of life for its residents. It comprises both rural and urban settlements, with rural areas primarily focused on agriculture and urban centers engaging in various economic activities such as commerce, industry, and services.

Over time, Siaya Municipality has experienced urban growth, with a steadily increasing population leading to the expansion of residential areas and commercial centers. To accommodate the growing population, new housing developments are being constructed on the outskirts of the town.

### *3.9.3 Urban Function*

Urban function encompasses a wide range of roles, activities, and services that are characteristic of cities and urban areas. These functions include residential, economic, commercial, cultural, administrative, transportation, social, and environmental aspects. Cities serve as homes, facilitate economic activities, house commercial establishments, promote cultural experiences, act as administrative and governance centers, enable transportation and connectivity, foster social interaction, and implement environmental management strategies.

Siaya Township, within a larger societal framework, serves several multifaceted purposes and plays various roles. Here are some of the key purposes and roles of Siaya Township:

1. **Economic Hub:** Siaya Township serves as an economic hub for the surrounding region, functioning as a center for trade, commerce, and business activities. It is home to markets, shops, and small-scale industries that provide employment opportunities and contribute to the local economy. The economic sector is dominated by transportation activities, such as boda-boda (motorcycle taxis), small-scale businesses, and fishing-related activities. The



hospitality industry is also on the rise, with hotels and bars like Distinction Gardens, Siaya County Club, Audrey Premier Hotel, and Summit leading the way in the bar and lodging business. Additionally, there are small-scale food kiosks that contribute to employment creation for the residents of Siaya.

2. **Administrative Center:** Siaya Township serves as an administrative center for Siaya County, housing government offices, including municipal headquarters, county offices and public institutions. It is the focal point for local governance and decision-making processes. Some of the county offices include the Ministry of Public Works, Ministry of Agriculture, Ministry of Lands, and Ministry of Forestry.
3. **Educational Center:** Siaya Township is an important educational center, hosting schools, colleges, and vocational training institutes. It provides access to quality education and plays a crucial role in fostering human capital development in the region. The municipality boasts a range of educational institutions, including pre-primary centers, primary schools like Awelo Primary School, Karapul Primary School, Mulaha Primary School and Township Primary School. There are also secondary schools like Boro Secondary School and Siaya Township Secondary School. The establishment of middle-level colleges such as Siaya Institute of Technology (STTI) and Siaya Medical Training College (KMTC), as well as the Barack Obama University's School of Agriculture at Jaramogi Oginga Odinga University of Science and Technology (JOOUST), has further enhanced the educational landscape.
4. **Health Services:** Siaya Township accommodates healthcare facilities such as hospitals, clinics, and medical centers, serving as a primary healthcare provider for the surrounding areas. It ensures access to essential medical services and promotes public health. The municipality residents have a strong desire for improved healthcare infrastructure and access. The Siaya Municipality is home to a level-four facility located at Siaya Referral Hospital, which serves the needs of all six sub-counties in Siaya County. Other medical facilities in the municipality include health centers and dispensaries. Private initiatives, such as Burma Hospital and Siaya Medical Facility, also contribute to healthcare improvement in the municipality.



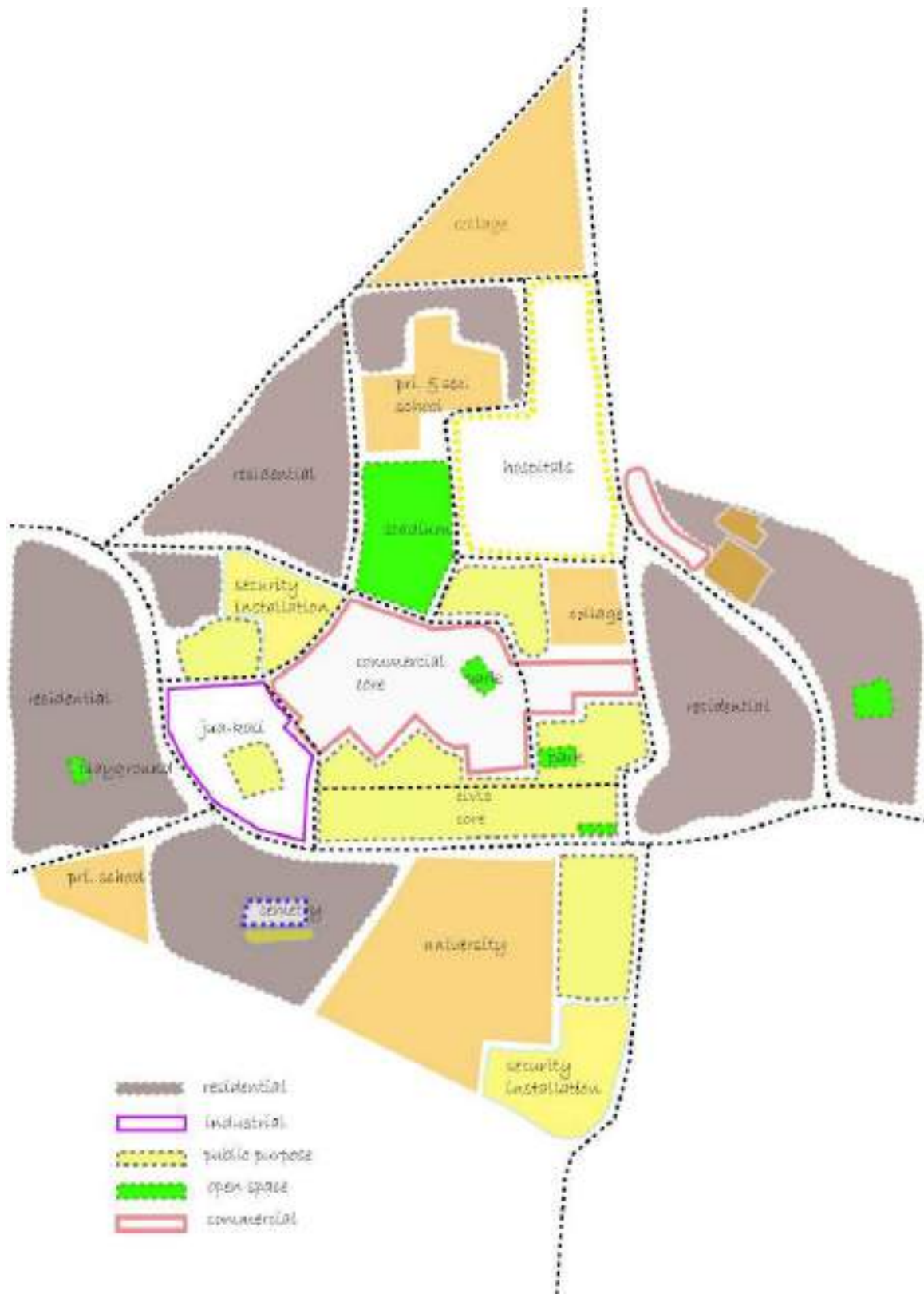
5. **Transportation Hub:** The road network in Siaya Township includes regional roads such as Kisumu-Siaya-Nyadorera (C29), Bondo-Siaya (D246), and Siaya-Ugunja (C28). These roads play a crucial role in connecting various parts of the region, facilitating economic growth, and promoting regional integration by enabling the smooth flow of goods and services. Buses and matatus (shared taxis) are the major public carriers in the municipality, with motorcycles being used for short distances. Buses are primarily used for regional and inter-county travel, and organized bus companies and Saccos manage their operations for efficient movement. However, the public transport system in the municipality faces challenges such as stiff competition, thin profitability margins, inadequate designated parking, poor fleet maintenance, and low productivity. Motorcycles, on the other hand, offer higher frequency and quicker response to passenger demands compared to matatus and buses. However, they also have drawbacks, including high accident rates, low carrying capacity, over-speeding, and unlicensed drivers.
6. **Social and Cultural Center:** Siaya Township serves as a center for social and cultural activities, hosting events, celebrations, and gatherings that promote cultural exchange and social cohesion. The township may have recreational facilities such as parks, sports fields, and community centers, fostering community engagement and providing leisure activities. However, the municipality lacks a modern social hall or amphitheater for larger events. Public parks also require further development for optimal public use.
7. **Infrastructure Development:** Siaya Township plays a role in infrastructure development, including the provision of basic amenities such as water, electricity, and sanitation facilities. It acts as a catalyst for infrastructure projects like roads, bridges, and telecommunications, improving connectivity and enhancing the overall quality of life. However, the municipality faces challenges in terms of low levels of service and infrastructure provision, unplanned rural developments, inadequate drainage management, pollution-abating infrastructure, and a lack of reliable garbage collection and disposal. The road network, water and energy reticulation, and public recreational facilities are inadequate and require attention and improvement.



8. **Employment Opportunities:** Siaya Township offers employment opportunities for both skilled and unskilled workers. The presence of various businesses and industries creates job prospects, reducing unemployment rates and supporting livelihoods. The informal sector is a significant employer, with activities such as welding, furniture production, vehicle mechanics, boda boda transportation (motorcycle taxis), and footwear manufacturing being common in the market centers. However, conflicts may arise due to the concentration of these activities in key trading centers. The formal employment sector, primarily consisting of government offices, also contributes to employment in the municipality.
9. **Social Services:** Siaya Township prioritizes the well-being and safety of its residents, offering a range of social services. The community is equipped with essential facilities and organizations dedicated to public safety, security, and emergency response systems. The Siaya Police Station plays a crucial role in maintaining law and order, ensuring peace and security within the community. Community organizations, such as the Imbaya Stadium, provide venues for various sporting and social events, fostering community engagement and recreational opportunities. The Siaya Bondo Water and Sanitation Company Limited (SIBOWASCO) ensures the provision of clean and safe water supply, promoting public health. Other notable organizations and institutions within the township include the Teachers Service Commission (TSC), the Ministry of Lands, the Kenya Power and Lighting Company (KPLC), the Siaya County Referral Hospital, and the Siaya District Hospital, which provide education, land management services, electricity supply, and healthcare facilities.
10. **Cultural Heritage Preservation:** Siaya Township may have cultural heritage sites, museums, or institutions dedicated to preserving and promoting the local heritage and history of the region. These sites contribute to tourism and cultural tourism development, fostering a sense of pride and identity among the local population.



Map 3-14: Urban functions



### 3.9.4 Street Type

Street types refer to the classification of roads based on their design and purpose. They include arterial streets, which are major roadways for high traffic volumes, collector streets that connect local and arterial roads, and local streets that provide access to residential areas. Highways and freeways are long-distance travel routes, while cul-de-sacs are dead-end streets commonly found in residential areas. Pedestrian streets prioritize pedestrians, while industrial and commercial streets cater to specific activities. Boulevards are wide, landscaped streets with a central reservation. Street types vary based on their intended function and design, reflecting the needs of the surrounding community and transportation requirements. Siaya township is a bustling urban area that encompasses various types of streets catering to the needs of its residents and visitors. One prominent feature of the township is the presence of collector streets, which serve as essential connectors between residential streets and arterial roads.

Collector streets in Siaya township play a vital role in facilitating the movement of traffic within the town. These streets are designed to collect and distribute traffic from residential areas, providing a smooth flow of vehicles between neighborhoods and the main transportation network. Collector streets typically feature moderate traffic volumes and are characterized by a combination of residential and commercial properties along their routes.

Residential streets form the backbone of Siaya township's neighborhoods. These streets are primarily designed to provide direct access to residential properties and create a safe and comfortable environment for residents. Residential streets in Siaya township generally have lower speed limits, traffic volumes, and wider sidewalks, emphasizing pedestrian safety and creating a sense of community. These streets often feature residential homes, gardens, and occasionally small-scale commercial establishments.

The residential streets in Siaya township seamlessly connect to the arterial roads that serve as major transportation corridors. Arterial roads are designed to accommodate high volumes of traffic, connecting Siaya township to other urban centers or significant highways in the region.



Map 3-15: Street analysis

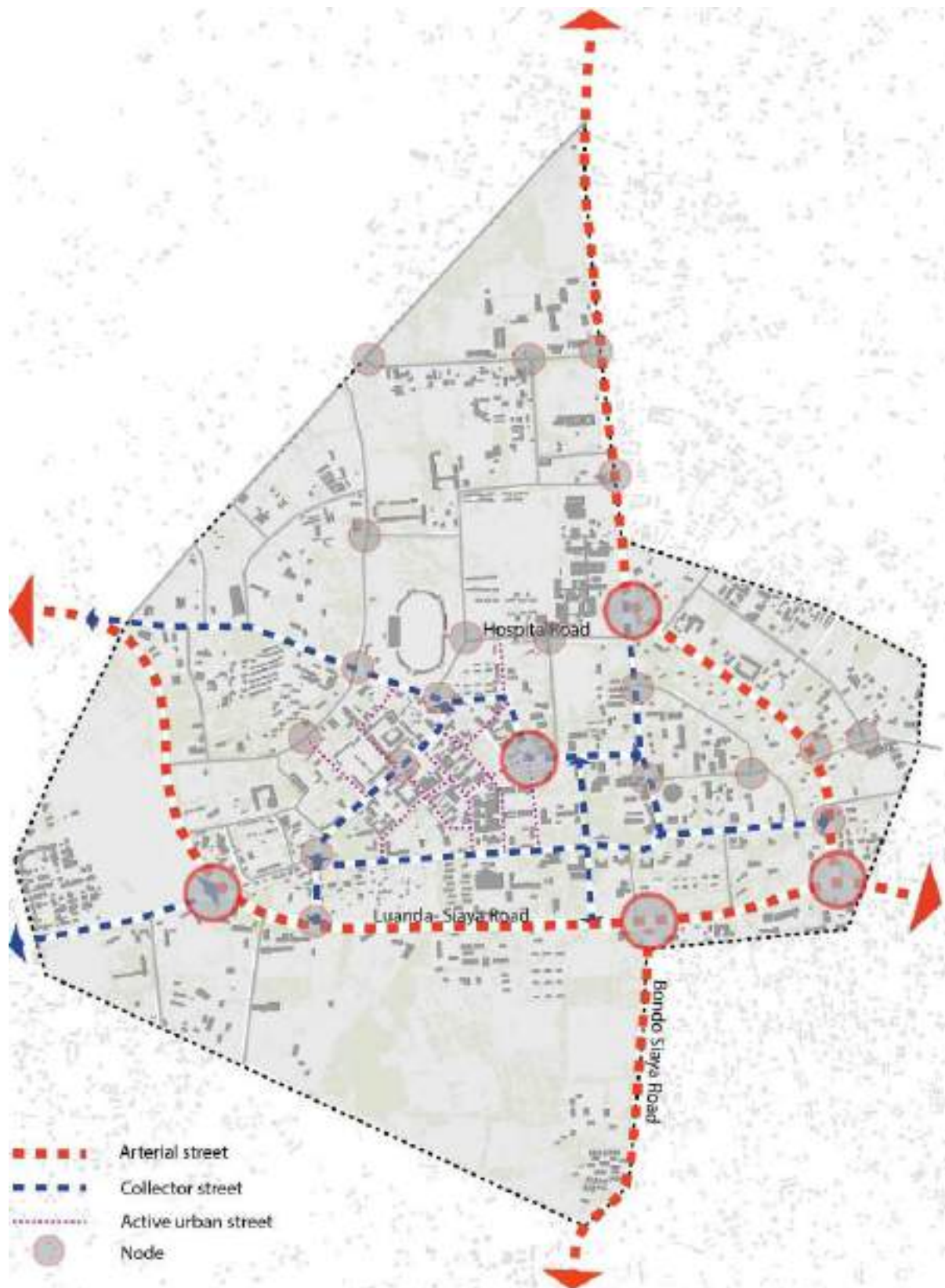


Plate 3-19: Street along the Siaya County Governor's Office with designated Pedestrian walkways



Source: Fieldwork, 2023

### 3.9.5 Urbanization Trends

An urban trend can be defined as a prevailing pattern, development, or transformation that takes place within cities and urban areas. These trends encompass a range of factors, including shifts in demographics, advancements in technology, cultural changes, and alterations in governance. They significantly impact the trajectory and evolution of urban development, influencing various aspects such as the physical environment, social dynamics, economic activities, and environmental sustainability of cities. Urban trends can manifest in specific phenomena like the adoption of sustainable practices or the emergence of co-working spaces, as well as broader trends such as urbanization, smart city initiatives, or the rejuvenation of urban neighborhoods. These trends reflect the dynamic nature of urban environments and are shaped by a combination of local and global influences, as well as the unique characteristics, challenges, and priorities of each city. Siaya demonstrates a distinct pattern in its economy. The economy of the commercial areas within Siaya municipality does not correspond to the expected forward and backward linkages of industrial development. There is a limited presence of subsidiary industrial development in these commercial areas, with most economic activities focused on commercial concerns and lacking significant industrial or manufacturing components. The few instances of light industrial activities that do exist often emerge spontaneously along road



reserves and open spaces. Additionally, the economic activity in these commercial areas is primarily service-oriented, comprising business outlets and a notable informal sector.

Another noticeable trend in Siaya is uncontrolled urban expansion and sprawl, characterized by low-density development and the prevalence of vacant or neglected land. This situation brings about several disadvantages, including higher infrastructure costs, poorly planned land use, and an increase in energy consumption and air pollution due to heavy reliance on motorized transportation. As a result, a fragmented pattern of development emerges, with residential settlements scattered amidst unused land. The low population densities associated with this expansion lead to an increased demand for land and the corresponding infrastructure required supporting it.

### *3.9.6 Urbanization Challenges*

1. The inadequate management of waste in Siaya CBD has emerged as a significant problem. The collection and proper handling of solid waste in Siaya town have become increasingly challenging, leading to the accumulation of substantial amounts of waste along the streets. This accumulation not only results in the decay of waste but also poses significant health risks, thus raising concerns about public health.
2. The lack of representation and inclusivity for the elderly and people with disabilities (PWD) in Siaya Township is a significant concern. The town fails to adequately address their needs, as shown by the absence of essential infrastructure like ramps and dedicated parking spaces that cater to their specific requirements. Siaya Township does not prioritize the construction of ramps, which are crucial for individuals with mobility challenges to access facilities and public spaces. Additionally, there is a lack of allocated parking spaces for PWD, making it even more difficult for them to navigate the town comfortably and safely. This failure to consider the elderly and PWD not only highlights a lack of inclusivity but also disregards their basic rights and needs. It is crucial for Siaya Township to rectify these issues by implementing appropriate measures that promote accessibility. This will ensure that the elderly and PWD have equal opportunities to fully participate in the community. Congestion within the CBD due to lack of designated parking spaces



3. The inadequate drainage system in the central business district (CBD) has resulted in frequent flooding. Currently, the municipality lacks an efficient system to manage these floods. Consequently, there is a high possibility of water stagnation in the town, posing environmental and health hazards.
4. The lack of comprehensive design and development pertaining to non-motorized transport (NMT) facilities, stormwater drains, and parking lots has a profound impact on the efficiency and accessibility of Siaya Town's transportation system. The inadequate provision of dedicated bicycle lanes, pedestrian walkways, and safe crossings restricts the options available to pedestrians and cyclists, thus compromising their safety and convenience.
5. Inadequate parking lots in Siaya Town exacerbates congestion and disorder, posing a significant challenge due to space contestation. Insufficient space for vehicles results in haphazard parking, which obstructs the smooth flow of traffic and causes inconvenience for both drivers and pedestrians. This pressing issue highlights the importance of implementing effective measures to address the limited parking capacity and promote a more organized and efficient utilization of available space.
6. The absence of dedicated social housing programs aimed at assisting the poor intensifies concerns regarding housing inequality and affordability, creating obstacles for low-income individuals and families in their pursuit of secure and affordable housing options.
7. The challenges posed by informal residential settlements are multifaceted. These settlements commonly face a lack of fundamental services such as water, sanitation, waste collection, and storm drainage. Additionally, residents of informal settlements contend with issues such as limited access, inadequate street lighting, and the absence of paved footpaths. These deficiencies compromise the safety and convenience of the residents, creating significant hurdles in improving their living conditions.
8. The limited availability of well-designed recreational spaces restricts opportunities for children to engage in play, impeding their physical and social development. This scarcity hinders the vital aspects of their growth and enjoyment, emphasizing the need to address this issue by establishing more secure and accessible play areas for children in the community.



9. The absence of designated spaces for community gatherings and events hampers social cohesion and inhibits community engagement. Without suitable locations for people to come together, interact, and collaborate, the overall sense of unity and collective participation within the community is hindered. Addressing this issue requires the establishment of dedicated meeting areas that foster community interaction and contribute to the strengthening of social bonds.
10. Neglected green spaces and recreational areas diminish their usability and fail to provide the intended benefits for residents in terms of leisure and relaxation. The lack of proper upkeep prevents these spaces from serving as enjoyable and rejuvenating environments for the community. To overcome this challenge, it is essential to prioritize the maintenance and enhancement of recreational spaces, ensuring they remain attractive and functional for residents to enjoy.

### 3.10 Housing

Siaya Municipality is characterized by permanent, semi-permanent and temporary housing structures. The characteristics vary within the hinterland areas and within the market centres. The main centres where commercial, light industrial, and residential activities take place have houses which vary in form and character. Outside the main CBD, housing is characterized by informal and unplanned settlements, with a mix of temporary and permanent structures. The quality of housing also varies from one area to area.

#### 3.10.1 Housing Typology

Housing typologies within the municipality can be classified into two; urban housing typologies and rural housing typologies. The urban areas are characterized by Bungalows, Maisonettes, flats. Row housing and institutional buildings.

Within the rural areas the building typologies are bungalows, institutional buildings and traditional houses.



Plate 3-35: Housing Typology within Urban Areas



Source: Fieldwork, 2023



Plate 3-36: Housing Typologies in the rural hinterland



Source: Fieldwork, 2023



### 3.10.1.1 Housing Conditions

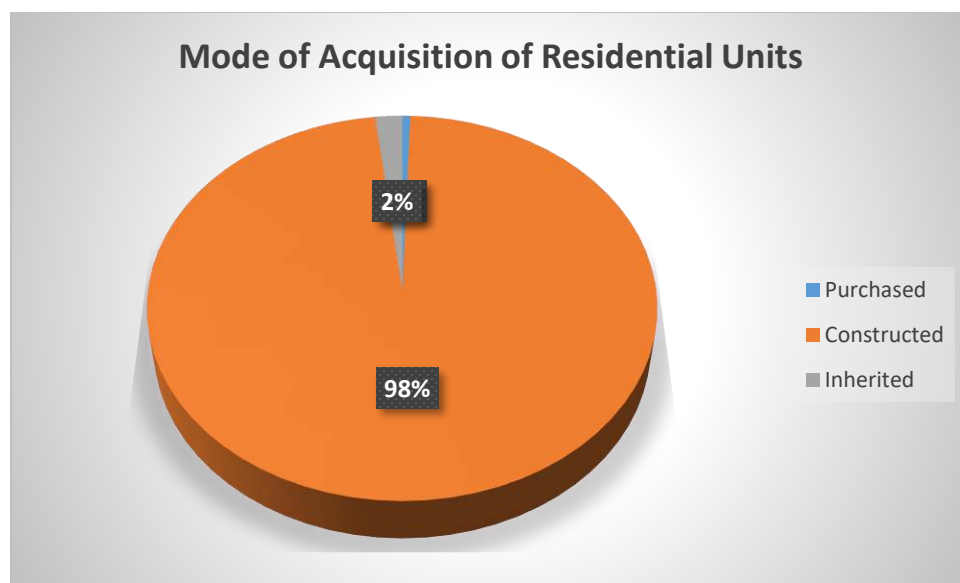
Housing is a major indicator of the standards of living of people in a given area. It is also essential in meeting people’s basic living needs. Good housing conditions are essential in promoting childhood development and ensuring people’s good health within the households. Housing conditions can be measured in respect to the state of the living facility, access to basic sanitary facilities, size of the family and the living space available and access to services and amenities.

Housing conditions vary in different parts of the Municipality. The permanent houses are made of stone walls and iron sheet roofing; the semi-permanent houses are made of mud wall or brick wall with iron sheet or dry-grass roofing.

### 3.10.1.2 Housing Supply and Demand

Housing in Siaya Municipality is provided mostly by the private sector. Most of the built houses are privately owned. The 2019 Population and Housing census estimates that over 98% of the residents within Alego Usonga Sub County where the Municipality lies have constructed their own residential houses. Other modes of housing acquisition are purchase and inheritance. The Figure below summarizes the mode of acquisition of residential units

Figure 3-6: Mode of residential Housing Acquisition within the Sub-County

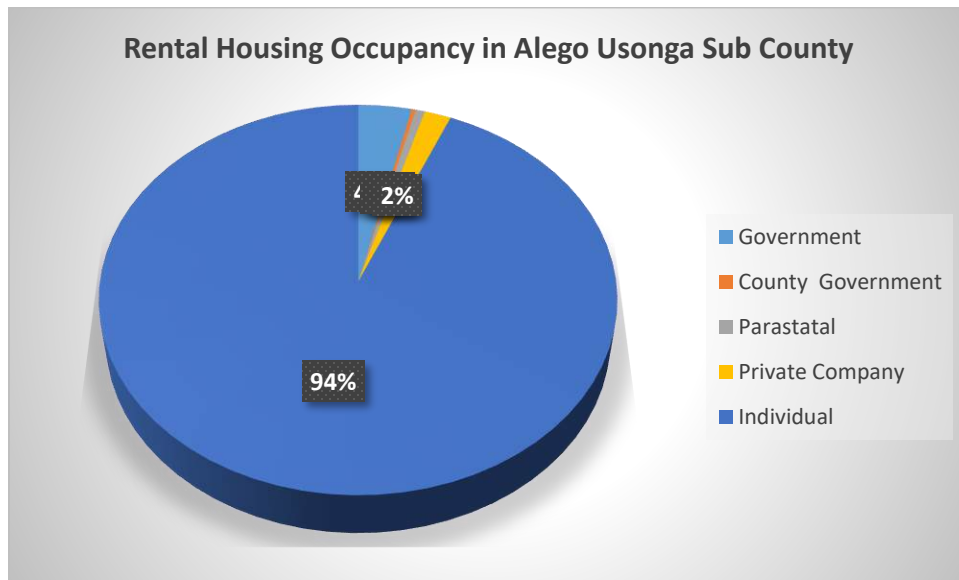


Source: Fieldwork, 2023



The 2019 National Population and Housing Census estimated that in Alego Usonga Sub County; a total of 11,408 was housing that was rented or provided for. Out of this, 413 was by the National Government, 31 County Government, 71 Parastatal, 205 by Private Company, 10,581 by individuals and 107 by FBO/NGO/Church/ Temple Mosque.

**Figure 3-7: Rental Housing Occupancy in Alego Usonga Sub County**



Source: Fieldwork, 2023

The Affordable Housing Project in Awelo by the Government of Kenya through the National Housing Corporation (NHC) is aimed to provide affordable and decent housing within Siaya Municipality.

### **3.10.1.3 Building Materials**

Conventional building materials are common within the planning area. Residential units are constructed by use of temporary and permanent materials. Such materials include sand, stone and gravel that are sourced within and outside the Municipality.



### Plate 3-37: Building Materials



Source: Fieldwork, 2023

#### 3.11 Physical Infrastructure and Services

Physical infrastructure focuses on the transportation system of the planning area, water supply and distribution, solid and liquid waste management, stormwater management, energy infrastructure, and the general ICT system.

##### 3.11.1 Transportation

Transport infrastructure is key for trade and development. It is a major economic driver playing a vital role of opening up areas and opportunities for communities. Transportation links communities and societies locally and internationally hence fostering mobility, communication, growth and development initiatives in an area. Intra and inter connectivity by road, railway, water where applicable and air are essential trade tools and instruments that determine the economic growth and development. Siaya County is accessible by road, air and water transport.

Road transport remains as the main mode of transport with a wide variety of means. This makes travel by motorcycles, bicycle, taxis, buses, and tuktuk as the main means of transport in Siaya Municipality. The map below shows transport traffic flow within the planning area.





### **3.11.1.1 Regional and National Interconnectivity**

Siaya County enjoys good connectivity in terms of regional and national linkages via road. The County is also served by Kisumu International Airport which is about 60 kms and about one hour drive away.

The major road that traverses through Siaya County is the national trunk road A12, Busia-Kisumu-Kericho-A8 Mau Summit Road which is the gateway to Uganda through the Busia border. This road also connects Siaya with neighboring counties of Kisumu, Busia, and Kericho.

### **3.11.1.2 Interconnectivity and Intra-Connectivity**

Siaya municipality is also linked with the neighboring sub-counties of Ugenya, Ugunja, Bondo, Rarieda, and Gem through the road mentioned in the above section and other roads such as the Luanda Kotieno-Bondo-Siaya-A12 Rang'ala Road (B9).

The four main roads for interconnectivity within Siaya County include the Kisian-Ramba-Usenge-Honge Beach Road (C27), which connects Busia County to Kisumu County through several towns along the network. The road passes through Akala, Ramba, Bondo and Kadimu towns towards the shores of Lake Victoria at Usenge and Honge Beaches. C28, running Northwards from Luanda Kotieno Archipelago, through Kalandini, Ramba, Ng'iya from C29 and C30. The planning area is also served by several other intra-county roads of lower hierarchy roads that connect different neighborhoods within the municipality.

### **3.11.1.3 Road surface and Condition**

Most of the roads within the CBD are tarmacked and have pedestrian walkways in place. Most roads on the periphery of the CBD are in motorable condition. Some access roads within the agricultural hinterland are narrow to a tune of less than the stipulated 9-meter minimum width and not well maintained. They become impassable during rainy seasons.



Plate 3-38: Narrow access road in Ndere area



Source: Fieldwork, 2023

Plate 3-39 Road surface Condition in Barding' Area



Source: Fieldwork, 2023



The table below lists some of the roads and their current condition.

**Table 3-15: Roads within Siaya Municipality**

No.	Road Name	Class No.	Length within the planning area (km)	Surface Type	NMT Facilities	Managing Agency
1.	Luanda Kotieno-Bondo-Siaya-A12 Rang'ala Road	B9	11.66	Bitumen	Nil	KeNHA / KURA
2.	Mabinju Beach-Siaya-Luanda-Vihiga-Majengo-Serem- Kipsigak Road	C672	14.52	Bitumen	Nil	KeNHA / KURA
3.	Rabango-Ulafu-Madeya Road	C844	6.83	Bitumen	Nil	KeNHA / KURA
4.	Magombe-Boro Road	C827	19.78	Gravel & Earth	Nil	KeRRA
5.	Nyamonye-Siaya Road	C839	19.95	Gravel & Earth	Nil	KeRRA
6.	Nzoia-Boro Road	C977	7.7	Bitumen & Gravel & Earth	Nil	KeRRA
7.	Harambee-Mur Malanga Road	G62206	7.8	Gravel & Earth	Nil	KeRRA
8.	Uranga-Ndere Road	D1867	19.4	Gravel & Earth	Nil	KeRRA
9.	Ting'wang'i-Bar Agulu Road	D1870	10.4	Gravel & Earth	Nil	KeRRA
10.	Ting'wang'i-Nyang'oma Road	E6116	8.3	Gravel & Earth	Nil	KeRRA
11.	Umala-Kodiaga Road	E6117	2.5	Gravel & Earth	Nil	KeRRA



No.	Road Name	Class No.	Length within the planning area (km)	Surface Type	NMT Facilities	Managing Agency
12.	Kobare-Umala Road	F6079	7.6	Gravel & Earth	Nil	KeRRA
13.	Umala-Ng'iya Road	F6078	5.0	Gravel & Earth	Nil	KeRRA
14.	Boro-Awelo Road	E6100	11.1	Bitumen & Gravel & Earth	Nil	KeRRA
15.	Uhembo-Ndere Road		2.0	Gravel & Earth	Nil	KeRRA
16.	Kayombi-Ndere Road	E6119	3.2	Gravel & Earth	Nil	KeRRA
17.	Nyang'oma-Kumuok Road	E6115	2.7	Gravel & Earth	Nil	KeRRA
18.	Umala-Kodiaga Road	E6117	2.4	Gravel & Earth	Nil	KeRRA

#### **3.11.1.4 Road Network in the Municipality**

The Municipality is well connected with a well-distributed network of access roads. Albeit the good distribution, the network is poorly maintained and encroached, making them inaccessible in some sections. NMT facilities are provided on some of the paved roads within the CBD only.





### 3.11.1.5 Public Transport

A Municipality whose population is projected to get to 101,535 people by 2030, require a robust public transport sector. The various means of transport are organized in societies and Saccos (Municipality, 2019). They work in partnership with the Local Authorities (Municipality and County Government) to provide seamless transport to the people of Siaya Municipality in managing the public transport.

Matatu is the most popular means of transport for moderate travel distances such as from Siaya to Kisumu, Siaya to Usenge, Siaya to Kisian and Siaya to Asembo. Bus is the most popular means of transport for long distance travel. Most residents of Siaya Municipality use bus to travel from Siaya to Nairobi, Nakuru, and Mombasa.

The Municipality has a designated bus stop which is yet to be operational. Operators use undesignated pickup and drop off points along the roads on the road shoulder as illustrated on the plate below.

**Plate 3-40: Matatus Using Undesignated Pickup and Drop Off Points**



Source: Fieldwork, 2023



### **3.11.1.6 Terminal Facilities and Parking Lots**

Currently, there is a bus terminus under construction within Siaya Municipality. The terminus is located adjacent to Siaya Market. This will make it easy for traders to move goods from the bus stop to the market once the terminus is operational. Stakeholders proposed the market to be moved to a different location to provide space for the expansion of the bus stop to accommodate all means of transport.

**Plate 3-41: Bus Terminus under Construction**



*Source:* Fieldwork, 2023

The Municipality has only parallel parking slots which end up utilizing more space and accommodating only a few vehicles. Where parking has not been provided, vehicles are currently being parked along the road reserve. This causes safety risks and land use conflicts in the area. The plates below show the areas designated for on-street parking and a congested street within the Municipality due to parking of vehicles along the road reserve.



Plate 3-42: Designated Parking Space Within Siaya Town



Source: Fieldwork, 2023

Plate 3-43: Designated Parking Space Within Siaya Town



Source: Fieldwork, 2023



Plate 3-44: Congestion Along a Busy Street Within Siaya Town



Source: Fieldwork, 2023

### 3.11.1.7 Motorcycle Transport

Travel by motorcycle, dubbed *boda boda* remains to be the most popular means of transport. *Boda boda* operators within the Municipality operate in Saccos and are strategically located all over the Municipality. They however decry tough operating conditions as they don't have designated shades but informal self-constructed shades. The *boda boda* operators proposed participatory approach by planning authorities when designating shades. The map on the page below shows the location of various *boda boda* shades within the Municipality.

Owing to the popularity of its use, *boda boda* transport should be streamlined into the planning of the township (Adinasi, 2022).



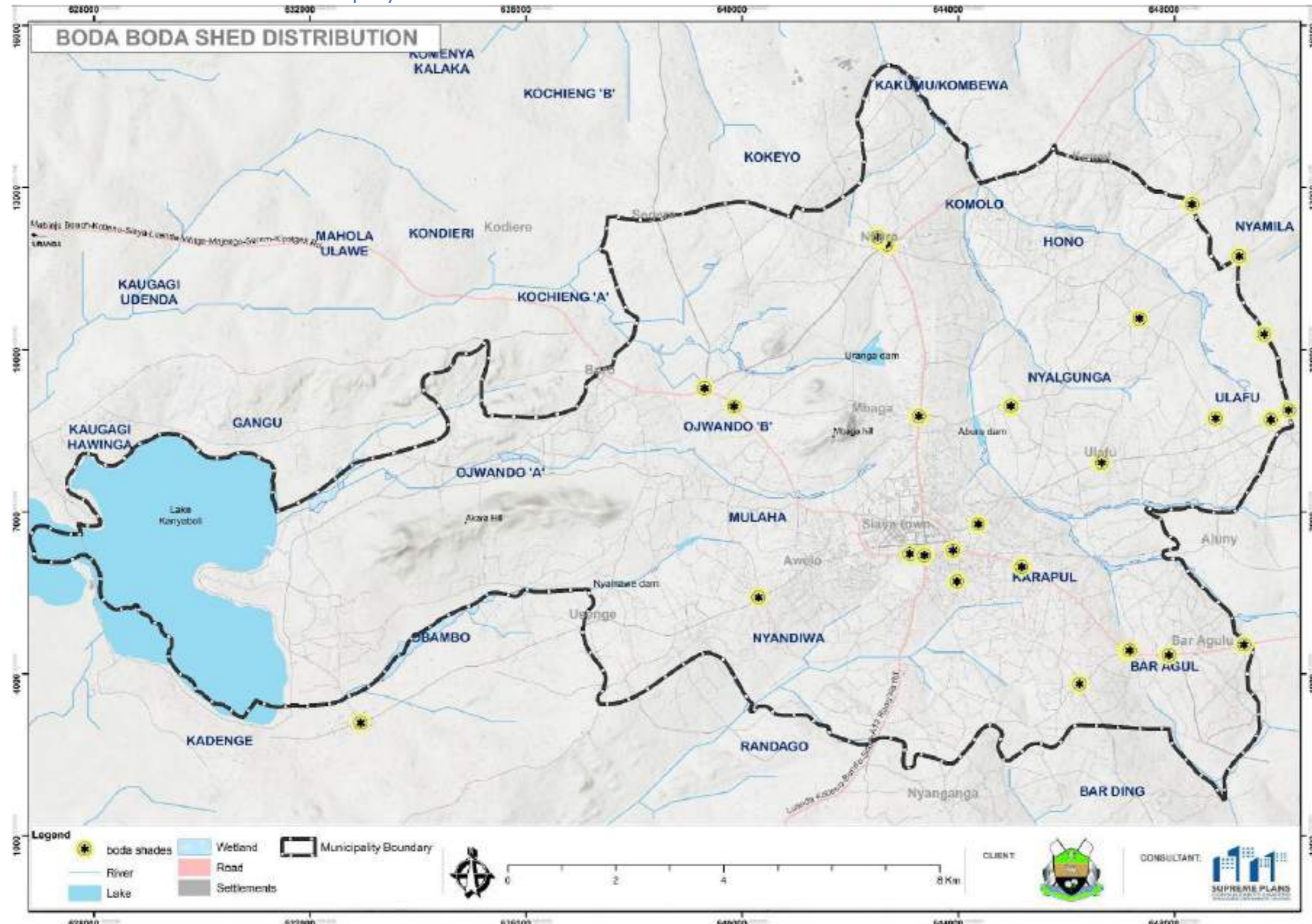
Plate 3-45: Boda Boda Shade Within Awelo Area



Source: Fieldwork, 2023



Map 3-18: Boda Boda Shades Distribution Within the Municipality



### **3.11.1.8 Non-Motorized Transport**

Non-motorized transport serves as the main last mile connector in Siaya Municipality and environs. Bicycles, animal, carts and foot transport are a popular means of NMT within Siaya municipality.

Carts are used in the area to ferry water and luggage such as agricultural produce to and from the market. The carts are either animal-drawn or human drawn or pushed. Donkeys are also used as transport animals in the area. They are family owned and are used for cultivation, water transport and for transport of agricultural produce to and from markets.

Non-motorized transport has been provided for along some of the streets within Siaya CBD. This has eased movement of pedestrians, bicycles and carts from one point to another. The illustration below shows the streets with NMT provision within Siaya.

**Plate 3-46: The Designated NMT Lanes within Siaya Town**



Source: Fieldwork, 2023

Non-motorized transport is inadequately catered for within the rest of Siaya municipality. This increases the risk of road accidents due to the high number of people using NMT.



**Plate 3-47: Lack of NMT Lanes Along the B9 Road near Siaya Referral Hospital**



Source: Fieldwork, 2023

### **3.11.1.9 Storm Water Drainage**

Storm water drainage remains a key challenge within the Municipality. While the general terrain of the land is gently undulating, and the flow of water is not greatly hampered, storm water drainage network is necessary within the Municipality to guide water out of the town during rainy seasons. The construction of the storm drains would also help control soil erosion and its adverse effects such as development of deep gullies which may cut off roads and leave landscapes derelict.

Less than 50% of the roads within the CBD have storm water drainage channels in place. The streets along which administrative offices are located have storm water drainage channels installed. Encroachment by traders on the existing storm water drainage channels may lead to blockage of the same in future. Within the agricultural hinterland, drainage channels have been provided along the main access roads only. As a result, storm water has damaged some roads due to lack of drainage channels.



Plate 3-48: A Section of the Storm Water Drainage Along Ahindi Gardens Encroached by a Temporary Boda Boda Shade



Source: Fieldwork, 2023

Plate 3-49: Section of An Access Road Damaged by Storm Water in Ulafu Area



Source: Fieldwork, 2023



### **3.11.1.10 Air Transport**

Gombe airstrip within the Municipality is available for air transport. The airstrip sits on approximately 11.97 Ha parcel of land within Gombe area. The current condition of the airstrip is however not conducive for use. There is need for fencing off the land, grading the runway, and having basic airside facilities constructed. Once it is operational, the airstrip will contribute to commerce and ease of transport to and from Siaya Municipality to the rest of the Country.

As at 2021, there were talks between KCAA, KAA and KMD to partner with Siaya County Government to upgrade the airstrip to an airport. The plans were in initial stages - that is feasibility studies (Nation, 2021).

#### **Plate 3-50: Current Status of Gombe Airstrip**



Source: Fieldwork, 2023

### **3.11.1.11 Water Transport**

Water transport in Siaya County is developed with more opportunity for development in the future via Lake Victoria. Siaya County boasts of a number of fish landing beaches which act as transport nodes for fishermen, fish mongers and other business men and women. The beaches



include Honge, Asembo, Wichlum, Usenge, Misori and Lunda Kotieno. Luanda Kotieno is also a Ferry Point connecting Luanda Kotieno to Mbita in Homabay County.

Siaya municipality has direct linkage to water as a mode of transport at Lake Kanyaboli. Fishermen use canoes and motorized boats to navigate the Lake. The resorts along and within the lake also have canoes and motorized boats for recreational purposes.

### **3.11.2 Water Supply**

#### **3.11.2.1 Water**

In any settlement, water is an important asset. It is the single-most consumed natural resource in the World. In that light, its' management is key to the development of any area.

Siaya-Bondo Water and Sanitation Company Limited (SIBOWASCO) has been contracted through a Service Provision Agreement (SPA) by Lake Victoria South Water Works Development Agency (LVSWWDA) to provide water and sanitation services to the residents of Siaya, Bondo and the surrounding towns.

#### **3.11.2.2 Water Sources**

In Siaya Municipality, surface water, run-off and ground water remain the main sources of water for consumption. This water is used for household, commercial and industrial use. Other sources of water in the area include protected springs, dams and wells. As of the year 2018, rehabilitation of some dams within the area had been initiated through a partnership between The County Government and The World Bank.

The main sources of water in Siaya include boreholes, River Yala, Lake Kanyaboli, Abura and Ufinya dams. Water access and regulation in Siaya Municipality is guided by the Water Act of 2016 and Water Resources Regulation of 2021. Some water abstractions within the municipality have not been streamlined and as such considered illegal to harvest. According to the sub-regional Water Resources Authority offices, Abura dam, Maura dam, Siaya Center borehole and Jackline borehole are illegal water abstractions and there is need to streamline them in accordance to water policy framework.



SIBOWASCO supplies piped water within the municipality and currently has a storage capacity of 3,608m<sup>3</sup>; serving about 5,382 connections and 101 water kiosks. The average distance to the nearest water point is approximately 400 meters.

**Plate 3-51: SIBOWASCO Water Abstraction Point Within Abura Dam**



*Source: Fieldwork, 2023*

**Plate 3-52: SIBOWASCO Treatment Plant in Mbaga Area**



*Source: Fieldwork, 2023*



### 3.11.2.3 Water Supply Versus Demand

Siaya Municipality has both urban and rural population. The demand for water has been on the steady rise with increased population. The current demand within Siaya according to SIBO Water and Sanitation Company is 720,000m<sup>3</sup> per month against a supply of 150,000m<sup>3</sup> per month. This shows a current deficit of approximately 79% within the planning area.

### 3.11.2.4 Projected Water Demand

SIBOWASCO estimates that by 2025, daily water demand within Siaya will be 24,816m<sup>3</sup>, 26,040m<sup>3</sup> per day by 2028 and 28,000m<sup>3</sup> per day by 2034.

Within the entire Municipality, using the World Water poverty threshold of 0.046m<sup>3</sup> per person per day, (UNDP, 2006) the expected annual water demand will be as follows.

**Table 3-16: Projected Water Demand within Siaya Municipality**

Year	2019	2020	2024	2025	2030	2034
Siaya Municipality Population	80,424	82,193	89,426	91,473	101,535	110,470
Daily Water Demand (m <sup>3</sup> )	3,700	3,781	4,114	4,208	4,671	5,082
Monthly Water Demand (m <sup>3</sup> )	110,985	113,426	123,408	126,233	140,118	152,449
Annual Water Demand (m <sup>3</sup> )	1,331,821	1,361,116	1,480,895	1,514,793	1,681,420	1,829,383



### **3.11.2.5 Water Projects**

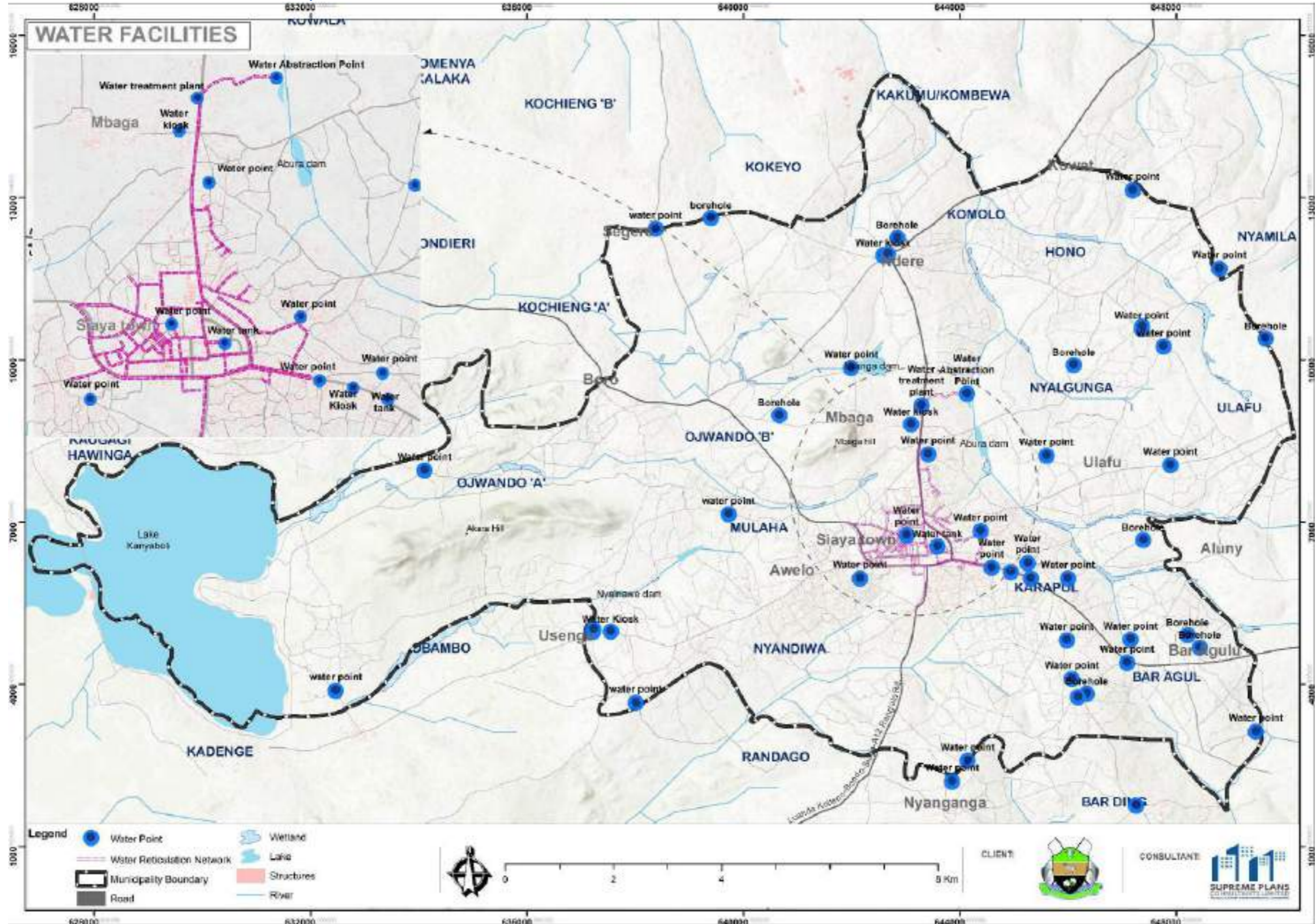
Water projects lined up for the 2021/2022 financial years included improvement of dams or water pans, rehabilitation of community-based water supply projects, phased construction of water supplies, expansion and rehabilitation of gazette water supplies and drilling new boreholes. The extent and distribution of the projects is across Siaya County and Siaya Municipality is expected to benefit from the water projects as one of the major urban areas throughout the County.

SIBOWASCO has initiated various water projects within the municipality such as rehabilitation of the Mbaga Treatment plant and extension of the water pipeline and connection of customers through the Last Mile Water Connection Project. The company has plans in place to improve on their storage tanks capacities to be able to store 10,000m<sup>3</sup> per day, improvement of production capacities to 15,000m<sup>3</sup> per day, extension of the pipeline towards Kobare, Kanyaboli, Rock and their environs.

The company has had various challenges while delivering its mandate. These include high cost of production (Chemicals and Electricity), high non-revenue water, and vandalism of their pipeline network among others.



Map 3-19: Water Facilities & Reticulation Network Map



### 3.11.3 Sanitation

#### 3.11.3.1 Liquid Waste Disposal

Access to basic sanitation facilities is a notable challenge in Siaya County. Currently there exists predominant dependence on pit latrines followed by septic tank. Organized sewerage and sanitation facilities are available only in selected areas of the municipality, majorly Siaya town. Open defecation is also in practice. Most liquid waste is consequently disposed haphazardly in the environment. Such waste include;

- i. Domestic liquid waste
- ii. Industrial waste (oil from garages, carwash waste water)
- iii. Agricultural waste from farms

These wastes find their way to the ground and waterbodies and pollute them through surface run off during rainy season. (Government & Siaya, 2023) The resultant effect of this is degraded water due to ground water pollution. To prevent spread of water-borne diseases, it is important to improve access to liquid waste disposal infrastructure throughout the municipality and the environs.

According to the Ministry of Water, Sanitation & Irrigation Design Manual, an average of 80% of water used by every person turns into waste. Table below shows the projected waste in the planning area.

**Table 3-17: Projected Waste Water Generation Within Siaya Municipality**

Year	2019	2020	2024	2025	2030	2034
Siaya Municipality Population	80,424	82,193	87,618	91,473	101,535	108,236
Annual Water Demand (m <sup>3</sup> )	1,331,821	1,361,116	1,480,895	1,514,793	1,681,420	1,829,383
Annual Waste Water Generation (m <sup>3</sup> )	1,065,457	1,088,893	1,184,716	1,211,834	1,345,136	1,463,506

Source: Ministry of Water, Sanitation & Irrigation Design Manual

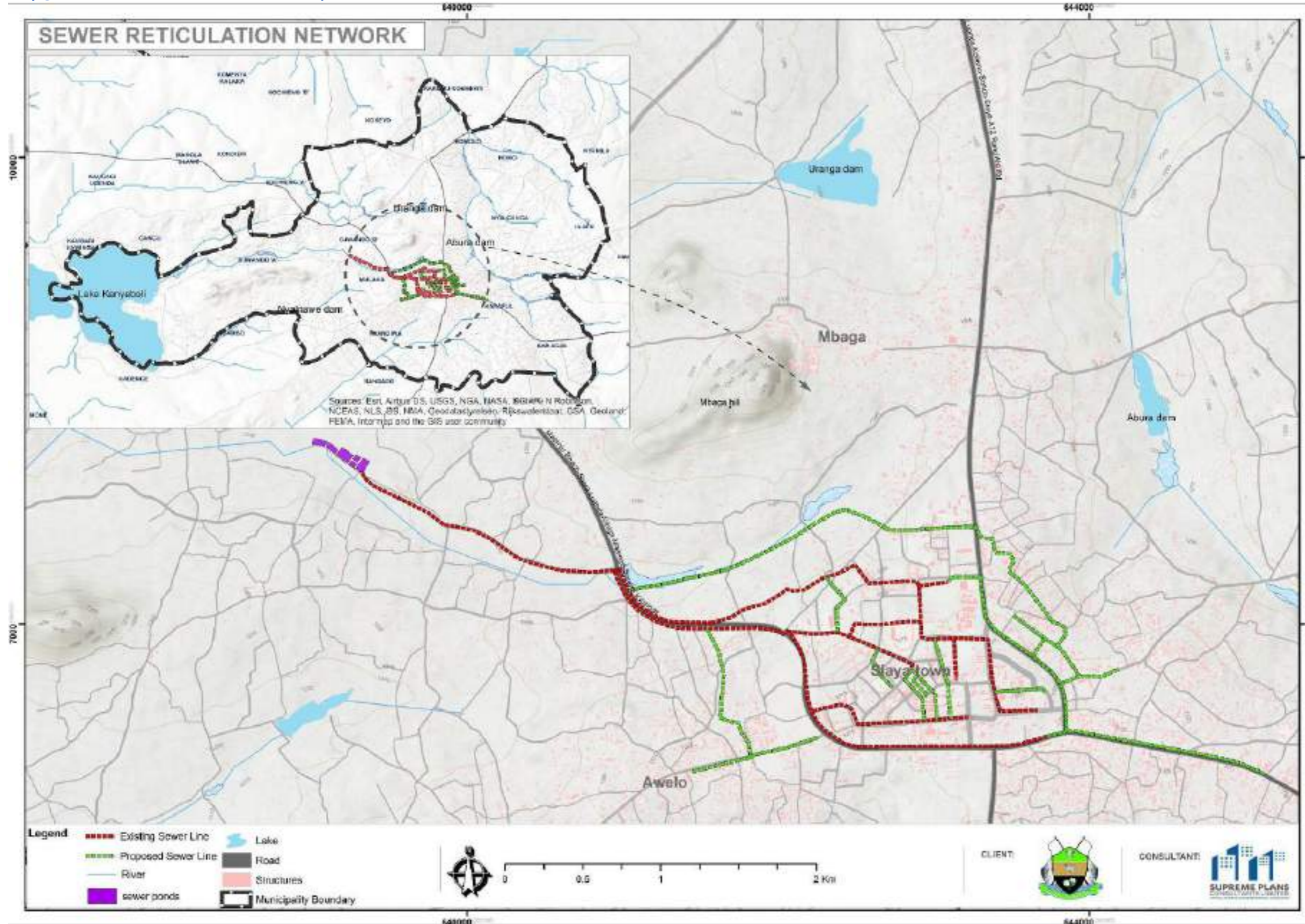


There is a sewerage reticulation that covers some parts of Siaya CBD and around the Siaya County Referral Hospital. The Sewerage flows North- Westwards to the sewer ponds located in Pap Kakan area.

There is need to expand the Sewerage network throughout the planning area. The map below shows the coverage of the current sewer network and the proposed expansion of the same.



Map 3-20: Sewer Reticulation Network Map



### 3.11.3.2 Solid Waste Management

Siaya Municipality lacks a designated solid waste disposal facility. This has made solid waste management a big challenge to the Municipal management and residents. Currently, solid waste is being disposed on the parcel adjacent to the Siaya Scouts Center within Siaya CBD.

The municipality has one tractor for solid waste management. Waste collection is done on weekly basis. There is need to provide designated solid waste disposal, collection and management site within the market center.

The Draft National Sustainable Waste Management Policy estimates that every person generates about 0.5 Kg of solid waste per day in urban areas. With this estimate, solid waste generation within the municipality can be projected as follows.

**Table 3-18: Projected Solid Waste Generation within Siaya Municipality**

Year	2019	2020	2024	2025	2030	2034
Siaya Municipality Population	80,424	82,193	87,618	91,473	101,535	108,236
Projected annual solid waste generated (metric Tons)	14,476	14,795	16,097	16,465	18,276	19,885

*Source: National Waste Management Policy, 2018*



**Plate 3-53: Condition of the Current Dumpsite Within Siaya Town**



Source: Fieldwork, 2023

**Plate 3-54: Siaya Municipality Waste Collection Tractor on Duty Within Siaya CBD**



Source: Fieldwork, 2023

#### **3.11.4 Energy**

Energy consumption in any urban set-up is highly dependent on the general economic activity. Siaya is an active municipality with a growing population. As such, energy consumption ranges from cooking, transport, lighting and even heating. All these come from different energy sources such as oil, hydro-electric power, solar and biofuels.



There's a lot of potential for growth in the energy sector in Siaya Municipality towards greener energy like solar and wind. Biogas from household wastes could also be produced for cooking and heating.

For the daily motorized transportation needs, diesel and petrol are supplied by the numerous filling stations and petrol stations within the planning area. Diesel powered engines are used for industrial energy where electricity is not supplied. These include posho mills and farm machinery such as water pumps.

Electricity is predominantly used by major public and private institutions, as well as within commercial centers. However, due to the *rural electrification program* that has been implemented throughout the country, approximately 21% of households in the municipality have also been connected to electricity.

**Plate 3-55: Kenya Power Sub-station in Mbaga Area**



Source: Fieldwork, 2023

#### **3.11.4.1 Cooking**

The primary source of energy for cooking in the Municipality is firewood and charcoal. In most urban centers however, electricity, charcoal, and paraffin are more commonly used. The dependence on charcoal and wood fuel stands at almost 90% of the fuel source for cooking. The



use of wood fuels and charcoal as an energy source has negative implications for the environment. This is due to the fact that it contributes to air pollution and leads to significant environmental degradation, as it contributes to the depletion of forest cover.

There is need to raise awareness about the significance of promoting accessible, clean, environmentally friendly, and sustainable energy.

### **3.11.4.2 Lighting**

Power consumption rate is different in the different sub-locations depending on the level of urbanism in the area. For instance, there's more electricity coverage within the CBD which is largely covered by Nyandiwa sub-location. In this area, electricity is used as the main source of energy for lighting. The usage of solar for lighting is highest in Karapul and Mulaha sub-locations respectively and lowest in Nyandiwa.

Efforts have been made to improve security within the planning area through street lighting although it still remains a challenge in Siaya. Most streets are dark during the night rendering them insecure. There's need to install more security masts and street lighting in the streets of Siaya Municipality (Okoyo & Kola, 2022).

#### **Plate 3-56: Security Mast and Street Lighting Within Bar Agulu Market Center**



Source: Fieldwork, 2023



### *3.11.5 Information and Communication Technology*

ICT is a broader term for IT (Information Technology) that encompasses all the communication technologies not limited to Internet, mobile phones, wireless networks, computers, software, social networks and middleware that helps people, create, store, send and receive information.

Due to its unique ability to significantly enhance communication, exchange information, strengthen and create new economic & social networks, ICT is a powerful tool for achieving development goals. There's a lot of development in ICT over the recent times with dominance of videocalls and videoconferencing during the Covid-19 pandemic.

#### **3.11.5.1 ICT Infrastructure**

ICT Infrastructure is any infrastructure that enables ICT to work. It refers to the hardware, software, and telecommunication networks used to process, store, and transmit information. It includes devices such as computers, servers, routers, switches, and other network equipment, as well as software applications, databases, and communication systems.

In Siaya Municipality, ICT plays a vital role in facilitating communication, networking and the exchange of information between different stakeholders. The 2019 Population and Housing Census reveals that mobile phone ownership in Siaya County stood at 44.1%. This indicates a shift from traditional forms of communication to modern technology in recent times. The Municipality benefits from mobile network coverage provided by Safaricom, Airtel, and Telekom Kenya. For money transfers, the primary modes of transaction are through M-Pesa and Airtel money services.

There's an elaborate but limited network of Fiber Optic Cables for Internet Services distribution in the area with Internet Service Providers (ISPs) such as Liquana Technologies and Zion Center providing Internet Infrastructure within the Municipality. There's need to increase investment in ICT infrastructure to give Siaya a competing advantage in the area of ICT innovations. With a robust young population, Siaya Municipality would leverage on ICT as a means of Education and Innovation to create jobs for the youth.

Additionally, efforts to promote digital literacy and provide training on the use of ICT will also be necessary to ensure that everyone can fully participate in the digital economy. To achieve



more with ICT as envisioned in Kenya’s Development Blueprint- Vision 2030, it is important to increase ICT infrastructure in Siaya Municipality to increase Internet availability for more online business and job opportunity for youths (Siaya County Intergrated Development Plan, 2023).

### Social Infrastructural Facilities and Amenities

This chapter discusses the existing social facilities in Siaya Municipality with the view of understanding the condition, current/projected demand and distribution among other elements. The facilities analysed include education, health, security, social halls and religious facilities as discussed below.

#### **3.11.6 Education**

This section assesses educational facilities in various categories and their distribution in Siaya Municipality where public and private sectors offer educational services. However, like most areas in Kenya, public institutions play the leading role in the sector. Education facilities in the Municipality include ECDCs, primary schools, secondary schools, TVETs, colleges and Universities with Nyadhi en Mwandu initiative applied in ECDs and primary schools in the municipality.

##### **3.11.6.1 Early Child Development Centres, (ECDCs)**

Siaya County has a total of 689 ECD Centres which are distributed within the 6 sub counties. These ECD Centres has a population of 47,716 pupils. There a total of 1660 teachers of which 605 are employed by the county while 1061 are employed by the BoM. The municipality has a total of 49 ECD distributed within the 4 wards of Central, North Alego, Siaya Township and South East.

The Table below shows the ECD centres within the municipality and the Ward located.



**Table 3-19: ECD Centres within the Municipality**

<b>No.</b>	<b>Name of ECD</b>	<b>Ward</b>	<b>Status</b>
1	Liganwa	Cenral	Functional
2	Pap Boro	Central	Functional
3	Boro	Central	Functional
4	Kalenuok	Central	Functional
5	Ndai	Central	Functional
6	Kanyaboli	Central	Functional
7	Aduwa	Central	Functional
8	Palpal	Central	Functional
9	Rarieda Uyore	Central	Functional
10	Oseno	Central	Functional
11	Gombe	North Alego	Functional
12	Hono	North Alego	Functional
13	Nyalgunga	North Alego	Functional
14	Ulafu	North Alego	Functional
15	Kowet	North Alego	Functional
16	Mbaga Mixed	North Alego	Functional
17	Mbaga Girls	North Alego	Functional
18	Mulaha	Siaya Township	Functional
19	Awelo	Siaya Township	Functional
20	Township	Siaya Township	Functional
21	Central	Siaya Township	Functional
22	Anduro	Siaya Township	Functional
23	Agage	Siaya Township	Functional
24	Ramba, Karapul	Siaya Township	Functional
25	Paradox Academy	Siaya Township	Functional
26	St. Pantaleon ECD	Siaya Township	Functional
27	Happy Kids Academy	Siaya Township	Functional
28	Magaret Nyadong'	Siaya Township	Functional
29	Upendo	Siaya Township	Functional
30	St. Mary's Christa	Siaya Township	Functional
31	Scouts Centre	Siaya Township	Functional
32	Marantha Ministries	Siaya Township	Functional
33	Melanie's Educational Centre	Siaya Township	Functional
34	Infant Jesus of Praque	Siaya Township	Functional
35	Angels Gate Academy	Siaya Township	Functional



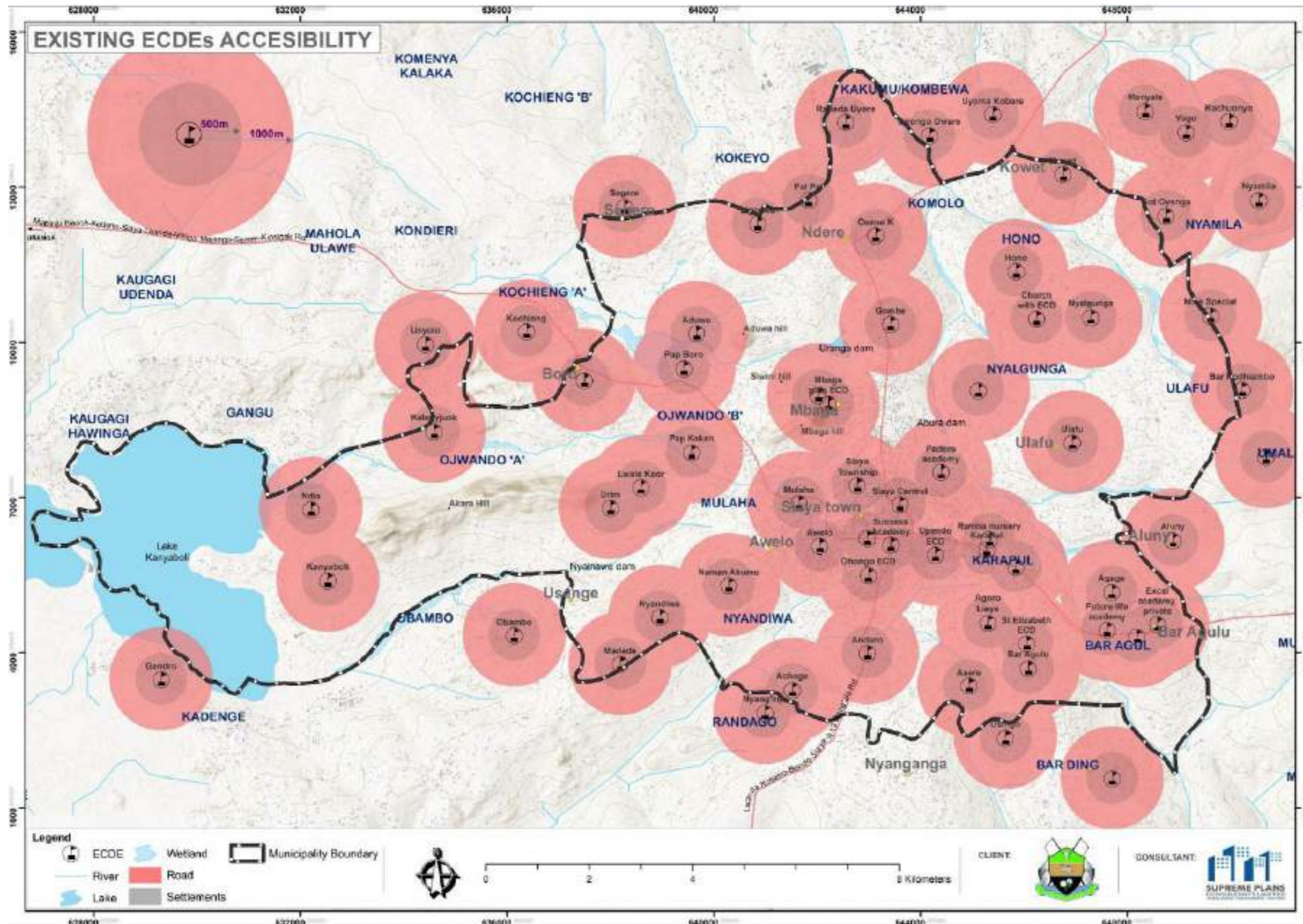
No.	Name of ECD	Ward	Status
36	Sifa School	Siaya Township	Functional
37	Aslidi	Siaya Township	Functional
38	Uhongo	Siaya Township	Functional
39	Pap Kakan	Siaya Township	Functional
40	Lwala Kaor	Siaya Township	Functional
41	Urim	Siaya Township	Functional
42	Namaan Akumu	Siaya Township	Functional
43	Nyandiwa	Siaya Township	Functional
44	Madede	Siaya Township	Functional
45	Agoro Lieye	South East	Functional
46	Bar Agulu	South East	Functional
47	Future Life Academy	South East	Functional
48	Excel Academy	South East	Functional
49	Asere	South East	Functional

It is recommended that ECD learners need access to a center within a radius of 500m. The distance-based analysis shows that the residents of Siaya Municipality are not adequately provided with ECDEs. There are numerous areas where nursery school children walk for more than 500m to the closest facilities.

The map below shows the accessibility index of ECD Centers within the Municipality.



Map 3-21: ECD Centers Accessibility by Distance



### 3.11.6.2 Primary schools

There are 44 primary schools within the Municipality. Most of the schools within the municipality are publicly owned with only a few of them being privately owned. The table below shows the primary schools within the municipality and their ownership.

**Table 3-20: List of Primary Schools in the Municipality**

No.	School	Ward	Status
1	Liganwa Primary	Cenral	Functional
2	Pap Boro Primary	Central	Functional
3	Boro Primary	Central	Functional
4	Kalenjuok Primary	Central	Functional
5	Ndai Primary	Central	Functional
6	Kanyaboli Primary	Central	Functional
7	Aduwa Primary	Central	Functional
8	Palpal Primary	Central	Functional
9	Rarieda Uyore Primary	Central	Functional
10	Oseno Primary	Central	Functional
11	Gombe Primary	North Alego	Functional
12	Hono Primary	North Alego	Functional
13	Nyalgunga Primary	North Alego	Functional
14	Ulafu Primary	North Alego	Functional
15	Kowet Primary	North Alego	Functional
16	Mbaga Mixed Primary	North Alego	Functional
17	Mbaga Girls Primary	North Alego	Functional
18	Mulaha Primary	Siaya Township	Functional
19	Awelo Primary	Siaya Township	Functional
20	Pap Kakan Primary	Siaya Township	Functional
21	Lwala Kaor Primary	Siaya Township	Functional
22	Urim Primary	Siaya Township	Functional



No.	School	Ward	Status
23	Namaan Akumu Primary	Siaya Township	Functional
24	Nyandiwa Primary	Siaya Township	Functional
25	Madede Primary	Siaya Township	Functional
26	Township Primary	Siaya Township	Functional
27	Central Primary	Siaya Township	Functional
28	Anduro Primary	Siaya Township	Functional
29	Agage Primary	Siaya Township	Functional
30	Karapul Primary	Siaya Township	Functional
31	Paradox Academy	Siaya Township	Functional
32	Magaret Nyadong'	Siaya Township	Functional
33	Upendo	Siaya Township	Functional
34	St. Mary's Christa	Siaya Township	Functional
35	Marantha	Siaya Township	Functional
36	Melanie's Educational Centre	Siaya Township	Functional
37	Infant Jesus of Praque	Siaya Township	Functional
38	Sifa School	Siaya Township	Functional
39	Karapul Special Unit	Siaya Township	Functional
40	Agoro Lieve Primary	South East	Functional
41	Bar Agulu Primary	South East	Functional
42	Future Life Academy	South East	Functional
43	Excel Academy Primary	South East	Functional
44	Aserre Primary	South East	Functional



It is recommended that a primary school serves a catchment population of 3,500 (Physical Planning Handbook). The population-based analysis shows that the existing 44 public institutions will adequately serve Siaya Municipality in the next 10 years (see the table below).

**Table 3-21: Analysis of Primary School based on Catchment Population**

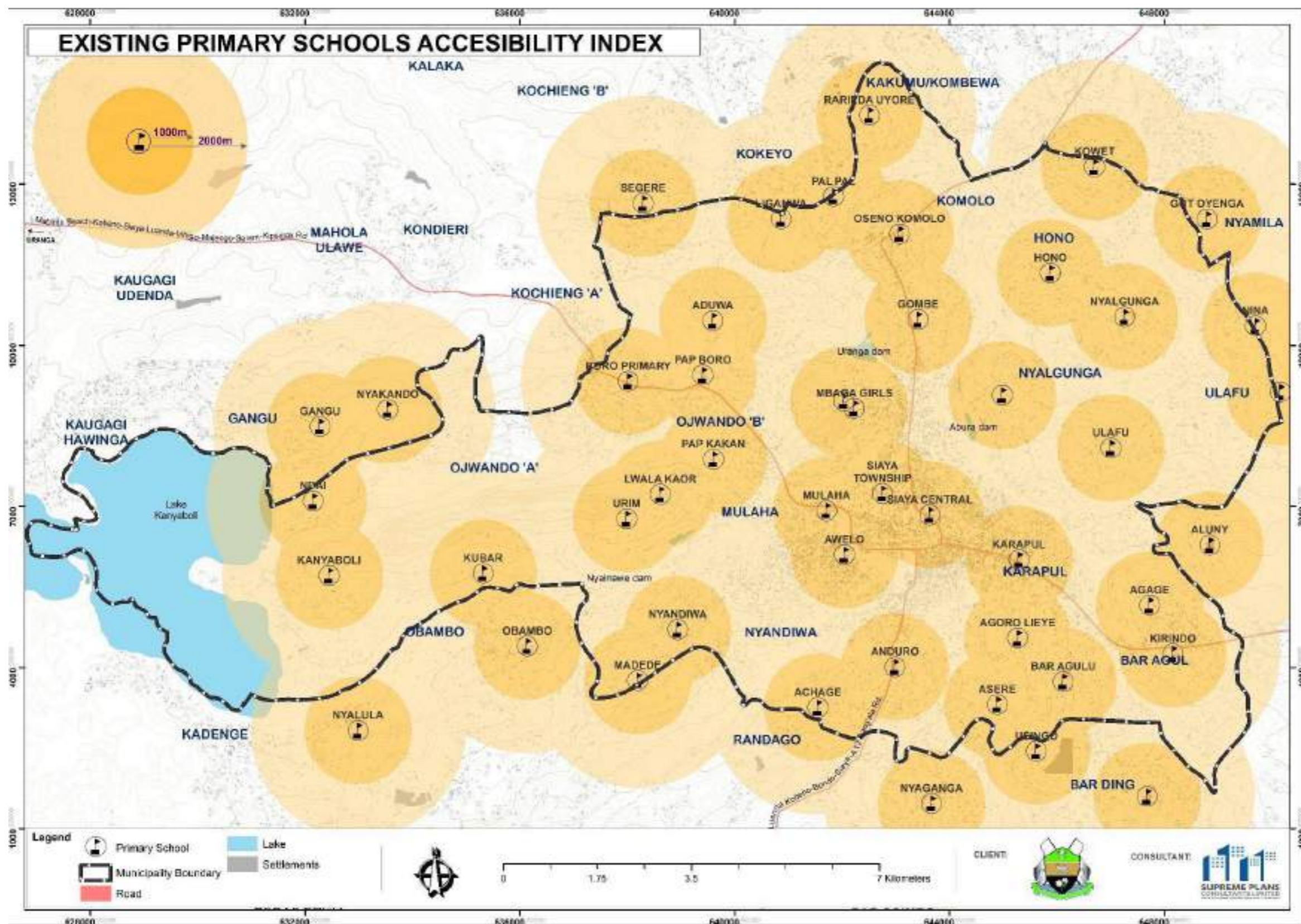
2024			2025		2030		2034	
Pop	No. of schools	+/-	Pop	+/-	Pop	+/-	Pop	+/-
89,426	44	+19	91,473	+18	101,535	+19	110,470	+13

The primary schools are well distributed within the municipality with all areas having access to a secondary school within a radius of 2000m.

The map below shows the accessibility index of primary schools within the Municipality.



Map 3-22: Primary Schools Accessibility by Distance



### 3.11.6.3 Junior Secondary Schools

Siaya Municipality has 39 junior schools located within the Municipality boundary. Majority of the schools are publicly owned. The table below shows the junior secondary schools within the Municipality.

**Table 3-22: Junior Secondary Schools Within the Municipality**

No.	School	Ward	Status
1.	Liganwa Primary	Central	Functional
2.	Pap Boro Primary	Central	Functional
3.	Boro Primary	Central	Functional
4.	Kalenjuok Primary	Central	Functional
5.	Ndai Primary	Central	Functional
6.	Kanyaboli Primary	Central	Functional
7.	Aduwa Primary	Central	Functional
8.	Palpal Primary	Central	Functional
9.	Rarieda Uyore Primary	Central	Functional
10.	Oseno Primary	Central	Functional
11.	Gombe Primary	North Alego	Functional
12.	Hono Primary	North Alego	Functional
13.	Nyalgunga Primary	North Alego	Functional
14.	Ulafu Primary	North Alego	Functional
15.	Kowet Primary	North Alego	Functional
16.	Mbaga Mixed Primary	North Alego	Functional
17.	Mbaga Girls Primary	North Alego	Functional
18.	Mulaha Primary	Siaya Township	Functional
19.	Awelo Primary	Siaya Township	Functional
20.	Pap Kakan Primary	Siaya Township	Functional
21.	Lwala Kaor Primary	Siaya Township	Functional
22.	Urim Primary	Siaya Township	Functional



No.	School	Ward	Status
23.	Namaan Akumu Primary	Siaya Township	Functional
24.	Nyandiwa Primary	Siaya Township	Functional
25.	Madede Primary	Siaya Township	Functional
26.	Township Primary	Siaya Township	Functional
27.	Central Primary	Siaya Township	Functional
28.	Anduro Primary	Siaya Township	Functional
29.	Agage Primary	Siaya Township	Functional
30.	Karapul Primary	Siaya Township	Functional
31.	Paradox Academy	Siaya Township	Functional
32.	Magaret Nyadong'	Siaya Township	Functional
33.	Marantha	Siaya Township	Functional
34.	Melanie's Educational Centre	Siaya Township	Functional
35.	Infant Jesus of Praque	Siaya Township	Functional
36.	Agoro Lieye Primary	South East	Functional
37.	Bar Agulu Primary	South East	Functional
38.	Excel Academy Primary	South East	Functional
39.	Asere Primary	South East	Functional

### 3.11.6.4 Secondary Schools

Siaya Municipality has 14 secondary schools located within the Municipality boundary. Majority of the Secondary Schools are publicly owned.

No.	School	Ward	Status
1.	Boro Mixed Secondary	Central	Functional
2.	Melis Senior School Secondary	Central	Functional
3.	Rarieda Mixed Secondary	Central	Functional
4.	Mbaga Mixed	North Alego	Functional
5.	Bishop Okoth Mbaga Girls	North Alego	Functional



6.	Ulafu Secondary	North Alego	Functional
7.	Hono Mixed Secondary	North Alego	Functional
8.	Kowet Mixed Secodary	North Alego	Functional
9.	Siaya Township Secondary	Siaya Township	Functional
10.	Mulaha Mixed Secondary	Siaya Township	Functional
11.	Siaya Central Secondary	North Alego	Functional
12.	Karapul Secondary School	Siaya Township	Functional
13.	Holy Cross Secondary	South East	Functional
14.	Agoro Secondary	South East	Functional

It is recommended that a secondary school serves a catchment population of 8000 (Physical Planning Handbook). The population-based analysis shows that the existing 20 institutions will adequately serve Siaya Municipality in the next 10 years (see the table below).

**Table 3-23: Analysis of Secondary School based on Catchment Population**

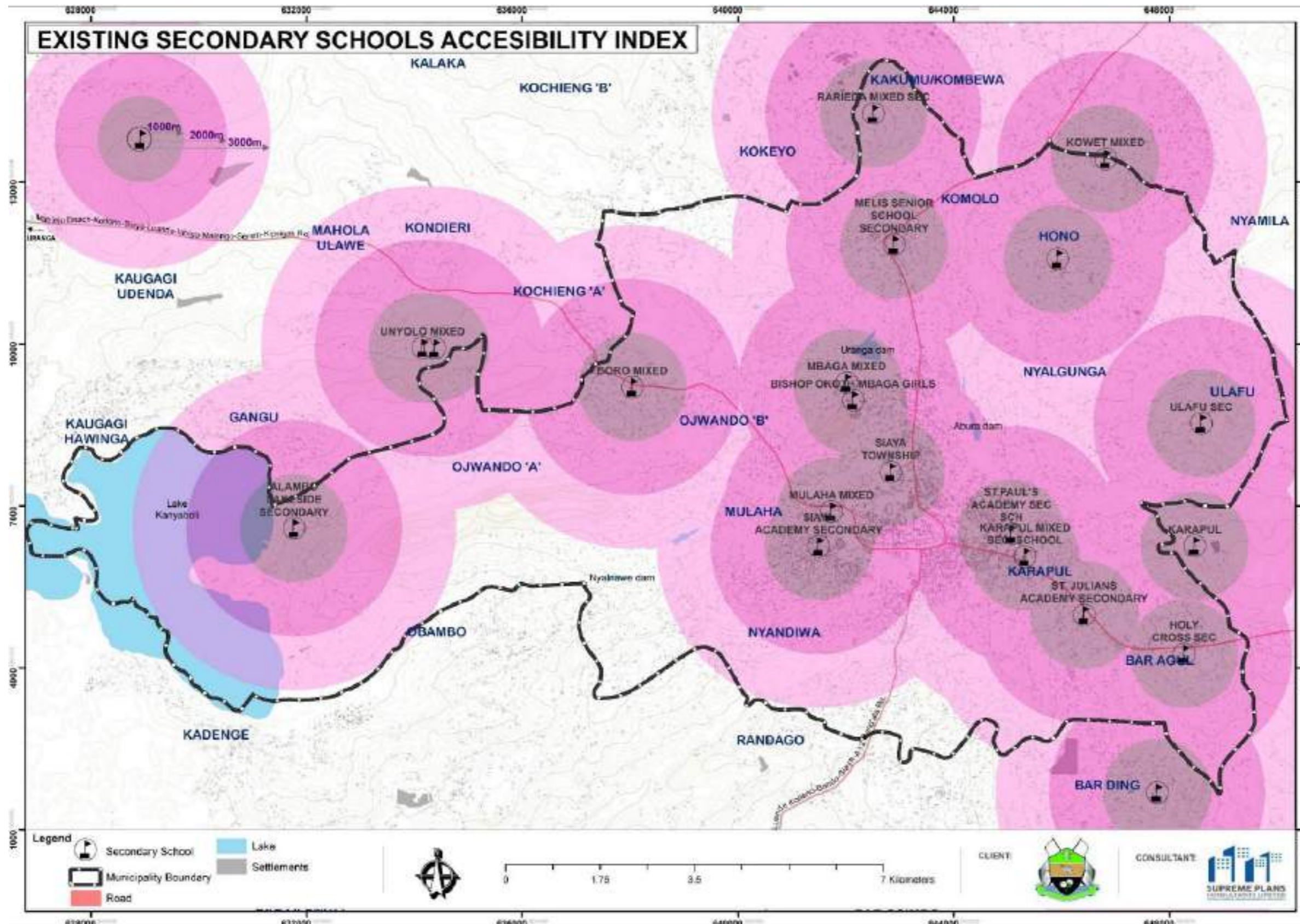
2024			2025		2030		2034	
Pop	No. of schools	+/-	Pop	+/-	Pop	+/-	Pop	+/-
89,426	14	+3	91,473	+3	101,535	+2	110,470	+1

The Secondary schools are well distributed within the Municipality with all areas having access to a secondary school within a radius of 2000m.

The map below shows the accessibility index of Secondary Schools within the Municipality.



Map 3-23: Secondary School Accessibility by Distance



### 3.11.6.5 Vocational Training Centres

The vocational training centres within Alego Usonga Subcounty where the municipality is located are as outlined below.

Name	Ward
Ng'iya	South East
Nyala	South East
Liganwa	Central Alego
Umala	North Alego
Randago	South East

### 3.11.7 Tertiary Educational Institutions

Siaya Municipality houses 3 tertiary educational institutions namely Jaramogi Oginga University of Science and Technology, Kenya Medical Training College (KMTC) and Siaya Institute of Technology. These Institutions have a catchment population which extends beyond the municipality and County boundaries. These three institutions contribute a large number of resident populations within Siaya Urban Centre with Hostels mushrooming near these institutions.





### 3.11.8 Health

#### 3.11.8.1 Health Facilities

The highest level of health facility within the municipality is Siaya County Referral Hospital. This facility attends to the needs of all the six sub counties of Siaya County and hence it needs the maximum attention to continue offering services to the residents. Other medical facilities in the municipality includes health centers and dispensaries.

The Table below shows the health facilities within the Municipality and their levels.

**Table 3-24: Health Facilities**

No.	Health Facility	Level	Status
1.	Siaya County Referral Hospital	Level 4	Functional
2.	Lake Kanyaboli Community Dispensary	Level 2	Functional
3.	Ober Ogunga Dispensary	Level 2	Functional
4.	Siaya County Referral Beyond Zero Mobile Clinic Dispensary	Level 2	Functional
5.	Ulafu Dispensary	Level 2	Functional
6.	GOK Prison Siaya	Level 2	Functional
7.	Karuoth Dispensary	Level 2	Functional
8.	Mulaha Dispensary	Level 2	Functional
9.	Bar Agulu Dispensary	Level 2	Functional
10.	Segere Dispensary	Level 2	Functional
11.	St. Elizabeth Mbagha Health Centre	Level 2	Functional

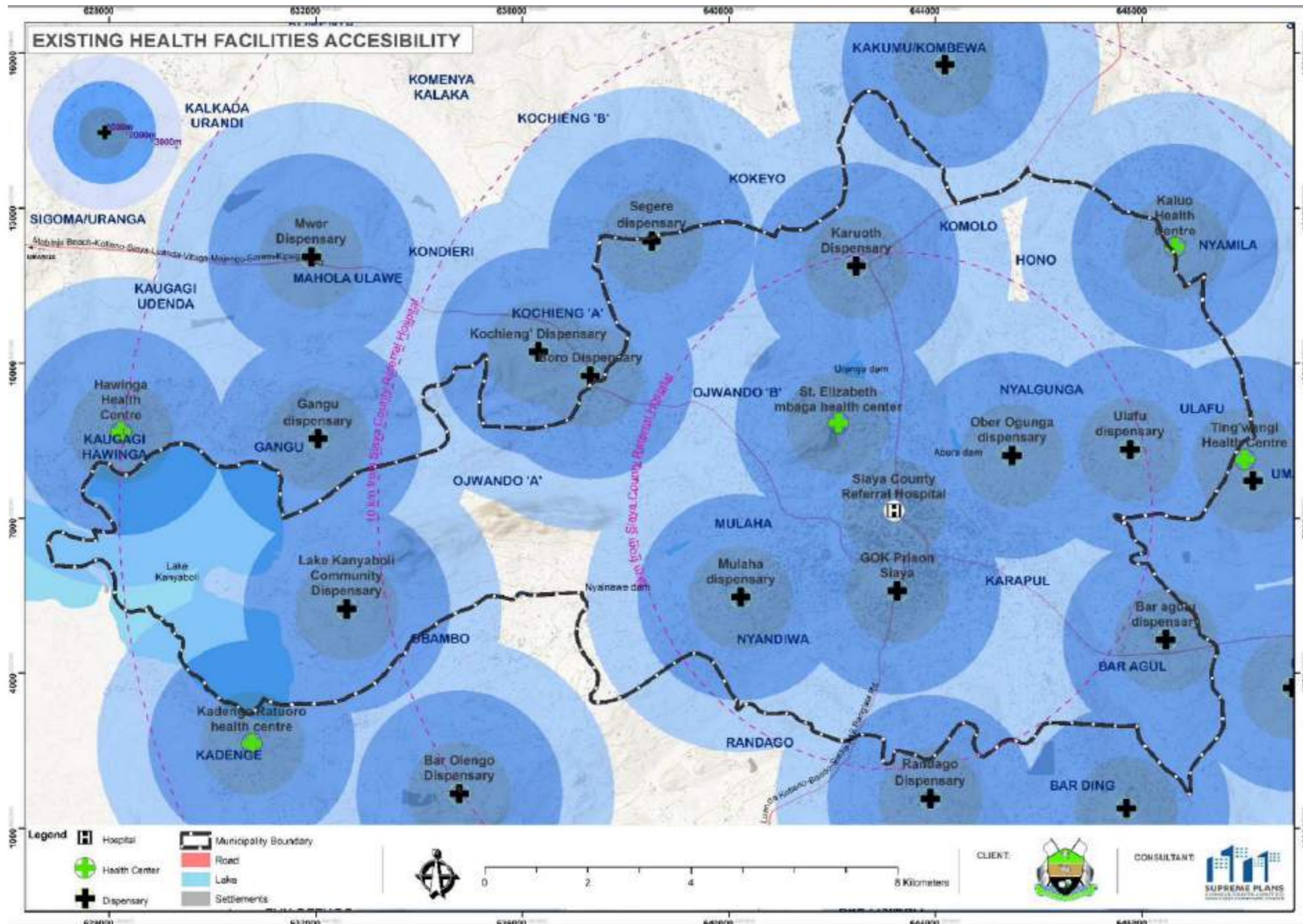
Source: Siaya Health and Sanitation Department, 2023

Majority of the residents within the Municipality have access to a health facility within an accessibility radius of 2-3km. The map below analyses the distribution and accessibility of Health facilities within Siaya Municipality.

Siaya County Referral Hospital the major referral hospital in the county is accessible to the residents of the Municipality within a radius of 15km. Siaya Municipality residents have a more ease of access of the County referral hospital than other residents within the subcounty and county at large.



Map 3-25: Health Facility Accessibility



### 3.11.9 Law and Order Institutions

Siaya Municipality houses the County Police Headquarters, the Law courts and a prison. These facilities make the municipality to be strategically equipped to maintain law and order

### 3.11.10 Other Facilities

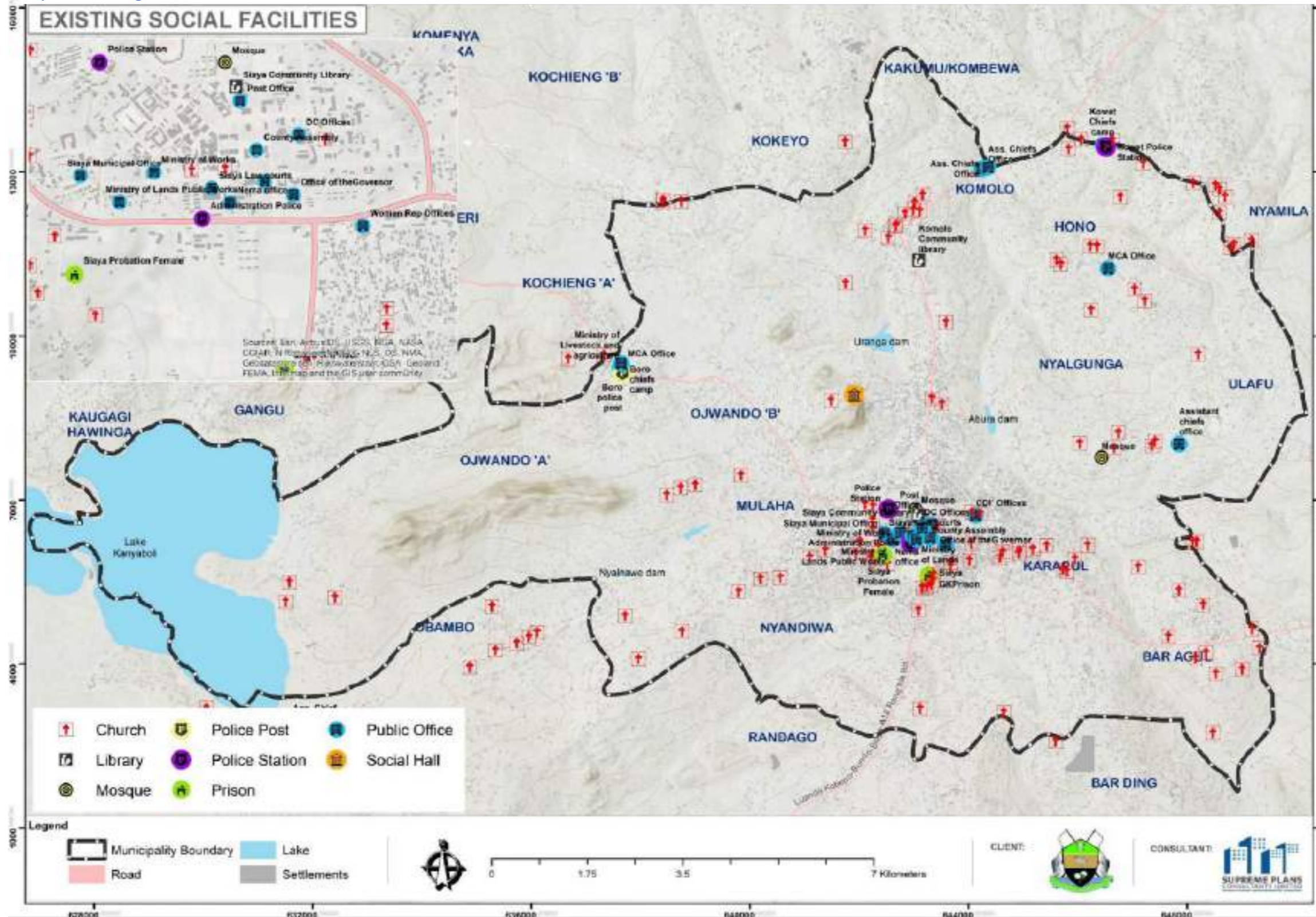
Other facilities within the municipality are analysed in the table below

Facility	Name	Ward	Land sizes	Status
Social halls			-	-
Stadium/ playground	Siaya Stadium	-	-	Under Construction
Recreational	Siaya Town	Township	-	
Cemetery	Siaya County Cemetery	Township	-	Inadequate
Fire station	None	-	-	-
Library	Komolo Community Library Siaya Community Library	Ndere Township		
Resource centre	None	-	-	-
Religious	Numerous	-	-	-
Huduma Centre	Siaya Huduma Centre	Township		

The map below shows the location of other social facilities within the Municipality.



Map 3-26: Existing Social Facilities



### 3.12 Economic Analysis

The section analyses current economic situation in Siaya Municipality. It summarizes the existing economic status of the planning area to guide future planning. The section discusses all the major economic sectors, including commerce, agriculture, trade and industry, and employment. For each sector, the section discusses the main elements, challenges, and opportunities. Besides, revenue generation and ongoing economic projects are discussed in the section.

#### 3.12.1 Formal Commercial Activities

There are several registered commercial activities in Siaya Municipality, including supermarkets, wholesale and retail shops, and open-air market businesses. These businesses vend items ranging from manufactured goods, agricultural products and services. The planning area has six banks, 16 major hotels, 5 supermarkets, and hundreds of general merchandise shops. The industrial sector comprises of the manufacturing, quarrying, mining and construction activities. Manufacturing is the primary industry. Most industries are agro-based. However, they are characterized by relatively low value addition, employment, capacity utilization and export volumes partly due to weak linkages to other sectors. Notable industries include Mur-malanga Dairy, Ramba Fruit Processing Plant, Liganwa Enterprise, and Chez Albert.

#### 3.12.2 Informal Commercial Activities

Informal business activities constitute one of the major sources of income within the Municipality, especially in urban areas. The sector includes both registered and unregistered economic entities, such as hawkers, small shops, jua-kali artisans, commercial motorcycle taxi riders (boda boda), and taxi drivers. These activities are concentrated in the market centres within the planning area. However, these activities also constitute a major contributor of the rural economic sector. Most informal commercial activities within the planning area employ less than 10 people, often on a wage basis. Besides, returns from such investments is often small and unreliable



### **3.12.2.1 Jua Kali Artisans**

Siaya Municipality has about 2,000 jua kali artisans registered under the Siaya Juakali Association, including trainees under apprenticeship. Most artisans operating within Siaya town work within a designated area with shades. However, a significant number operate in other rented spaces and areas outside the urban centres. The primary products made by jua kali artisans in the municipality include building materials (steel doors, windows, and gutters), furniture (steel chairs, beds, tables, and cabinets), agricultural tools (feed mixers, planters, hoes, jembes and rakes), and repair works (motor vehicle repairs).

***Plate 3-57: Jua Kali Artisans in Awelo***



Source: Fieldwork, 2023



Products made by jua kali artisans are mainly sold locally. Customers visit stall to make purchases, with few members having other markets. Members of the Siaya Juakali Association earn an average revenue of Ksh.500 to Ksh. 2,500 per day. They mainly acquire funding from personal savings, personal loans, and loans from Saccos and banks. Each member is required to join a Sacco. The Sacco plays a critical role in helping members secure loans. Besides, the Sacco is involved in welfare activities, such as money when a member is hospitalized or dies. Lastly, the Siaya Juakali Association advocates for the rights of its members to lower the cost of doing business. For instance, members pay a collective sh.63, 500 in annual fees, as opposed to paying individually for single business permits.

The Municipality and the government have put in measures and strategies to improve the working conditions of jua kali artisans in Siaya Municipality. The drainage system serving the jua kali shades is in excellent condition, preventing flooding incidents. Besides, garbage collection in the area is done on a regular basis. The access road to the area is also tarmacked. The municipality also erected a security light to increase security in the area and enable artisans to work late in the evening. The artisans have also benefited from training from the county government and NGOs, albeit in rare occasions. However, jua kali artisans still face multiple challenges in their work. Notably, there is low skill level due to inadequate formal training. Artisans also face challenges accessing funding from existing financial institutions. The jua kali area also lacks piped water supply and toilets, inconveniencing the artisans and increasing the risk of health issues.

### **3.12.2.2 Boda boda**

The commercial motorcycle business (boda boda) is one of the primary youth employers in Siaya Municipality. The Siaya Boda Boda Association has approximately 3,000 members operating in about 100 parking bays. Each parking bay averages 15-50 members. Boda boda riders operate primarily from towns and market centres, including Siaya, Boro, Ndere, Malanga, Barding', Dondi, Nyakongo, Ogwato Centre, Usenge Centre, and Nyalgunga.



Boda boda riders serve nine main routes as follows:

1. Siaya – Bar Agulu– Barding’
2. Siaya – Kawota – Ndere (Ugunja way)
3. Siaya – Boro
4. Siaya – Malanga (towards Bondo)
5. Siaya – Dondi (towards Kisumu)
6. Dondi – Ng’iya
7. Siaya – Ogwato (towards Gem)
8. Siaya – Usenge (towards Dominion)
9. Siaya – Hono – Nyalgunga

Boda boda riders generate sh.500-700 per day. The revenue is then shared among the motorcycle owner, the rider, and fuel. Riders pocket between sh.200 and sh.500 per day. This marks a sharp decline in revenues as the number of riders increase. A few years back, riders would make up to 2,000 per day. The County government also collects sh.1, 200 in fees per motorcycle.

However, there is poor implementation of this policy, leading to high evasion by riders. Boda boda operators also contribute sh.300 per week to save in a Sacco, albeit on a voluntary basis. The Siaya Boda Boda Association helps its members by lending loans. Apart from the Association, operators can borrow from banks and credit institutions. Credit institutions, such as Mogo and Watu are the most prominent. However, they charge punitive interest rates and involve harsh loan conditions, increasing the loan default rate.



Plate 3-58: Boda Boda Shade in Awelo



Source: Fieldwork, 2023

The government put measures and programs to assist boda boda operators within the municipality. Notably, riders can get sponsored rider training to acquire licenses with full funding from the county government under the education department or the woman representative fund. However, they do not have adequate shades to support their operations. The current shades are own-built or donated. Besides, there are no designated sanitary facilities (toilets) serving boda boda shades. The reduced revenue generation, high motorcycle prices, and increased fees have also negatively impacted the earning potential of boda boda riders.

### **3.12.2.3 Matatu Operations**

Matatus are the primary mode of transportation within Siaya Municipality. There are about 12 routes served by matatus, with each matatu Sacco having about 30 vehicles. The sector directly employs an estimated 750 people within the municipality. Besides, it facilitates other economic activities by facilitating the movement of goods and people. Matatus in Siaya Municipality ply



five major routes all of which are in good condition: Kisumu, Ugunja, Bondo, Nairobi, and Nyadorera.

Matatus operating in Siaya municipality make sh.2, 000 in revenues daily. The earnings are subdivided among the matatu owner, the conductor, and operating fees and expenses. Matatus pay fees per trip made. 14-seater matatus pay sh.50 for each trip made, while mini-buses and buses pay sh.100 and sh.200 per trip, respectively. The Siaya Matatu Sacco acts as a critical support system to members. In particular, it engages in benevolent activities to improve members' welfare. Besides, member can save and borrow loans from the Sacco.

**Plate 3-59: Matatus Picking Passengers Alongside the Road in Siaya Town**



Source: Fieldwork, 2023



However, the matatu sector is faced by multiple challenges due to the poor condition of their operating environment. The current matatu stage lacks proper stalls/shades, piped water drainage facilities, toilets, and garbage disposal bins. Besides, the accessibility to and within the matatu stage is poor. The space available is also inadequate to handle the matatus using it. The matatu stage under construction can resolve some of the challenges faced by matatu operators. However, the municipality should consider the current shortcomings in the sector and consider them when completing the new stage.

#### **3.12.2.4 Challenges Facing Informal Commercial Activities**

- a) Poor Working Environment - Most informal commercial activities are not served with adequate infrastructural facilities, such as toilets, piped water, and parking spaces.
- b) Low skill levels- Most people working in the informal commercial segment are unskilled. This limits their ability in value addition, reducing the revenue they earn from their trade.
- c) Low revenue generation capacity – Most people in the informal sector do not make enough profit to adequately support their livelihoods.

#### **3.12.2.5 Opportunities in the Informal Commercial Sector**

- a) Designated Areas to Support Informal Activities – Siaya Municipality should set aside suitable spaces to support informal activities. In particular, the government can set aside more land to expand the jua kali sector in the municipality. Secondly, boda boda shades should be constructed in complimentary areas, such as the matatu stage and the market, with supporting facilities such as toilets.
- b) Training – Most participants in the informal sector are unskilled or lowly skilled. The Municipality can improve their productivity by sponsoring training on essential skills.

### **3.12.3 Agriculture**

#### **3.12.3.1 Crop Production**

Crop farming is a major economic activity and a large contributor to food self-sufficiency in the planning area. Planning is essential to poverty reduction through employment creation and value addition. The primary food crops farmed in the area are maize, beans, cassava and sweet



potatoes. Cash crops produced are mainly rice, sugarcane and groundnuts. Cotton is grown in certain areas, but the area under cotton farming has declined. Other crops produced include vegetables, such as tomatoes, onions, avocado and kales. Common fruits mangoes, pawpaw, bananas, and watermelon.

The average farm size for a small-scale farmer in the planning area is 1 ha. The small farm sizes act as a disadvantage because farmers cannot enjoy economies of scale. Besides, mechanized agriculture is constrained. There is one grain storage facility constructed by the County Government. However, the facility is inadequate and not well equipped to prevent high post-harvest losses.

There is one main irrigation scheme in the planning area: Dominion. The major products farmed under irrigation are horticulture and rice. There are smaller irrigation projects for people living rivers. However, the performance of the irrigation schemes is below expectation. More water needs to be tapped to aid irrigation and protect farmers against harsh environmental conditions. Prioritizing and operationalizing irrigation scheme can increase farmers' earning potential enhance food security in the planning area.

### **3.12.3.2 Livestock Keeping**

Livestock keeping is a widely practiced economic activity in Siaya Municipality. The main livestock kept in the Municipality are cattle sheep, goats, pigs, rabbits, poultry, and donkeys. The population of these animals and their breeds are listed in the table below.

**Table 3-25: Livestock Population in Siaya Municipality in 2022**

<b>Livestock</b>	<b>Breed/Type</b>	<b>Population</b>
<b>Cattle</b>	Dairy	2,532
	Beef	135,079
<b>Sheep</b>	Wool	0.00
	Hair	51,005
<b>Goats</b>	Dairy	483



	Meat	56,728
<b>Pigs</b>		1,191
<b>Rabbits</b>		4,140
<b>Poultry</b>	Broilers	11,805
	Layers	8,990
	Indigenous chicken	130,423
	Turkeys	410
	Ducks	760
	Geese	292
	Guinea fowl	283
	Quails	403
<b>Donkeys</b>		1,438

The livestock kept in Siaya Municipality play a key economic role for the residents. Livestock farmers earn significant revenue from selling animal products, including milk, meat, hair, and eggs. The total yield, unit price, and revenue generated from these products in 2022 are tabulated in table below:

**Table 3-26: Livestock Productivity in 2022**

<b>Product</b>	<b>Output</b>	<b>Unit Price per Kg</b>	<b>Total Revenue/Value</b>
Milk	9,224,948 kg	60	553,496,880
Beef	1,467,715 kg	450	660,471,750
Chevon	120,143 kg	550	6,6078,650
Mutton	107,111 kg	450	48,199,950
Pork	60,979 kg	360	21,952,440
Rabbit meat	580 kg	550	319,000
Indigenous chicken (meat)	162,768 kg	550	89,522,400
Broiler chicken (meat)	14,166 kg	500	7,083,000



Eggs	146,770 trays	450	66,046,500
Hides	2,001	300	600,300
Skins	3,090	45	139,050

Farmers also generated revenue from selling live animals to other farmers or in the market. The markets serving farmers are Ng'iya, Boro, and Radago markets. The prevailing market prices for live animals are tabulated in the table below.

**Table 3-27: Price of Live Animals in Siaya Municipality**

Livestock	Breed/Type	Unit Price
Cattle	Dairy	70,000
	Beef	35,000
Sheep	Hair	4,500
Goats	Dairy	20,000
	Meat	5,000
Pigs		5,500
Rabbits		1,500
Poultry	Broilers	500
	Layers	500
	Indigenous	850
Donkeys		12,500

Livestock within Siaya Municipality are fed a mixture of fodder and commercial feed. The estimated land used to grow fodder for livestock is tabulated in Table 3-28. On the other hand,



Table 3-29 lists the main commercial feeds used by farmers, their availability, prices, and sources.

**Table 3-28: Fodder grown in Siaya Municipality**

Type Of Pasture / Fodder	Size (Ha)/Year		
	2020	2021	2022
Nappier Grass	1,370	1,540	1622
Sweet Potato Vines	145	174	193
<b>Fodder Trees</b>			
Calliandra	29,450	Unknown	30,097
Sesbania	8,240	Unknown	8,260
Leucaena	63,255	Unknown	64,129
Other (Specify)	100,945		
<b>Pastures</b>			
Rhodes Grass	155	77	
Columbus Grass	4	4	4
Kikuyu Grass	Unknown	Unknown	Unknown
Natural Pastures	72,000	34,357	
Other (Specify)	100	48	65
Browse Material	Unknown	Unknown	Unknown
Legumes	44,080	19,754	
Lucerne	12		12
Desmodium	50	Unknown	Unknown
Siratro	Unkown	Unknown	Unknown



**Table 3-29: Commercial Livestock Used in Siaya Municipality**

Feed	Availability	Price Range	Source	Quantity
Dairy meal	Readily available	2400-2450	Local and external	50kg
Dairy cubes	Scarce	0	Local and external	20 kg
Calf pellets	Readily available	3000-3300	External	50 kg
Heifer grower	Scarce	0	Local and external	50 kg
Chick starter	Readily available	3200-3360	External	50 kg
Grower's mash	Readily available	2700-2750	External	50 kg
Layers mash	Available	2900-3100	External	50 kg
Broiler mash	Readily available	3630-3850	External	50 kg
Broiler finisher	Readily available	3300-3550	External	50 kg
Pig creep pellets	Not available	750	External	20 kg
Sow and weaner meal	Available	2100-2200	External	50 kg
Pig finisher	Available	2100-2300	External	50 kg
Rabbit pellets	Available	700-800	External	20 kg
Maize bran	Available	950-1100	External	40 kg
Maize germ	Available	1200-1250	External	40 kg
Minerals	Readily available	300	External	2 kg

Livestock farmers receive support from the government and non-governmental organizations. The county government supports farmers through extension officers. Livestock extension officers carry out disease surveillance and vaccinations. The municipality is currently served by 5 livestock officers and 3 veterinary officers. Multiple NGOs are also involved in advancing livestock farming in municipality. The main NGOs include the German Agency for International Cooperation (GIZ), World Vision, Plan International, and local NGOs.

Livestock farmers also the benefit from programs targeted at advancing the sector, including:



- a) The Kenya Livestock Commercialization Program
- b) Agriculture Sector Development Support Programme (ASDSP)
- c) The Kenya Climate Smart Agriculture Project (KCSAP)

**3.12.3.3 Fisheries (Aquaculture)**

Fish farming is a growing source of revenue and food for residents of Siaya Municipality. There are two main fish types farmed are Nile perch, tilapia and cat fish. The fish is farmed in dams and fish ponds. In 2021, there were 5 dams measuring 18,000 m<sup>2</sup> and 800 fish ponds measuring 240,000m<sup>2</sup> under fish production. There were 72,000 tilapia fingerings stocked in the dams and 800,000 stocked in the fish ponds. A total of 329,550kg of fish was harvested and sold for sh. 300 per kg, realizing revenues worth 98,865,000.

The county government supports farmers through research and extension services. NGOs and local institutions, such as churches and schools also support fish farmers through training and research. Some of the existing programs to support fish farmers include:

- i. Aquaculture business development program (ABDP)
- ii. Smart climate agriculture
- iii. Agricultural sector development support program (ASDSP)

**3.12.3.4 Bee-Keeping (Apiculture)**

Apiculture is an alternative livestock keeping activity adopted by farmers in the Siaya. In 2022, there was almost 2000 bee hives in the municipality. The main types of beehives and their numbers is tabulated in the table below.

**Table 3-30: Number of Beehives in Siaya Municipality**

Type	Number
Log	95
KTBH	358
Lang	1,484



Bee farmers within the Municipality sell honey and wax to generate revenue. In 2022, these products generated nearly Ksh.50 million in revenue. Table 7 shows the quantity, unit price, and revenue generated from these products in 2022.

**Table 3-31: Revenue from Bee Products in 2022**

Product	Quantity (kgs)	Unit price	Revenue
Honey	46,488	1,000	46,488,000
Wax	3,389	500	1,694,500

### **3.12.3.5 Challenges Facing Farming in Siaya Municipality**

- a) High cost of inputs, such as pesticides, seeds, and animal feeds
- b) Low quality of inputs
- c) High prevalence of crop and livestock diseases
- d) Low availability of extension services
- e) Lack of markets for produce.
- f) Poor adoption of technology and innovation
- g) Lack of financing

### **3.12.3.6 Opportunities in Agriculture in Siaya Municipality**

#### **3.12.4 Trade and Industry**

##### **3.12.4.1 Markets**

Siaya municipality is served by several markets: Rabango, Ndere, Koyogo, Obambo, Harambee, and Mbagha. However, most of the markets are informal markets, with only 3 formal markets; Siaya Town Market, Ramba and Boro Market. There are approximately 2,400 registered traders operating in these markets. An approximated 500 traders are not registered. Markets in Siaya Municipality sell a variety of products and wares, including fresh produce, fish, clothes, general wares (mali mali), shoes, live poultry, and cereals. Traders get their good from within and outside the municipality. For instance, fresh produce is obtained from local farms, Luanda Market, Busia Market, and Kisumu Town. On the other hand, general wares are obtained from as far as Nairobi while fish is sourced from Usenge, Nyamonye, and local fisheries.



Markets within the municipality are in need of improvement to create a conducive working environment for traders. Currently, most market feature wooden structures constructed by individuals. The available shades are incomplete and lack lighting to support business activities at night. Traders also lack access to piped water and proper drainage facilities. Currently, they purchase water from vendors. Sanitation in the markets is also a major issue. There are inadequate toilets and garbage disposal is poor. Markets also have poor accessibility due to lack of parking spaces and paved footpaths. Offloading items for sale in the market is often troublesome due to these poor conditions.

***Plate 3-60: Wooden Stalls at Rabango Market***



Source: Fieldwork, 2023



The average revenue generated by each trader in the market differ significantly depending on the products they sell and the location of their business. They are required to pay fees of sh.20-30 per day to operate, averaging about sh.500 per month. Traders in Siaya markets are organized into social groups and Saccos. These groups help each other in welfare issues (sickness and death). Besides, traders save and borrow money from the Saccos. Apart from borrowing from these groups, traders acquire financing through bank loans, Sacco loans, harambees, grants, and personal savings.

#### **3.12.4.2 Challenges Facing Trade and Industry**

- a) Poor physical infrastructure in markets, such as lighting, parking spaces, storage facilities, water and sanitation, and waste management.
- b) Lack of modern stalls to support trading in all weather conditions and at night
- c) Lack of business skills among traders

#### **3.12.5 Employment**

Siaya Sub-County has a large proportion of unemployed and underemployed persons. The proportion of employed wage earners is estimated at only 17%. Most employment opportunities are in government, NGOs, the transport sector, and private enterprises. Self-employment also plays a major role in the planning area's employment. Between 8% and 15% of the people are self-employed. Most of the self-employed persons are in urban areas, operating small business ventures. The main businesses where people are self-employed include kiosks, groceries, hotels, commercial motorcycles, and small-scale farming. The area's unemployment rate is about 40%, translating to a very large proportion of unutilized manpower.



Map 3-27: Economic Activities Distribution Map

