GOVERNMENT OF KENYA

COUNTY GOVERNMENT OF KIAMBU

KIAMBAA SUB-COUNTY INTEGRATED STRATEGIC URBAN DEVELOPMENT PLAN

2020-2030

VISION

A Vibrant Regional Service, Commercial and Residential Hub

SEPTEMBER, 2020

FOREWORD

I am pleased to introduce Kiambaa Sub-County's Integrated Strategy Urban Development Plan 2020-2030 (ISUDP), which is a road map on how the Sub-County is geared to develop. This is the first comprehensive spatial plan for the Sub-County and has been prepared at a time when the County is grappling with the challenges of rapid urbanisation. I am happy to note that this ISUDP has been prepared in a participatory manner taking into account the contributions of various stakeholders whose role in implementation is fundamental.

Kiambu is the third most urbanized County after Nairobi and Mombasa and has witnessed rapid urbanisation in the last few decades with people moving in to settle, set up businesses, and undertake other development activities. Kiambaa Sub-County has witnessed rapid population growth and increased economic activities over the last ten years since the onset of the devolved government, steadily changing the town's character. However, most of the urbanisation is happening in the peri-urban areas where barely little planning takes place. These are the areas that are characterised by piecemeal and disjointed land subdivisions coupled with a haphazard change of users that consistently distort urban planning processes. In addition, due to an absence of a local ISUDP to guide and manage this sprawl, the Sub-County continues to be affected by uncoordinated growth, land-use conflicts, inadequate basic infrastructure facilities and services, poor housing, and loss of rich agricultural land, amongst other challenges.

In order to cope with this scenario, the County, therefore, is expected to commit resources to manage urbanisation and growth in a more efficient manner. The increased population needs to be accommodated in a suitable environment, with ease of movement, adequate physical and social infrastructure, and employment opportunities.

This ISUDP has been prepared cognizant of Kenya's global commitments for sustainable development and existing policy and legal framework which includes Kenya's Vision 2030, Constitution of Kenya (2010), County Government Act (2012), Urban Areas and Cities Act (2011), Physical and Land Use Planning Act, 2019, and other applicable statutes which form the legislative framework within which the County will be able to implement this ISUDP. It, therefore, gives the County the necessary tools to address the current development challenges.

The ISUDP recognises the many opportunities and resource potentials that the Sub-County has and needs to exploit when addressing its development needs while ensuring that the resources are sustainably utilized. Implementation of the ISUDP will, therefore, enable the County not only to improve service delivery but also direct development to the most appropriate locations.

Institutionalizing the County Planning Unit (CPU), as provided under Clause 105 of the County Government Act (2012), will ensure consistency across the entire planning and implementation cycles. In the end, sectoral strategies will be implemented within a spatial framework and in turn, reflect the socio-economic analysis across the entire Kiambaa. The plan has also identified several action areas and quick-win projects which are to be undertaken within the first year of implementation, hence setting the pace for the realization of the medium- and long-term projects.

My administration acknowledges with appreciation the support of the World Bank. I commend the National Government through the Ministry of Transport, Infrastructure, Public Works, Housing and Urban Development; Directorate of Nairobi Metropolitan Development for providing technical and supervisory roles. The County Department of Land Housing and Physical Planning led by CECM Eng. Mugo and his staff have played a pivotal role in steering the planning process ending to completion of this Plan.

I also appreciate the efforts of other stakeholders, including professional bodies; resident associations; the business community; community-based organizations; and the *wananchi*, for their engagement and valuable inputs during various stages of the preparation. My government pledges to ensure during the course of implementation of this plan, that it will continue to involve and collaborate with all stakeholders to achieve its full realization. It is hoped that the implementation of the plan will produce positive changes and improvements in our people's lives.

I welcome all to support the noble cause in realizing the vision of this plan.

Governor,

County Government of Kiambu

CERTIFICATION

This Plan has been prepared as per requirements of the Physical and Land Use Planning Act, 2019

NAME: …….

…… ……..

Signed Date

Registered Physical Planner

PPRB No. …….

APPROVAL

RECOMMENDED BY:

NAME: …….

…… ……..

Signed Date

County Director, Physical and Land Use Planning

APPROVED BY:

NAME: ……

…… ……..

Signed Date

CECM, Lands, Housing and Physical Planning

Approved Plan

No……...…….

ACKNOWLEDGEMENT

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We acknowledge the technical support provided by the Nairobi Metropolitan Service Improvement (NaMSIP) Team led by Eng. Benjamin Njenga (Director), Plan. Ann Mugo (Project Supervisor) and Dr Anthony Moire (Deputy Project Supervisor) and all the other team members for their guidance, encouragement, and advice throughout the duration of preparation of this plan.

We have deep gratitude to the County Government of Kiambu's Technical Working Group under the able leadership of Mr Mugo Kimani (CECM, Lands, Physical Planning and Urban Development and Management); Ms Jane W. Mwaniki (Director, Physical Planning) and all the Technical Working Group members for their insights and constructive critique of the various reports produced in the course of this assignment.

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We thank VisionRI team led by Plan. Requito Bellosillo (Team Leader); Paul G. Chege (Deputy Team Leader); Mr Jitender Pal Singh Economist/Business Analyst; the Cluster Planning Team members of Plan. Dr Margaret Ngayu, Plan. Philip Olale, Mildred Ambani, Peter Macharia who worked diligently to produce this report. We also appreciate the inputs provided by thematic experts; Dr Joseph K. Kurauka (Environmentalist); Dr Luke Obala (Land Economist); Mr Elijah Kimani Mutuango (Social Expert; Mr Imtiyaz Ahmed (Transport Planner); Dennis Wakaba and Moses Mabinda (urban designers) and Mr Francis Muchiri (Communications).

We might not be able to mention everyone individually who we consulted during public stakeholder consultations, but we acknowledge their invaluable contribution and cooperation that greatly contributed to the successful completion of this ISUDP.

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EXECUTIVE SUMMARY

Urban Planning is a process aimed at improving the welfare of the people and their communities by addressing challenges related to land use conflicts, promoting efficiency in movement and public health, amongst others. This is achieved by creating more convenient, efficient, sustainable, and attractive places for present and future generations. Thus, this Integrated Strategic Development Plan (ISUDP) for Kiambaa Sub-County has been prepared as a broader initiative that addresses key urban development issues such as infrastructure provision and environmental conservation. Kiambaa Sub-County has an area of approximately 8,321 hectares and is located to the South of Kiambu County and Northwest of Nairobi, which defines its eastern and south-eastern boundaries.

The key objectives of the ISUDP are to:

- Clarify the boundaries of the planning area to facilitate effective development control;
- Analyse demographic changes and its impact on service provision;
- Identify development constraints, potentials, and challenges of the planning area (social, economic, infrastructure and environmental profiling) and provide strategies to address them;
- Identify environmental issues and propose strategies for effective environmental management including, amongst others, climate change adaptation and disaster risk reduction and management measures;
- Allocate sufficient space for various land uses, including recreation and open spaces, to ensure efficient function and convenience of users and accommodate future growth.

This Plan conforms with and is informed by the national aspirations, the physical planning statutes and strategic directions provided by the Vision 2030 and National Spatial Plan (NSP). Two approaches were adopted, that is, integrated and strategic in the plan preparation, which incorporated participatory methods. The integrated approach included metropolitan-wide studies that contextualised the Sub-County's environmental setting, transportation linkages and functional role in the Nairobi Metropolitan Region (NMR) and Kenya, in general. The strategic approach was applied to several aspects of the Plan. First, in determining the functional role of the Sub-County within the NMR and key requirements to ensure the realisation of this. The strategic approach was also characterised by determining key interventions that would yield the most benefits such as by putting forward transit-oriented development proposals to improve the efficiency of land use as well as the viability of transportation systems.

Karuri Town is the traditional centre of the Sub-County. The town was established as a meeting centre in the pre-colonial era where Kikuyu Paramount Chief used to meet for deliberations. The town is named after the chief, Karuri wa Gakure. The Sub-County is positively identified with the rich, arable agricultural land the supports production of varied cash crops such as coffee, tea, horticulture, and subsistence ones, namely, maize, beans, and vegetables.

Physiographically, the Sub-County is situated in a region of relatively high altitude ranging from 1500m to 1800 m above sea level which supports the flow of Koski, Rui-Ruaka, Ruini and Karura Rivers, drawing from the Aberdare ranges. Due to its proximity to Nairobi and location on the main highway linking Nairobi to other towns, Kiambaa Sub-County has been attracting investors, particularly in housing developments. Its proximity to Kenya's capital city and adequate road transportation has attracted residents to Kiambaa Sub-County.

This Plan has identified the key constraints to sustainable development in the Sub-County to include ineffective land use planning and development control which is as a result of weak institutional capacity, deteriorating natural and physical environment, and loss of linkages between urban and rural areas. This has led to poor service delivery, loss of natural aesthetics and beautiful landscapes and irregular development patterns in urban and rural areas.

To address these development challenges, the Plan provides for balanced and controlled development. It defines the strategic development directions based on the significance of Kiambaa Sub-County in the NMR, by promoting the main urban growth nodes of Karuri, Ruaka, Gachie and Ndenderu; protecting environmentally sensitive areas; enhanced comparative advantage of ecological zones; Transit-Oriented Development (TOD); decentralised planning; and quality living.

Guided by its physical, social, and economic potential, the stakeholders, through a multi-sectoral workshop, developed their shared vision for Kiambaa Sub-County which is to be '**A vibrant regional service, commercial and residential hub.***"* The County Government's mission statement with regard to this vision was also determined by the stakeholders during the same multi-sectoral workshop. The mission statement is to "**Realize sustainable Sub-County growth that attracts regional investments in urban services and provide value addition.***"*

The key goals of the Plan were likewise developed by the stakeholders. These are to:

- Promote local economic growth through the provision of physical and social infrastructure that supports investment and entrepreneurship; and
- Put in place a sound environmental management system for sustainable development.

A preferred development model that is most responsive to the vision and goals for the Sub-County was then developed through another set of stakeholders' workshops and discussions. The stakeholders' preferred model is referred to as the Multi-Nodal Transport Oriented Development Model which is based on the following components:

- Intensified land use within a radius of 400m to 800m around transit node;
- Improving connectivity through upgrading existing roads and incorporating non-motorised transport (NMT);
- Develop and enforce guidelines to control development;
- Designates hierarchy of nodes based on the allocation of functions (Karuri-commercial and administrative); and
- Promotes mixed-use development.

Sub-County's Land Use Plan is reflective of the preferred development model. The Land Use Plan is structured in a way that it provides a balance in the physical, social, and economic character of the towns in Kiambaa Sub-County by enhancing it to attract more people in developed high-density areas. This will act as counter magnets for pulling away the undesirable growth zones away from the agricultural areas under coffee and tea plantations; the environmentally fragile areas such as watersheds and rivers as well as reduction of land subdivision amongst the poor and economically underprivileged in such of high gains of land transfers.

The Land-use plan is supported by Action Plans which are area-specific interventions that provide focused proposals based on prioritised problem areas and objectives. These have been accompanied by urban design interventions for illustrative purposes and are prepared within the overall framework of the preferred development model. Thus, Action Area plans were prepared for the Karuri CBD comprising Karuri/Banan town and Northern By-Pass corridor.

The Zoning Plan has also been developed as another tool to implement the Land Use Plan. The Zoning Plan delineates residential, commercial, industrial, recreational, and agricultural; transport, public purpose and public utility, land use in the Sub-County. Zoning has been done to control the physical development of the land and the types of uses that each individual space shall be put to use and thereby ensuring proper planning of Kiambaa Sub-County to achieve the desired built urban environment.

The Plan's sectorial strategies revolve around the following priorities:

- Promote the growth of the residential development sector through the provision of pedestrian-friendly infrastructure and implementation of affordable housing schemes;
- Provide efficient and reliable connectivity to all areas through improved road network and supporting facilities including those for non-motorised transport (NMT);
- Promote conservation measures that will protect the environment;
- Delivery of quality, accessible, and affordable social services, and infrastructure;
- Delivery of quality, sustainable, accessible, and affordable physical infrastructure to include clean water supply, waste management, storm drainage, and electricity;
- Strengthen the local economy by encouraging the growth of internal and external investments;
- Enhance and stabilise revenue collection at both the County and Sub-County levels; and
- Put in place disaster risk management measures particularly to mitigate floods, curb the occurrence of fires, ensure the construction of structurally-sound buildings, minimise the risk of landslides, and reduce road accidents.

It is envisaged the County Planning Unit (CPU), headed by the County Director of Physical and Land Use Planning, shall play a strategic role and duty in the implementation of this Plan following the provisions of the County Government Act (2012).

A Capital Investment Plan (CIP) has also been developed to guide the implementation of projects that were identified in the ISUDP. The CIP includes 'quick-win project' such as the upgrading of Karuri and Ruaka CBDs and construction of key facilities in Kawaida, Ndenderu, Muchatha, and Gachie such as a bus park, market, NMT facilities, and solid waste transfer stations.

The CIP also includes sectoral projects that will be implemented over the short and long-terms of the ISUDP. Sectoral projects include those for natural resources and environment, social infrastructure, local economy, urban and rural development, urban design, multi-modal transportation, and housing.

A Monitoring and Evaluation (M&E) Framework that is intended to facilitate the assessment of the effectiveness of the ISUDP's implementation has also been prepared. The M&E Framework includes physical planning indicators and their means of verification. The role of M&E will be anchored within the CPU.

ABBREVIATIONS AND ACRONYMS

CBD	Central Business District
CIDP	County Integrated Development Plan
CSP	County Spatial Plan
ECDE	Early Childhood Development Education
GIS	Geographic Information System
ICT	Information and Communications Technology
ISUDP	Integrated Strategic Urban Development Plan
KNBS	Kenya National Bureau of Statistics
KPLC	Kenya Power and Lighting Company
Kshs	Kenyan Shilling
KUSP	Kenya Urban Support Programme
KWFT	Kenya Women Finance Trust
MoTIHUD&PW	Ministry of Transport, Infrastructure, Housing, Urban Development and Public Works
NaMSIP	Nairobi Metropolitan Service Improvement Project
NEMA	National Environment Management Authority
NLC	National Land Commission
NMR	Nairobi Metropolitan Region
NMT	Non-motorised Transport
NSP	National Spatial Plan
SMEs	Small and medium-sized enterprises
SPC	Spatial Planning Concept
SWOT	Strengths-Weaknesses-Opportunities-Threats
TOD	Transit-Oriented Development
ToR	Terms of Reference

PART I: INTRODUCTION AND PLANNING CONTEXT

1. INTRODUCTION

1.1 Background

The preparation of the Kiambaa Integrated Strategic Development Plan (ISUDP) (herein referred as the Plan) 2020-2030 is part of Component 1 on Institutional Reform and Planning of the Nairobi Metropolitan Service Improvement Project (NaMSIP). NaMSIP is an initiative of the Government of Kenya Government (GoK) to address different elements of urban development and contributes to its governance, growth, and improved environmental management agendas. It is supported by the World Bank under the Country Partnership Strategy (CPS) which emphasizes the themes of growth, equity, and environment, with a special emphasis on governance.

The Nairobi Metropolitan Region where Kiambaa Sub-County is located is a national, regional, and international strategic centre for education, commerce, transport, regional cooperation, and economic development. It connects eastern, central, and southern African countries. It plays a significant role in the global, regional, and local economy, and is a centre of international diplomacy, finance, banking, and commerce.

One of the major problems and challenges facing the Sub-County is its rapid urban growth against the declining quality of the environment. Key urban centres are experiencing rapid growth and development that is unplanned, uncoordinated, and uncontrolled. As a result, these urban areas are experiencing several development challenges which include inadequate housing and mushrooming of informal settlements, unemployment, environmental degradation, inadequate infrastructure, services and facilities, an escalation in crime incidence, and social distress. Other problems include excessive and uncoordinated piecemeal subdivisions of privately owned land without approved planning schemes and uncontrolled developments without requisite expansion or upgrading of utilities and services.

In light of the above, there is an urgent need to look at urban development of the Sub-County from a perspective that integrates physical, economic, social, cultural, environmental, and institutional aspects. There is a need to align urban development planning with the on-going socio-economic and political reform and transformation in the country, which requires a major shift in planning by utilizing a strategic planning approach.

Thus, under the auspices of NaMSIP, the Kiambaa Sub-County ISUDP has been prepared to support the identification and implementation of critical urban services that will allow the Sub-County to meet the needs of businesses and residents. Investment in infrastructure also contributes to improve the competitiveness of Kiambaa Sub-County as a place to live and invest in. Some of the areas targeted for improvement in the ISUDP include transport systems, solid waste management, stormwater management, water supply and sanitation, disaster management, security/street lighting, and social services, amongst others.

Consequently, this ISUDP has identified priority programmes that can transform the Sub-County into a vibrant and well-planned human settlement. With effective implementation, this should be reflected in improved quality of living and working environments of residents, enhanced revenue to the County Government of Kiambu, and efficient transport system. Moreover, the ISUDP provides for the full exploitation of opportunities for expansion of agro-industrial development and rural-urban linkages.

1.2 ISUDP Concept

The ISUDP concept is anchored on looking "at urban development from a perspective that integrates physical, economic, social, cultural, and environmental as well as institutional aspects in urban planning." It also seeks "to align urban development planning with the on-going socio-economic and political reforms and in the country" and employs a "strategic planning approach that is more flexible and development-oriented that is desirable to catalyse the government's economic recovery strategy for wealth and employment creation" (Project Terms of Reference (ToR)).

The strategic planning approach mentioned above involves the identification of "priority programmes and projects that can transform the Sub-County into a vibrant well-planned satellite town of Nairobi City that taps on the advantage of its proximity to the capital city" (Project ToR). It is focused on identifying means to improve living and working environments, generate more employment opportunities, enhance local government revenues, create efficient transport systems, exploit opportunities for industrial growth and urban linkages, and imbue towns with unique urban forms and character through innovative urban design.

The key planning principles that underlie plan preparation are also provided in Project ToR as follows:

- Consultative/participatory process allows for public participation and ownership of plans as the basis for shared responsibility for implementation;
- Strategic process which requires a focused approach, and a systematic search for the most appropriate and effective solution, keeping in mind given municipal resources, and overall policy guidelines and principles;
- An integrated approach, which requires thinking and acting holistically across conventional sectorial boundaries. Functional integration with the purpose of improving availability and accessibility; reducing travel and transport needs; and improving convenience for those with fewer resources. Integration as a tool for promoting sustainability;
- The ISUDP should provide equal access to services and facilities; provide for functional, socio-economic, cultural, and ethnic interaction; provide for economic development and employment; facilitate institutional cooperation and encourage community participation;
- Create a balance between natural and physical environments, viable economic systems and greater integration, equity, and responsibility; and
- Promote gender mainstreaming to incorporate the needs and aspiration of men and women.

1.3 Purpose of the Plan

The purpose of this ISUDP as provided in the ToR includes:

- Articulating the aims of the national and county governments for the area together with strategies, policies and general proposals which are intended to achieve those aims;
- Providing a framework for detailed development policies and proposals for the Kiambaa Sub-County;
- Indicating action areas for immediate development or re-development; and

- Providing a coordinated basis upon which various implementing agencies can develop their individual programmes of work for which they have executive responsibility, for example, housing, transportation, water supply, electricity supply, sewerage development, etc.

1.4 Specific Planning Challenges for Kiambaa Sub-County

The key planning issues that face Kiambaa Sub-County include the following:

- Urban sprawl, and unplanned and uncoordinated urban growth especially along the transport corridors;
- Uncontrolled land subdivisions without meeting planning standards and encroaching into rich agricultural areas;
- Lack of an updated development plan that could form the basis for planning decisions;
- Inadequate infrastructural services such as narrow roads, lack of sewer, water supply, waste disposal and stormwater drainage;
- Environmental degradation and encroachment on riparian reserves and other fragile areas;
- Poor quality housing and inadequate community services such as schools, health facilities, community halls and recreation areas;
- Unemployment and declining employment opportunities that lead to a high rate of youth unemployment;
- High incidences of urban poverty;
- Proliferation of informal settlements;
- High crime levels;
- Poor coordination amongst relevant government authorities, private sector and other actors on planning and projects implementation; and
- Ineffective engagement and participation of local communities and the private sector in planning and development activities.

1.5 Objectives of the Plan

According to the ToR, the objectives of the Plan are:

- To determine the boundaries of Kiambaa Sub-County considering projected requirements for urban land within the plan period;
- To analyse demographic changes in the last ten years and those expected over the life of the Plan, and how these relate to economic changes, welfare, and administrative shifts;
- To identify development constraints, potentials, and challenges of the Sub-County (social, economic, infrastructure and environmental profiling) and propose strategies to address them;
- To identify environmental issues and propose strategies for effective environmental management including, amongst others, climate change adaptation and disaster risk reduction and management measures;
- To allocate sufficient space for various land uses, including recreation and open spaces, to ensure efficient function and convenience of users and accommodate future growth;

- To uphold innovative civic and urban design that enhances the character and form of Kiambaa Sub-County;
- To provide a basis for development control and investment decisions; and
- To develop an implementation plan and monitoring framework.

1.6 Scope of the Plan

1.6.1 Geographical scope

The geographical scope of the Plan comprises the current administrative boundaries of Kiambaa Sub-County. This includes the major urban nodes and rural areas. The planning area is located at the south of Kiambu County and northwest of Nairobi City, which defines its eastern and south-eastern boundaries.

1.6.2 Scope of Planning Tasks

In accordance with the ToR, the preparation of this plan involved the following tasks:

- Delineation of the planning boundaries of Kiambaa Sub-County;
- Preparation of an elaborate base map showing the existing spatial structure of Kiambaa Sub-County to include planning boundaries, existing road network, landmarks, major natural features, and topography;
- Carrying out a contextual analysis of Kiambaa Sub-County and its environs;
- Undertaking a land-use and socio-economic study and survey of Kiambaa Sub-County, accommodating all the changes that have occurred over time and projecting future changes, and comparing how these changes compare in the metro region and county;
- Undertaking an assessment of transport, infrastructure and utility needs, housing, and community services. This will include mapping of the transport, infrastructure, and utility network of Kiambaa Sub-County;
- Detailed study on the redevelopment of the central business district (CBD);
- Identifying suitable land for residential, industrial, education, recreational, public purposes, commercial, public utilities, transportation, and other uses applicable to Kiambaa Sub-County;
- Analysing administration and institutional requirements in planning and development;
- Projecting land use, infrastructure and services required over the plan period;
- Preparing a detailed short term, 10-year land-use plan for Kiambaa;
- Preparing detailed 10-year sectorial development plans in support of the land use plan for Kiambaa Sub-County;
- Preparing individual implementation plans to include proposed requisite resource and institutional frameworks; and
- Preparing zoning plans for Kiambaa Sub-County with requisite development densities and guidelines.

1.7 Outputs/Deliverables of the Plan

The outputs of this Plan include:

- Spatial plan covering the entire Sub-County;
- Action area plans;

- Detailed transportation strategy;
- Detailed environmental strategy;
- Detailed housing strategy;
- Detailed social facilities strategy;
- Detailed local economy strategy;
- Detailed investment strategy;
- Financing and revenue enhancement strategy; and
- Digitized plan for the Sub-County.

1.8 Vision and Mission of the ISUDP

A participatory approach in the formulation in the shared vision for the Sub-County and mission statement of the County Government was informed by views of various stakeholders who were involved in the ISUDP preparation process. The community vision for the Sub-County is to be "**A vibrant regional service, commercial and residential hub."**

In order to achieve the shared vision, the County Government's mission is to "**Realize sustainable Sub-County growth that attracts regional investments in urban services and provide value addition."**

To achieve the vision and mission of this ISUDP, the key goals are:

- To promote local economic growth through the provision of physical and social infrastructure that supports investment and entrepreneurship; and
- To put in place a sound environmental management system for sustainable development.

1.9 Methodology

1.9.1 Preparatory stage

The preparatory stage in the preparation of this Plan involved profiling, transect surveys, and preparation of the Inception Report and Project Design Report. Profiling involved scanning general aspects of Kiambaa Sub-County to appreciate the challenges and opportunities. The outputs were the refinement of the problems and objectives of the plan. Transect surveys involved undertaking reconnaissance surveys of the planning area. The output at this stage were: identification and appreciation of the towns major planning issues, challenges and opportunities in line with metropolitan spatial development plan; delineation of the planning area and consolidation of the base maps as provided for by the Directorate of Nairobi Metropolitan Development (DoNMED) and County; and preparation of the Inception Report. The Project Design Report involved fine-tuning of the scope and timeframe of the ISUDP, and preparation of the detailed work plan.

1.9.2 Sensitization

Sensitization of key stakeholders was carried out through publication of a Notice of Intention to Plan. This was done in collaboration with the Director of Metropolitan Planning & Environment (DoNMED), Director of Physical Planning (Land) and the County. This was followed by stakeholders' engagements through direct interviews and focused groups discussions (FGD) which led to stakeholders' workshops where broad ranges of participants were involved in validating the situational analysis and formulation of the shared vision and goals.

1.9.3 Data Collection

A variety of methods were used in order to capture all the data required for planning in such a complex and diverse situation, a variety of methods were used. First, there were surveys to capture household characteristics, economic activities and so on to plan for. Second, focus group discussions not only in the slums but also in the towns, corridors, peri-urban and rural areas to capture data on upgrade expectations/fears, sacred places/heritage sites, infrastructure needs, social problems and so on to plan for were conducted. Third, key informant interviews with key actors were conducted to capture data on the status of social infrastructure, population patterns and respective needs and infrastructure needs amongst others. Fourth, the data collection endeavoured to the extent possible to seek to access all existing secondary data on population size, density and trends, economic activities, access to social infrastructure and so on. The data capture tools used include interview schedules, focus group discussion guides, and key informant interview guides. These included consultations with stakeholders which were done through the following manner:

- **Focus group discussions (FGDs):** These involved stakeholders in the slums, towns, corridors, and peri-urban and rural areas to capture information on their expectations/challenges, infrastructure needs, and social problems, as well as to identify sacred places/heritage sites.
- **Key informant interviews:** These were used to collect data on the historical as well as current socio-economic, environmental, land use and infrastructural information. They include officials from The Ministry of Lands, Housing and Urban Development, County Director of Physical Planning, Kenya Urban Roads Authority, Kenya National Highways Authority, Kenya Roads Board, Ministry of Energy and Petroleum, and Ministry of Transport and Infrastructure, amongst others.
- **Comprehensive Stakeholder Forums:** These included multi-sectorial consultations to establish the key development challenges on transport, access to amenities and community facilities and the challenges involved, amongst others. Some of the key meetings include the first stakeholders meeting to present key study findings, refinement of the Sub-County's problems, visioning and setting the specific objectives of the ISUDP**.** Other forums included the presentation of Alternative Development Proposals and draft plans for stakeholder's validation.
- **ISUDP Publication:** The ISUDP was publicized for two weeks to solicit and incorporate relevant public comments.

Secondary data were collected through desk studies from past reports and publications in the planning area. This was carried out before field visits were made with the objective of clearly identifying data gaps to be collected. Reports such as publications, topo-cadastral maps and land-use plans were reviewed to give clear insights into Kiambaa Sub-County. It also included reviews of existing plans, policies, and statutes. Some of the documents reviewed are Kenya Vision 2030 and its two Medium Term Plans; County Integrated development plans for Kiambu County; The Nairobi Integrated Urban Development Masterplan (NIUPLAN), 2014-2030; Nairobi Metro Vision 2030 Strategy; Kiambu County Spatial Plan, the Kenya Power and Lighting Company Master Plan; and the Konza City Master Plan, amongst others.

Field studies were carried out not only to fill information gaps which were identified during the desk studies but also to verify data. This involved collecting information on existing infrastructure conditions to assess the adequacy and functioning of existing facilities. The field studies also assisted in verifying data collected from secondary sources, identification of planning issues,

potential problem areas, and existing and future development potentials of the project areas. Some of the key techniques used to collect various types of data included:

- **Reconnaissance Surveys:** Observations were undertaken to provide information on land use patterns, environmental conditions, traffic volumes by day/hour, and direction and types of vehicles, amongst others.
- **Conducting Origin-Destination** (O-D) studies to determine the nature of traffic and the present volume of freight and passenger movements. The O-D studies were also used to establish the current traffic flow pattern, and to use the data to forecast future patterns. Other information obtained included the number of trips into, within, and through a connection; and time of day, mode of travel and number of occupants in a vehicle during a trip; current travel patterns; areas that generate the most traffic; and adequacy of transport facilities; and flow rates and road safety; and people's perception of the transport system.
- **Roads Inventory and Condition Surveys:** These involved determining the surface type of the roads (e.g. paved or gravel), the surface condition (e.g. good or fair), the road classification (e.g. class a) and length of the road in the project areas. It also involved determining conditions of other utilities such as water, drainage, and sewer systems.
- **Map preparation** was carried out using surveying and Geographic Information System (GIS) software and saved into distributable formats easily understood outside surveying and GIS profession. Field validation was carried out using a handheld Global Positioning System (GPS) receiver pre-set to the national grid system. Gaps found in the supplied maps were filled using handheld GPS equipment or current high-resolution imagery covering. Spatial data acquired in hardcopy formats were scanned, geo-referenced and digitised into vector maps on the same coordinate system as the base map. Datasets that were acquired in hardcopy formats included registry index maps (RIM) showing the land subdivision, administrative maps, existing and proposed road networks, fibre optic cable network, power distribution network, etc.

1.9.4 ISUDP Formulation

Formulation of the ISUDP was based on thematic studies which involved detailed analysis of secondary and primary data, and the identification of critical planning issues. The findings of the thematic studies were presented to key stakeholders for validation. Based on validated situational analysis, a draft plan and development proposals were prepared, modelled, and presented in a spatial context showing desired outcomes, alternatives, strategies and programmes. The output was presented to a stakeholders' forum for comments. This was followed by the formulation of alternative development proposals and selection of preferred alternative to inform land management and investment decisions. A stakeholders' meeting focussing on the presentations of the draft plan proposal and preferred models was then organised to gain consensus on the preferred plans and strategies.

1.9.5 Approval

Approval of this ISUDP will be in line with provisions of Section 50 of the Physical and Land Use Planning Act 2019. This entails the presentation of the Plan to the County Assembly for approval and onward gazettement by the County Executive Committee Member in charge of physical planning and land use. The output will be a gazetted plan for implementation for the period 2020-2030.

2. PLANNING CONTEXT

2.1 Historical Development of Kiambaa Sub-County

The earliest settlers in the Sub-County were the Kikuyu people. As time went by, trade and other human activities led to the influx of more people who brought diverse cultures and traditions. At the beginning of the 20th Century, residents spoke Swahili and English, as well as Kikuyu. The area developed further grew and expanded because of tea, coffee, and farming of other food crops.

During the colonial period, British and other Europeans farmers settled in the area and occupied area location which formed part of the "white highlands," a term used to claim white man ownership of the occupied land hence leading to expulsion of Africans from their land. They settled with the support of the colonial government and established tea and coffee plantations, cereal farms, and ranches. The area became the largest tea and coffee exporting zone of the country, attributed to the putting up of tea and coffee industries. Over time, milk production and processing formed the industrial character of Kiambaa and attracted many employees, who currently work in both agricultural and manufacturing-based industries.

The headquarters of the Kiambaa Sub-County government administration are in Karuri Town which combines Karuri and Banana Towns. The town was established as a meeting centre in the pre-colonial era where Kikuyu's Paramount Chief used to meet for deliberations. The town is named after a paramount chief, Karuri wa Gakure. It is well known internationally for its Banana Hill suburb, which is considered a centre for contemporary arts and is home to the Banana Hill Art Studio.

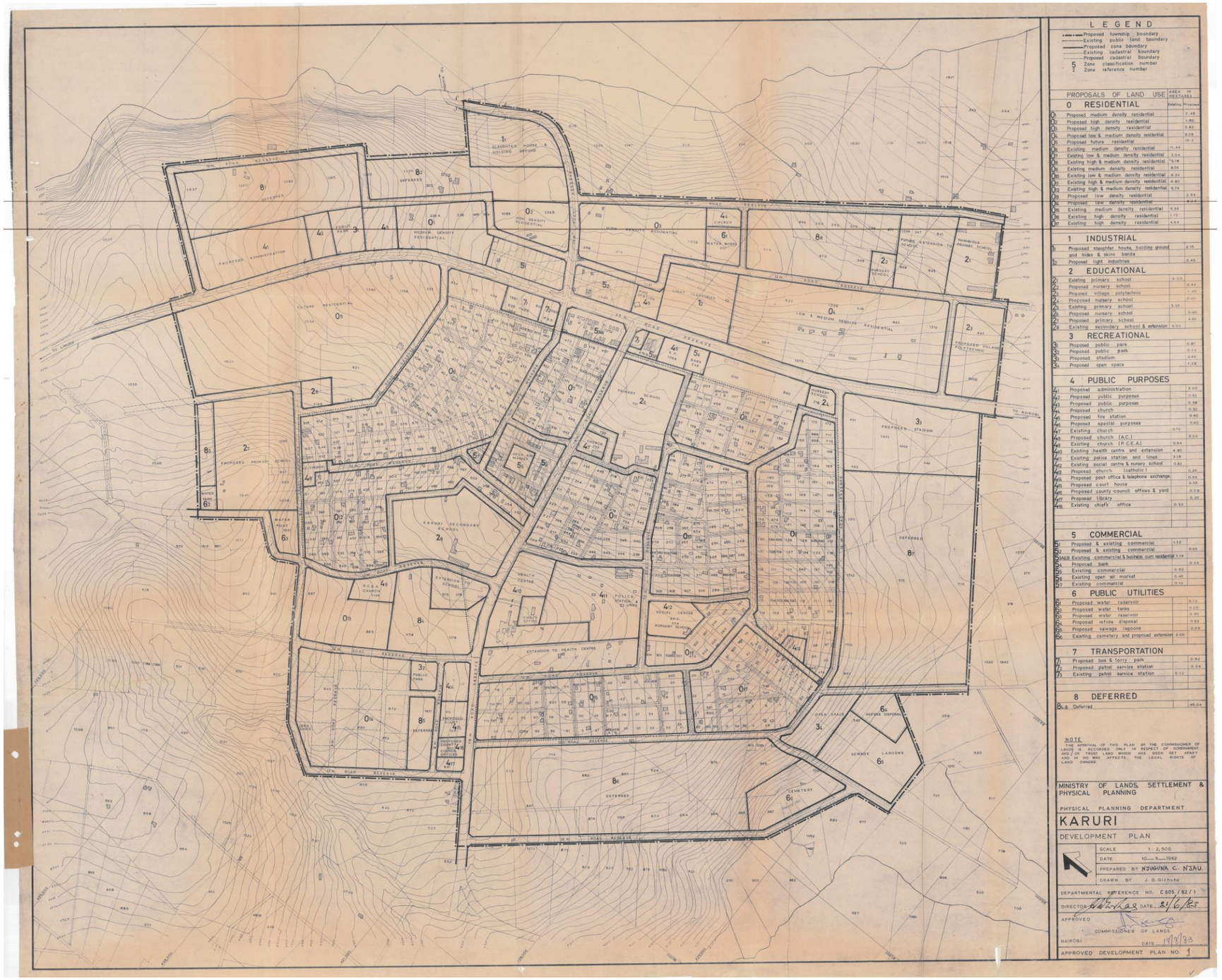
Other major urban centres in the Sub-County are Ruaka, Gachie, Muchatha and Ndenderu.

Kiambaa is one of the 12 sub-counties in Kiambu County and has been gazetted as one of the six (6) municipalities in the County.

2.2 Previous Planning Attempts

The plan that is in use at the time of the preparation of this ISUDP was prepared by the Physical Planning Department of the then Ministry of Lands, Settlement and Physical Planning in the year 1982 and approved in the following year. As of 2020, the plan has been in use for the last 36 years. Evidently, it has been overtaken by events owing to population growth, urbanisation, and lack of updating.

The said plan only covered Karuri town which is only a small portion of the entire planning area. This left the hinterlands unplanned and their development uncontrolled. Developments have expanded into agricultural lands which have been subdivided into smaller plots for residential use without considering any planning standards. A lot of the planning challenges facing the Sub-County can be traced to this piecemeal nature of land subdivision and change of user without being guided by a comprehensive spatial plan. Map 2-1 shows the 1982 Physical Development Plan for Karuri town. The preparation of this ISUDP aims at addressing this gap.



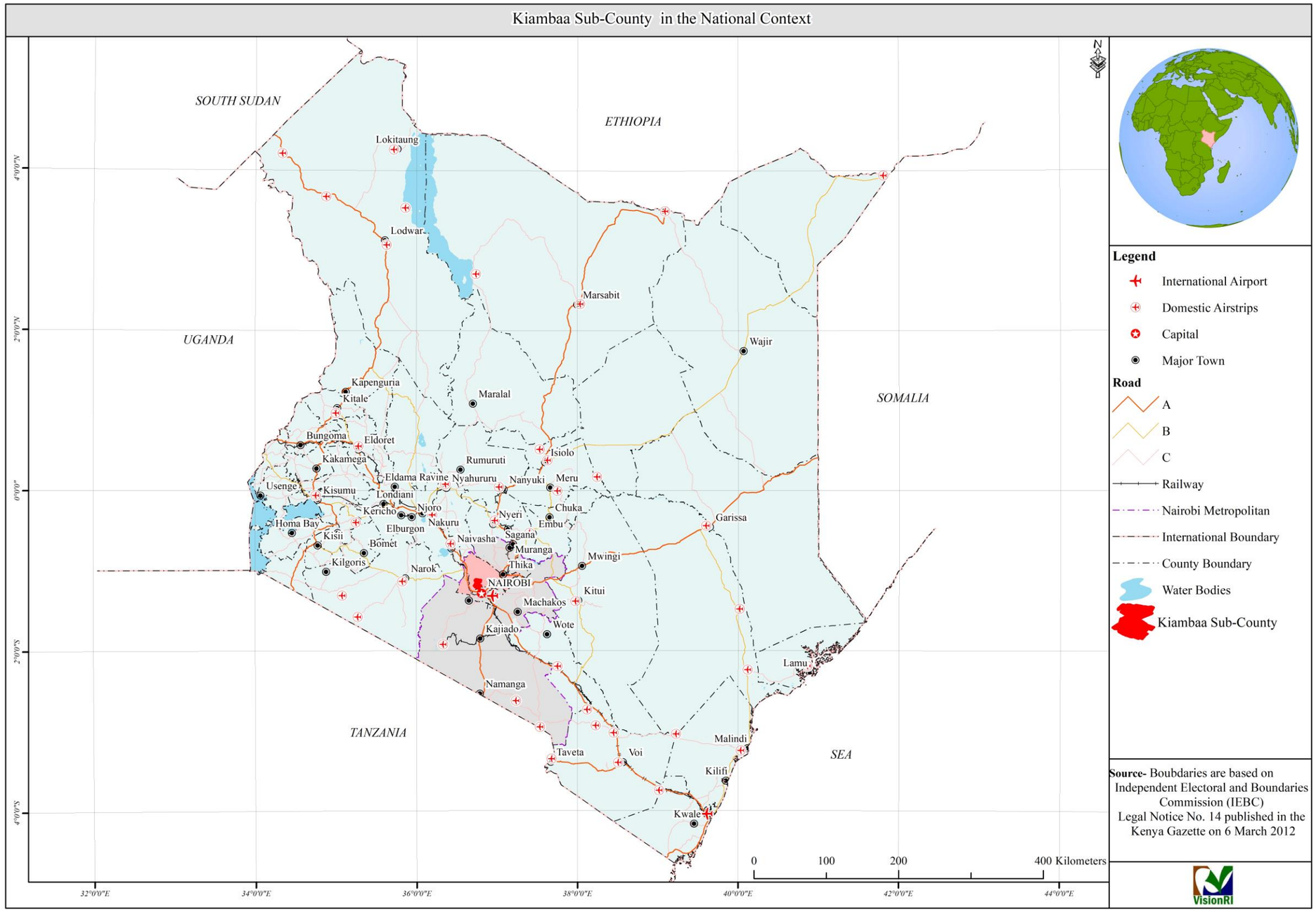
Map 2-1: 1982 Karuri Town Development Plan

Source: Kiambu County Government – Physical Planning Department

2.3 Geographic Location and Size

2.3.1 National Context

Kiambaa Sub-County is located in Kiambu County. Kiambu County borders Nairobi and Kajiado counties to the South, Machakos to the East, Murang'a to the North and North East, Nyandarua to the North West, and Nakuru to the West as indicated in Map 2-2. The County lies between latitudes 00° 25' and 10° 20' South of the Equator and Longitude 360° 31'and 370° 15' East.

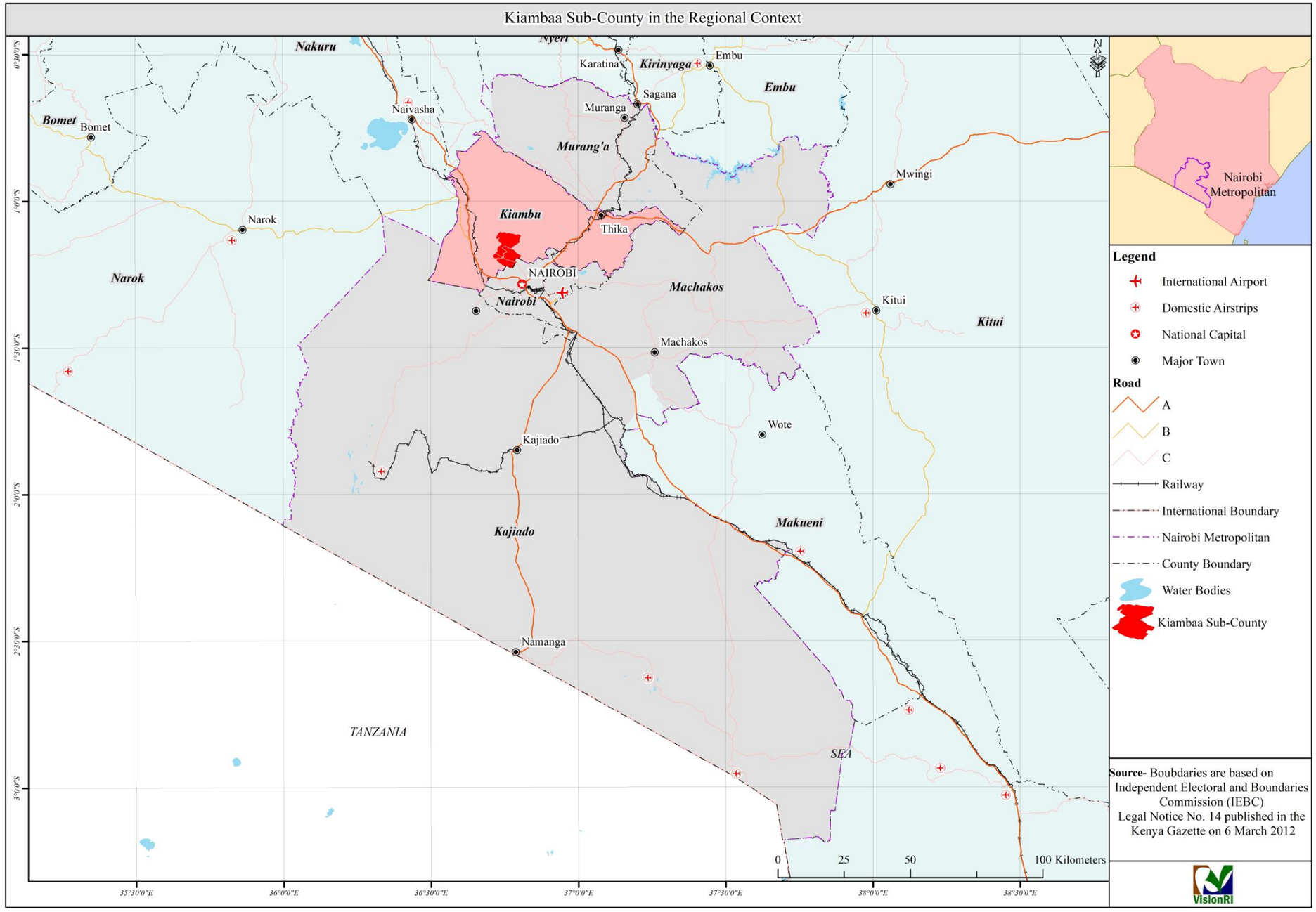


Map 2-2: Location of the Planning Area in the National Context

Source: VisionRI

2.3.2 Regional Context

The Sub-County forms part of the Nairobi Metropolitan Region along with Ruiru, Thika, Limuru, Kiambu, Juja, Kikuyu, Mavoko, Kitengela, Ongata Rongai and Ngong', amongst others.

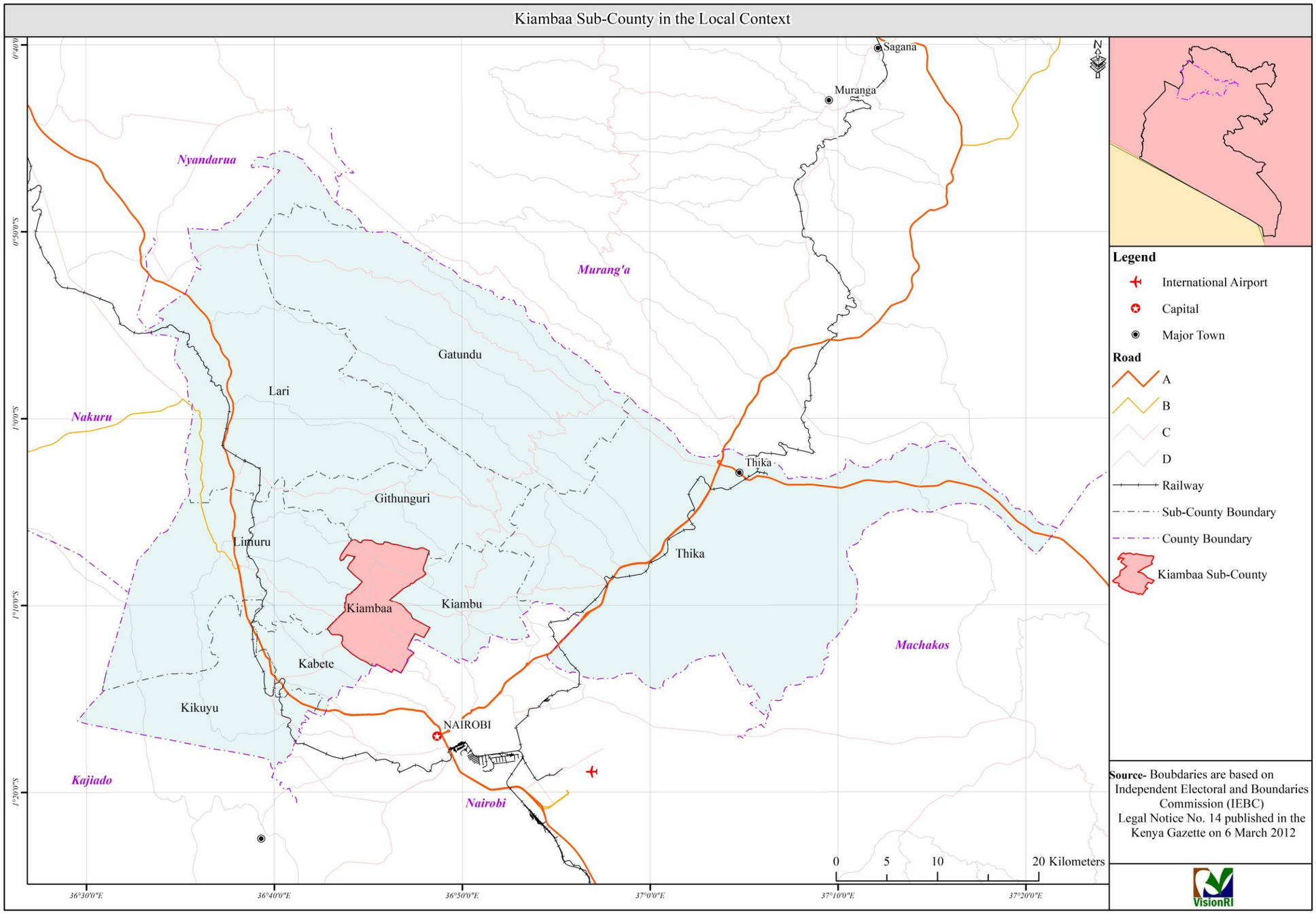


Map 2-3: Location of the Planning area in the Regional Context

Source: VisionRI

2.3.3 Local Context

The Sub-County borders Githunguri Sub-County to the North, Kiambu Sub-County to the east, Limuru to the west and Kabete to the south-west. Nairobi County defines its southeast border. It enjoys a strategic location in the Nairobi Metropolitan Region (NMR) with the main access being via Kiambu road, Limuru road and Northern Bypass. It is about 20 kilometres from Nairobi. The town is found within the longitude 36° 45' 23" E and latitude 1°10'35" S.



Map 2-4: Location of the Planning area in the Local Context

Source: VisionRI

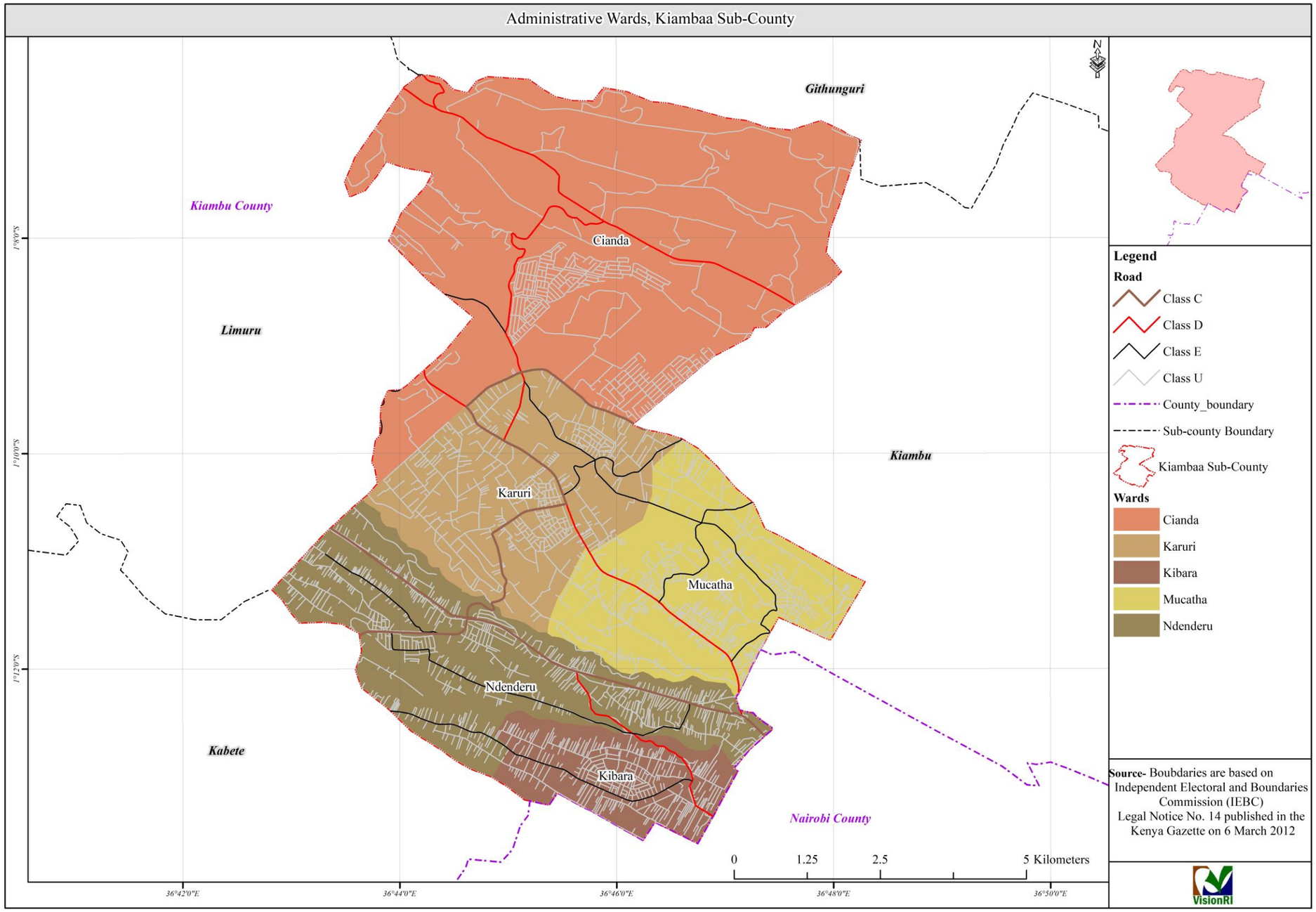
2.4 Administrative Units

The Sub-County is composed of five wards with 15 sub-locations whose respective land areas are presented in the table below.

Table 2-1: Administrative and Political Units

Ward	Sub-location	Area in hectares		Share in % area
		Ward	Sub-location	
Cianda	Cianda	3669	2103	44.1%
	Kawaida		1566	
Karuri	Karuri	1445	427	17.36%
	Njiku		618	
	Kiambaa		400	
Muchatha	Gathanga	1176	559	14.13%
	Muchatha		316	
	Njoro		301	
Ndenderu	Ndenderu	1495	331	14.96%
	Karura		250	
	Wangunyu		257	
	Ruaka		250	
Kihara	Kihara	536	270	8.69%
	Gachie		256	
Total		8,321 Hectares		

Source: Kiambaa sub-County Office



Map 2-5: Administrative Units in Kiambaa

Source: VisionRI

2.5 Legislative Context

2.5.1 National Laws

i. **Constitution of Kenya, 2010:** The Constitution of Kenya, 2010 provides the overarching legislation that guides the preparation of this ISUDP. Through the objects of a devolved system of government, the Constitution places planning functions both at the national and county levels. Pursuant to the Fourth Schedule of the Constitution, the National Government is mandated to formulate the general principles of land use planning and coordination of planning by the counties, while counties are in charge of planning and development control within their area of jurisdiction.

Further to the above, the preparation of this ISUDP was guided by the spirit of participation of the people, human dignity, equity, social justice, inclusiveness, equality, human rights, non-discrimination and protection of the marginalised with the overall goal of attainment of sustainable development pursuant to Article 10 of the Constitution.

With regards to achieving the objectives of Article 60 of the Constitution, this ISUDP has observed various principles such as:

- Security of land rights;
- Sustainable and productive management of land resources; and
- Sound conservation and protection of ecologically sensitive areas such as forests, swamps, and wetlands.

Subject to Article 66 of the Constitution, this ISUDP has been adopted by the County Government of Kiambu (established under Article 176) in a bid to support the overall state mandate of regulating the use of any land, or any interest in or right over any land, in the interest of defence, public safety, public order, public morality, public health, or land use planning.

Lastly, the overall implementation of this ISUDP will be overseen and monitored by the National Land Commission (NLC) established under Article 67. Other functions to be performed by NLC with regards to the implementation of this ISUDP include amongst others: to manage public land on behalf of the County Government of Kiambu, to conduct research related to land and the use of natural resources, and make recommendations to appropriate authorities; to initiate investigations, on its own initiative or a complaint, into present or historical land injustices, and recommend appropriate redress as well as to encourage the application of traditional dispute resolution mechanisms in land conflicts within the county.

ii. **County Governments Act, 2012:** The County Governments Act 2012 mandates the County Governments to prepare county plans which include "cities and urban areas plans," amongst others. The said Act provides that the "county planning framework shall integrate economic, physical, social, environmental and spatial planning" (Article 104(2)). The key principles of planning and development facilitation require the integration of national policies and plans in all processes and concepts and further serve as a basis for engagement between county government and its citizenry, other stakeholders, and interest groups.

Other relevant sections of this Act to the preparation of this ISUDP include:

- Section 102 (c) and 103 (f) that provide for the protection and integration of the rights and interest of minorities and marginalized groups and communities and the integration of under-developed and marginalized areas to bring them to the level generally enjoyed by the rest of the Country; and
- Sec 103 (i) that provides for the achievement and maintenance of a tree cover of at least ten per cent of the land area of Kenya as provided in Article 69 of the Constitution.

The Act also provides that all plans prepared for a County should be approved by the respective County Assembly.

iii. **Urban Areas and Cities Act, 2011:** This Act establishes a legislative framework for the classification of areas as urban areas or cities, their manner of governance and management including the participation of residents. It also provides that Town Committees should "formulate and implement an integrated development plan" (Article 20(2-c)) as well as "control land use, land sub-division, land development and zoning…within the framework of the spatial and master plans for the (town) as may be delegated by the County Government (Article 20(2-d))." The integrated development plan "shall bind, guide and inform all planning development and decisions and ensure comprehensive inclusion of all functions" (Article 36(2).

iv. **Physical and Land Use Planning Act (13 of 2019):** This Act regulates physical planning activities in Kenya. It empowers County Governments to regulate development within their areas of jurisdiction. Further, it empowers the Director of Physical Planning to prepare various types of physical and land use development plans. In addition, the Director formulates National, Regional and Local Physical development policies, guidelines, and strategies.

Under Article 20 of this Act, the County Director of Physical and Land Use Planning's responsibilities include: advising the County Government on physical and land use planning matters that impact the County; formulating County physical and land use planning policies, guidelines and standards; preparation of County physical and land use development plans; and preparation of local physical and land use development plans.

The Director also participates in the preparation of inter-county physical and land use development plans and carries out research on matters relating to physical, and land use development planning at the County level. In addition, the Director makes recommendations to the County Government on the establishment of planning units as may be necessary. The Act also stipulates the responsibility of the Director's office in maintaining the County land information system to guide physical and use planning; communicate decisions of the County Government on development applications, and issue development permissions and other development control instruments with the approval of the County Executive Committee Member.

Article 36 of the Act mandates each County to develop a 10-year physical and land use development plan. The plan should be in conformity with the National Physical and Land Use Development Plan and any relevant Inter-County Physical and Land Use Development Plan. According to Article 37 of the Act, the plan should provide an overall physical and land use development framework for the County; guide rural development and settlement; provide a basis for infrastructure and services delivery and direct the use and management of natural resources. In addition, the plan should enhance environmental protection and conservation; identify the proper zones for

industrial, commercial, residential and social developments; improve transport and communication networks and linkages, and promote the safeguarding of national security amongst other purposes that may be determined by the planning authority.

This Act lends guidance to the development of the contents of structure plans, development plans, advisory plans, zoning plans, and subdivision plans amongst other plans. The Act also stipulates the plan preparation and approval processes.

Article 56 of the Act empowers the Kiambu County Government to prohibit or to control the use and development of land and buildings in the interests of proper and orderly development of its area and to review development applications and grant development Permissions.

v. **Environment Management and Co-ordination (Amendment) Act of 2015:** This ISUDP seeks to ensure that every person has a clean and healthy environment and has the duty to safeguard and enhance the environment pursuant to Section 3 of Environment Management and Co-ordination Act (EMCA) (Amendment) of 2015. The entitlement to a clean and healthy environment in this ISUDP has included access by any person to various public elements or segments of the environment for recreational, educational, health, spiritual and cultural purposes. Other regulations that stem from EMCA (Amendment) Act of 2015 which have been considered during the preparation of this ISUDP include Environmental (Impact Assessment and Audit) Regulations, 2003; Air Quality Regulations, 2013 (Legal Notice No. 34); Waste Management Regulations, 2006 (Legal Notice 121); Water Quality Regulations, 2006 (Legal Notice No. 120); Controlled Substances Regulations, 2007 (Legal Notice No.73); Wetlands, Riverbanks, Lake Shore and Sea Shore Management Regulations, 2009 (Legal Notice No. 19); and Noise and Excessive Vibration Pollution (Control) Regulations, 2009 (Legal Notice No. 25).

2.5.2 County Laws

i. **The Kiambu County Valuation and Rating Act, 2016:** This Act is meant to facilitate the implementation of Article 209 (3) (a) of the Constitution that involves valuation and rating of land and for connected purposes. The purpose of this Act is to provide a framework for valuing and rating land in order to: ensure efficiency, accountability and transparency in the administration of valuation of land for rating; promote economic development; ensure equity and fairness in land valuation and rating system; and ensure compliance with payment of rates related to land. The Act has established the Directorate of Valuation and Rating whose functions include undertaking valuation; preparing the draft valuation and supplementary valuation rolls; administering the draft valuation rolls; preparing the schedule of rates; as well as advising the Executive Committee Member on the appropriate methods of rating, amongst others.

ii. **The Kiambu County Community and Neighbourhood Associations Engagement Act, 2016:** This Act gives statutory recognition to community and neighbourhood associations and effect to their initiatives in complementing the County Government's service delivery; to enable structured co-operation between the County Government, residents and businesses; to facilitate the activities of associations and organizations; and to give further effect to Articles 10 and 174 of the Constitution as regards the principle of participation of the citizens and for connected purposes.

2.5.3 Other Related Legislations

Table 2-2: Other laws applicable to planning

Laws	Purpose
The Land Laws Amendment Act, No 28, 2016	To amend the laws relating to land in order to align them with the Constitution, to give effect to Articles 68(c)(i) and 67(2)(e) of the Constitution, to provide for procedures on evictions from land, and for connected purposes.
The Kenya Roads Act, 2017	To provide for the classification, management, construction, and maintenance of public roads; to establish the Kenya National Highways Authority, Kenya National Urban Roads Authority and Kenya National Secondary Roads Authority; and to provide for their functions and powers and connected purposes.
The Government Lands Act, Cap 280	An Act of Parliament to make further and better provision for regulating the leasing and other disposals of Government lands, and for other purposes.
The Registration of Titles Act, Cap 281	An Act of Parliament to provide for the transfer of land by registration of titles.
The Land Titles Act, Cap 282	To make provision for the removal of doubts that have arisen in regard to titles to land and to establish a Land Registration Court.
The Registered Land Act, Cap 300	To make further and better provision for the registration of title to land, and for the regulation of dealings in the land so registered, and for purposes connected therewith.
The Wayleaves Act, Cap 292	Relating to wayleaves, and the processes involved in creating and management.
The Dairy Industry Act, Cap 336	To provide for the improvement and control of the dairy industry and its products.
The Land Acquisition Act, Cap 295	To make provision for the compulsory acquisition of land for public benefit.
The Land Act, 2012	To give effect to Article 68 of the Constitution, to revise, consolidate and rationalize land laws; to provide for the sustainable administration and management of land and land-based resources, and for connected purposes.
The Land Registration Act, 2012	To revise, consolidate and rationalize the registration of titles to land, to give effect to the principles and objects of devolved government in land registration, and for connected purposes.
The National Land Commission Act, 2012	To make further provision as per the functions and powers of the National Land Commission, qualifications and procedures for appointments to the Commission; to give effect to the objects and principles of devolved government in land management and administration and for connected purposes.
The Special Economic Zones Act, 2015	To provide for the establishment of special economic zones; the promotion and facilitation of global and local investors; the development and management of enabling environment for such investments, and for connected purposes.

Source: VisionRI

2.5.4 Other sectorial legislations

The other sectoral laws considered in this ISUDP are summarized below.

Table 2-3: Other Sectorial Laws

Laws	Relevance
Agriculture, Fisheries and Food Authority (2013)	Provides the confines within which to make proposals on agriculture promotion and conservation of soils and fertility for sustainable agriculture and optimization of land use.
Water Act (2002)	Provide guidelines on plan proposals touching on management, conservation, use and control of water resources, water supply, and sewerage services.
National Land Commission Act, 2012	Provides for County Land Management Boards which have important roles in processing development applications and allocation of public land as well as a National Land Commission that will monitor and have oversight responsibilities over land use planning throughout the country

Source: VisionRI

2.6 Policy Context

The key policy documents which have informed this ISUDP are briefly discussed in the following sections:

2.6.1 Global Policies

i. **Sustainable Development Goals (SDG)**: The 2030 Agenda for Sustainable Development was adopted by all United Nations Member States in 2015. It provides a shared blueprint for peace and prosperity for people and the planet, now and into the future. It defines global sustainable development priorities and aspirations for 2030 and seeks to mobilize global efforts around a common set of seventeen goals and targets.

   The goal that is most relevant to this ISUDP is Sustainable Development Goal 11: Sustainable cities and communities. This goal aims to make cities and human settlements inclusive, safe, resilient, and sustainable. To make cities sustainable for all, good and affordable public housing can be created, slum settlements can be upgraded, investments in public transportation made, green spaces developed, and have a broader range of people involved in urban planning decisions.

ii. **New Urban Agenda:** The New Urban Agenda represents a shared vision for a better and more sustainable future. A future in which all people have equal rights and access to the benefits and opportunities that cities can offer, and in which the international community reconsiders the urban systems and physical form of urban spaces to achieve this. The New Urban Agenda provides a roadmap for building cities that can serve as engines of prosperity, inclusion and centres of cultural and social well-being while protecting the environment. It also provides guidance for achieving the SDGs as well as the underpinning actions to address climate change and a framework for urban policies, urban planning and design and urban governance, rules, and regulations to enhance municipal finance.

2.6.2 National Policies

i. **Kenya Vision 2030:** As the country's development blueprint covering the period 2008-2030, Kenya Vision 2030 aims to achieve a "globally competitive and prosperous country with a high quality of life by 2030."

In support of this vision (economic pillar), Kiambaa's ISUDP seeks to increase the level of value addition of local agriculture products such as tea, cereals, seedlings, cheese, ghee, yoghurt, milk, feeds, and horticulture. Value addition of agricultural produce shall increase the farmers' earnings and therefore enhance their livelihoods. In addition, manufacturing for the East and Central African regional market shall be made possible through export production approach thus increasing the country's foreign exchange earnings.

Moreover, Vision 2030 puts forward proposals in with promotion of information and communications technology (ICT), gender balance and catering for persons with disabilities. All these aspects have been observed in the ISUDP through provisions for all socio-economic groups and the people with disabilities both through access to economic activities and social rights.

ii. **National Environment Policy, 2013:** With regards to the provisions of the National Environment Policy, 2013, the ISUDP recognizes the importance of the link between development and sustainable environment by:

- Addressing environmental degradation issues and challenges facing the Sub-County. Notable drivers of environmental degradation are high rates of population growth, inappropriate technology, unsustainable consumption and production patterns, and increased incidences of poverty and climate change;
- Providing a framework for an integrated approach to planning and sustainable management of Kenya's environment and natural resources;
- Ensuring sustainable management of the environment and natural resources, such as unique terrestrial and aquatic ecosystems, for both county and national economic growth and improved livelihoods; and
- Promoting and enhancing cooperation, collaboration, synergy, partnerships and participation in the protection, conservation, sustainable management of the environment and natural resources.

iii. **Sessional Paper No. 3 of 2009 on National Land Policy:** Sessional Paper No. 3 of 2009 on National Land Policy provides an overall framework and defines the key measures required to address, amongst others, the critical issues on land, land use planning, environmental degradation, conflicts and unplanned proliferation of informal urban settlements, outdated legal framework, institutional framework and information management. In tandem with the provisions of this policy, the Kiambaa ISUDP has promoted and encouraged multi-sectoral approach to land use, provision of social, economic and other incentives and put in place an enabling environment for investment, agriculture, livestock development and the exploitation of natural resources.

iv. **Sessional Paper No. 1 of 2017 on National Land Use Policy:** This policy emphasizes the importance of land as a resource for the economic life of a majority of people in Kenya. The way people handle and use land resource is decisive for their social and economic well-being as well as for the sustained quality of land resources. In tandem with this policy, the Kiambaa ISUDP seeks to strike a balance between

satisfying the human livelihood needs and sustainable use of resources for posterity. This has been taken into consideration in the ISUDP through:

- Anchoring the Sub-County's land development initiatives that will respond positively to market demands;
- Environmental management and sustainable production initiatives in the utilization of land resources;
- Coordination and integration of institutional linkages in planning at sectoral and cross-sectoral levels to foster collaboration and decision making amongst different land users; and
- Optimum utilization of land resources to meet governance, socio-economic, political, and cultural obligations of the people of the County and Kenya at large.

2.6.3 Other relevant policies

Other relevant policies that the ISUDP has considered and integrated are summarised in the following table.

Table 2-4: Other Relevant Policies

Policy	Relevance
Housing Policy Sessional Paper No. 3 of 2004	That comprehensive land use planning is a major component of housing in facilitating provisions of adequate shelter and a healthy living environment, at an affordable cost to all socio-economic groups in Kenya in order to foster sustainable human settlements.
National Information & Communications Technology (ICT) Policy, 2016	Seeks to improve the livelihoods of Kenyans by ensuring the availability of accessible, efficient, reliable, and affordable ICT services.
National Climate Change Response Strategy, 2010	Seeks to strengthen and focus nationwide actions towards climate change adaptation and greenhouse gas emission mitigation.
Integrated National Transport Policy Sessional Paper No. 2 of 2012	Aims to develop a world-class integrated transport system that is responsive to the needs of people and industry since the Government recognizes the transport sector as one of the critical enablers in achieving Vision 2030.
Sessional Paper No. 2 of 2009 on Forest Policy	Requires County Governments to establish and maintain arboreta, mini-forests, or mini-recreational parks within their areas of jurisdiction and during the construction of housing estates by the public and private investors.
Energy Policy, 2012	Seeks to ensure adequate, quality, cost-effective, and affordable supply of energy to meet development needs while protecting and conserving the environment.
Public Health Policy, 1994	Focuses on the priority packages based on the burden of disease and the required support systems to deliver services amongst major players in the health sector including the government represented by the Ministry of Health and County Government, private sector and non-government organisations (NGO).
National Urban Development Policy	Creates a framework for sustainable urban development in the country and addresses the following thematic areas: urban

Policy	Relevance
	economy; urban finance; urban governance and management; national and county urban planning; land, environment and climate change; social infrastructure and services; physical infrastructure and services; urban housing; urban safety and disaster risk management; and marginalized and vulnerable groups

Source: VisionRI

2.6.4 Institutional Framework

i. **Core Planning Mandate:** Institutional mandates for planning in Kenya are examined in relation to urban planning at various scales. Schedule Four of the Constitution distributes planning functions across two-tiers of government - national and county - with provisions for coordination across them. Planning roles and responsibilities at both the national and county governments are governed by the Constitution under Chapter 5: Land and Environment, particularly Article 66. The Fourth Schedule Part 1 (21) and (32) forms the foundation of national government planning mandates while Part 2 (8) of the schedule forms the foundation of County governments planning mandates.

At the County level, planning mandates are also governed by the County Governments Act, 2012 Part XI: County Planning (Section 102-115) and Urban Areas and Cities Act, 2011 Part V: Integrated Development Planning (Section 36-42). The Physical and Land Use Planning Act, 2019 governs the planning framework under Schedules 1, 2, 3 and 5 (matters to be considered in spatial planning); Part V (framework control for development control) and Section 16, 17 and 24 (purpose and content of spatial plans). Intergovernmental Relations Act No.2 of 2012 forms a basis in planning mandates under Part III: Transfer and delegation of powers, functions, and Competencies (Section 24-29) and Part IV: Dispute Resolution Mechanisms (Section 30-36). Moreover, statutory instruments (PPA 1, 2, 5, 6 & 7) serves as a tool for development control. The table below shows the allocation of planning mandates from the aforementioned powers.

Table 2-5: Allocation of planning mandates

Agencies	Description
National Government	• Formulating general principles, policies, standards, and guidelines of land planning; • Preparation and approval of the National Physical Development Plan, and national policies on land use; • Planning along international boundaries such as those with Tanzania, Uganda, Somalia, South Sudan, and Ethiopia; • Coordination of Regional Spatial Plans/Inter-County Spatial Plans; • Capacity building and technical support to counties; and • Planning research at the national level.
County Government	• Preparation, approval and implementation of County Spatial Development Plans, Local Physical Development Plans, County Integrated Development Plans, Integrated Strategic Urban

Agencies	Description
	Development Plans, Sectoral Plans, Development Control and Enforcement; • Formulating County specific policies; • Implementing national policies, standards, and guidelines; and • Planning research at the County level.
County Assembly	Approval of plans.

Source: VisionRI

The National-County Government Operational Linkages in planning are further presented below:

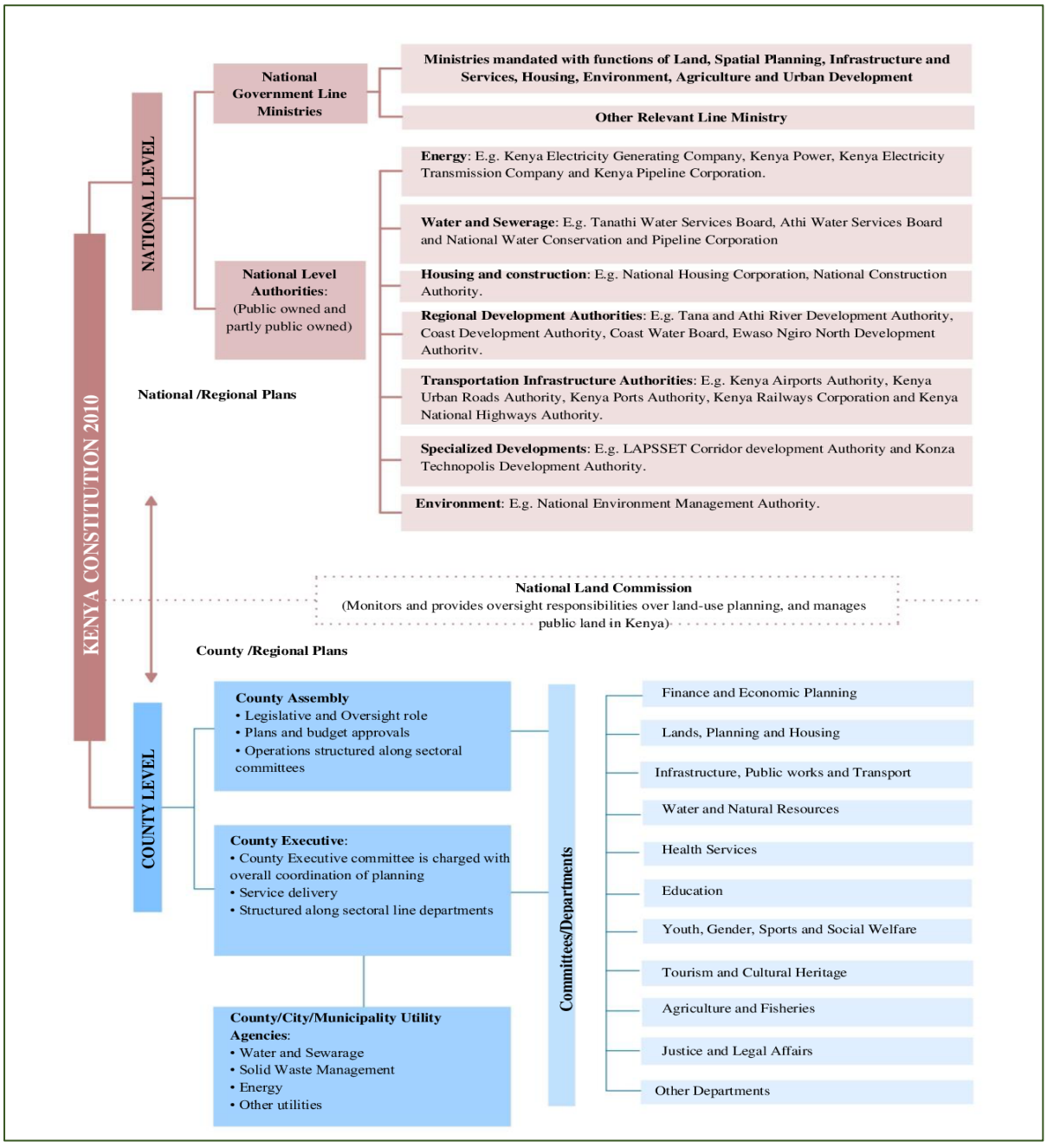


Figure 2-1: National-County Government Operational Linkages in Planning

Source: Urban Planning for City Leaders Handbook

2.6.5 Cross-Cutting Stakeholders

Key stakeholders usually include government agencies; a civil society that includes civil society organizations; residents' associations; community-based organizations; non-governmental organizations; community at large; private sector; developers and property owners; donor agencies or development partners; and local businesses, amongst others. Stakeholders should be spatially mapped to ensure that there is even representation across the planning area. Public participation whether in form of public consultation and decision making is to involve leaders and stakeholders. Likewise, the public shall be engaged in budget and policy formulation, planning and social service delivery priority setting. These are vested from the powers provided by the following laws:

- Constitution of Kenya, 2010 (articles 174, 201 and 232);
- County Governments Act, 2012 (section 47, 91, 99-100);
- Public Finance Management Act, 2012 (section 125, 128, 131 and 137); and
- Urban Areas and Cities Act, 2011 (section 21 and 22).

Table 2-6: Key Sectoral Government Agencies

Institutions/organizations	Roles and Responsibilities
National Treasury	• Responsible for managing Kenya's national government finances.
Ministry of Lands and Physical Planning	• Charged with the following functions: National Lands Policy and management; physical planning; land transactions; survey and mapping; land adjudication; settlement matters; rural settlement planning i.e. eco-village; land reclamation; land registration; national spatial infrastructure; land and property valuation services administration; administration of public land as designated by the constitution; and land information systems.
Ministry of Transport, Infrastructure, Housing, Public Works & Urban Development	• The Ministry consists of five state departments, namely, transport, infrastructure, housing and urban development, maritime and shipping affairs, and public works. These departments have various roles and responsibilities. For example, the State Department for Housing and Urban Development is responsible for, amongst others, housing policy management, development and management of affordable housing, management of building and construction standards and codes, shelter and slum upgrading, and urban planning and development.
Ministry of Environment & Natural Resources	• The main functions of the Ministry include environment and natural resources policy formulation and review; sustainable management of mineral resources and environmental conservation; continuous development of a geodatabase for integrated natural resources and environmental management systems; promoting environmental management activities; and enforcing compliance with regulations and guidelines, amongst others.
National Land Commission (NLC)	• Established under Article 67 of the Constitution, the NLC is responsible for, amongst others: managing public land on behalf of the national and county governments;

Institutions/organizations	Roles and Responsibilities
	recommending a national land policy to the national government; advising the national government on a comprehensive programme for the registration of title in the land throughout Kenya, and monitoring and oversight responsibilities over land use planning throughout the country.
National Environment Management Authority (NEMA	• Established by the EMCA, the NEMA is the agency in charge of the coordination of environmental management activities, ensuring compliance with environmental guidelines, and advising the government on legislative measures concerning environment management.
Kenya National Highways Authority (KENHA)	• The KENHA is a state corporation established under the Kenya Roads Act 2007. It is responsible for the management, development, rehabilitation, and maintenance of international trunk roads linking centres of international importance and crossing international boundaries or terminating at international ports.
Kenya Urban Roads Authority (KURA)	• A state corporation established by the Kenya Roads Act 2007 with the core mandate of management, development, rehabilitation, and maintenance of national urban trunk roads.
Kenya Forest Service (KFS)	• Established under the Forest Act of 2005, the KFS's mandate is to conserve, develop, and sustainably manage forest resources for Kenya's socio-economic development.
Water Resources Management Authority (WRMA)	• Established under the Water Act, 2002, the WRMA is a state corporation under the Ministry of Water and Irrigation and has the mandate for nation-wide water resources management.
Council of Governors of Kenya (COG)	• The COG was established under Section 19 of the Intergovernmental Relations Act (2012) with the mandate to provide a mechanism for consultation amongst county governments, share information on the performance of the counties in the execution of their functions, facilitate capacity building for governors, and consider reports from other intergovernmental forums on national and county interests, amongst other functions.
County Governments Entities	• Comprises the County Assembly and County Executive Committee with responsibilities outlined under the Constitution; • The responsibilities of the County Assembly include exercising the powers of enacting laws at the County-level; acting as an oversight on the County Executive, and approval of plans and policies for smooth operation and management of resources and county institutions; and • The County Executive is charged with the responsibility of exercising executive power at the county level, implementing laws for the administration of the county, as well as carrying out other executive functions of the county.

Institutions/organizations	Roles and Responsibilities
Kenya Investment Authority (Ken invest or KIA)	• The KIA is a statutory body established in 2004 through the Investment Promotion Act No. 6 of 2004). It is mandated to promote investments in Kenya and is responsible for facilitating the implementation of new investment projects, providing after-care services for new and existing investments, as well as organizing investment promotion activities both locally and internationally.
Micro and Small Enterprise Authority (MSEA)	• The MSEA is a state corporation established under the Micro and Small Enterprise Act No. 55 of 2012. It is tasked in financing, training, infrastructure development and policy development.
Kenya Industrial Estate Ltd (KIE)	• The KIE was established as a limited liability company (Companies Act, Cap 486) of the laws of Kenya to address indigenization of businesses, capital formation, regional dispersion of wealth, exploitation of local resources, undertake special government projects, and offer business advisory services.

Source: VisionRI

2.7 Planning Policy Linkages

2.7.1 National Spatial Plan

The National Spatial Plan (NSP)2015-2045, is an integrated plan that strives to achieve balanced and sustainable national development. The NSP anchors its framework on Vision 2030 and provides comprehensive strategies and policy guidelines to deal with issues of rural and urban development. The NSP also focusses on issues of modernizing agriculture, infrastructure, energy production, mining, and industry, as well as sustainable human settlements.

The specific objectives of the NSP include:

- Creating a spatial planning context that enhances economic efficiency and strengthens Kenya's global competitiveness;
- Optimizing the utilization of land and natural resources for sustainable development;
- Creating a liveable and functional human settlement in both urban and rural areas;
- Securing the natural environment for the high quality of life; and
- Establishing an integrated national transportation network and infrastructure system.

Based on the characteristics of the planning area, the key strategies outlined in the NSP that have been integrated into this ISUDP are as presented in the table below.

Table 2-7: Relevant National Spatial Plan Strategies

Objective	Strategies
Promoting regional balance	• Promoting industrialization and value addition; • Encouraging equitable exploitation and sound management of mineral resources; • Promoting investment in tourism including eco-tourism aspects;

Objective	Strategies
	• Developing appropriate transport and infrastructural facilities and services; • Promoting rural industrialization; • Promoting commercial and large-scale livestock production practices; and • Promoting urban containment to reduce the effects of urban sprawl into rich agricultural land.
Urbanisation strategies	• Strengthening urban-rural linkages through the provision of integrated physical infrastructure; • Creating an enabling environment for commercial and industrial developers; • Providing alternative areas for development of urban centres by the provision of services and infrastructure; and • Promoting the development of centres as per their potentials and population.
Environmental conservation and protection	• Intense forest cover through afforestation and reforestation; • Controlling water abstraction; • Putting flood mitigation measures in place; and • Ensuring optimal utilization of available natural resources.
Transport infrastructure	• Creating an integrated road transport corridor; • Preserving and securing adequate land for future transport infrastructure development; • Encouraging the use of green transport; and • Creating linkages between agricultural, tourist and urban centres as well as rural areas.

Source: VisionRI

2.8 Regional Policies

2.8.1 Nairobi Metro 2030

Nairobi Metro 2030 provides the policy direction for the development of the metropolis to support Kenya Vision 2030. This ISUDP is guided by these policies, particularly in the course of determining the Sub-County's overall development goals and various strategies to achieve them. Nairobi Metro 2030 envisions the Nairobi Metropolitan Region (NMR) to become a "world-class African metropolis" characterised by world-class working environment, living environment, business environment and governance. Its key result areas are the following:[1]

- Building an internationally competitive and inclusive economy for prosperity;
- Deploying world-class infrastructure and utilities for the region;
- Enhancing mobility and connectivity through effective transportation;
- Enhancing the quality of life in the region; delivering a unique image and identity through effective place branding; and

[1] Nairobi Metro 2030, Chapter 4, pp. 45-80

- Ensuring a safe and secure region and build world-class governance systems.

2.8.2 Spatial Planning Concept for NMR

The Spatial Planning Concept (SPC) for NMR provides the physical direction for the region's development in support of Kenya Vision 2030 and Nairobi Metro 2030. It provides a holistic "conceptual framework" that defines the future spatial growth of the NMR and thus provides a guide in the preparation of local development plans. The SPC promotes a land-use system intended to ensure the development of an "environmentally sustainable region" that will [2]: build an internationally competitive and inclusive economy for prosperity; deploy world-class infrastructure and utilities for the region; optimise mobility and accessibility through effective transportation; enhance the quality of life and inclusiveness in the region; deliver a unique image and identity through effective place branding; ensure a safe and secure NMR; and employ World-Class Metropolitan Governance Systems. Key parameters that are provided in the NMR Spatial Plan that will guide the development of the ISUDP for Kiambaa is its envisioned Economic Function of being an "Agro-based Industrial Town" and its role in the proposed settlement hierarchy for NMR, 2030 of being a "Growth Centre."

Table 2-8: Economic targets for Urban Centres

Spatial units	Envisaged function
Ruiru	Trading Town
Thika	Industrial Town
Limuru	Agro-based Industrial Town
Kiambu	Administrative -cum- Agro based Industrial Town
Juja	Service Town
Kikuyu	Agro-based Industrial Town
Kiambaa/Karuri	Agro-based Industrial Town
Githunguri	Agro-based Industrial-cum-Administrative Town
Gatundu	Administrative Town
Machakos	Administrative-cum-IT Industrial Town
Mavoko	Industrial Town
Kangundo/Tala	Trading Town
Kathiani	Service Town
Ngong	Industrial Town
Kitengela	Service Town
Ongata Rongai	Service Town
Kiserian	Service Town
Namanga	Trading Town
Isinya	Service Town
Bissil	Service Town
Kajiado	Administrative-cum-service town

[2] Spatial Planning Concept for NMR, page ix

Spatial units	Envisaged function
Loitoktok	Administrative Town
Sultan Hamud	Transit Town
Magadi	Industrial Town

Source: Spatial Planning Concept for NMR, 2010

Table 2-9: Proposed Settlement Hierarchy for NMR, 2030

Level	Settlement Hierarchy	Settlements	Characteristics
I	Regional Complex	Nairobi- Ngong-Ongata Rongai-Ruiru Complex	• Highest administrative functions; • Specialised & world-class facilities; and • Tertiary activities.
II	Sub-Regional Centre	Thika, Kikuyu, Kiambu, Machakos, Tala/ Kangundo, Kajiado	• Administrative Function/county headquarters; • Higher-level infrastructure; • Secondary & tertiary activities; and • Strong industrial base.
IIA	Priority Town	New Towns	• Planned to decongest Nairobi & developments in the surrounding regions; • Designed with specialised facilities on the basis of world-class norms; and • To be planned as special packages and special focus for development.
III	Growth Centre	Limuru, **Kiambaa,** Juja, Mavoko, Kitengela, Loitoktok	• Intermediary towns; • Important role in promoting rural development and in achieving a balanced distribution of the urban population; and • Provide functional linkages between the smaller towns and sub-regional centre.
IV	Market Centre	Gatundu, Githunguri, Kathiani, Kiserian, Namanga, Isinya, Bissil, Sultan Hamud Magadi	• Small towns having linkages with immediate rural hinterlands; and • Refers to the higher-order village having a central location and potential for development within its catchment area with relatively better services and facilities in terms of education, health, communication, accessibility and has the capacity to serve a group of basic villages.
V	Central Village Centre	To be identified as part of sub-regional plans	• Would cater to the rural hinterland as Agro-service centre in the collection and distribution of agricultural goods and services with processing, marketing, warehousing, and storage facilities.
VI	Basic Village	All villages	

Source: Spatial Planning Concept for NMR, 2010

2.9 County Policies

2.9.1 Kiambu County Spatial Plan, 2016-2026

The Kiambu County Spatial Plan (CSP) 2016-2026 has its strategic focus on land use planning, multi-modal transportation planning, informal settlements, and zonal planning. Other elements that have been focused on include environmental protection, heritage conservation and physical and social infrastructure management planning. The CSP views Kiambu as a rapidly urbanizing County with rapid outward growth from its core. The CSP is inextricably linked to the County Integrated Development Plan (CIDP) having a key focus on optimal utilization of resources and ensuring infrastructural development in the region. The planning area will have its plans and programmes mainly pegged on Kiambu's CSP and CIDP. This will act as the base for the articulation and formation of action area plans and zoning plans for this ISUDP. Below are the key programmes and strategies in Kiambu County Spatial Plan (2016-2026).

Table 2-10: Relevant Strategies in Kiambu County Spatial Plan

Sector	Strategies
Agriculture and Rural Development	• Promotion of agriculture, livestock, and fisheries development; • Ensuring proper access to infrastructure and utilities; • Ensuring the promotion or marketing of agricultural, livestock and fisheries products; • Ensuring quality control on-farm inputs; • Ensuring proper access to available and affordable credit; and • Enhancing effective institutional and legal framework.
Urbanisation	• To enhance the creation of employment opportunities in rural centres; • To promote the development of strategic growth centres; • To encourage the densification of residential areas to avoid urban sprawl; • To provide adequate sewer and solid waste disposal infrastructure in urban centres; and • To promote efficient linkages and connectivity within and between urban centres.
Industrialization	• To provide an enabling environment for industrial growth; • To promote innovative technologies; • To revive collapsed industries and promote the establishment of *jua kali* and other light industries; and • To strengthen and promote community-based financial institutions.
Tourism and Environmental Conservation	• Ensuring conservation and sustainable use of the environment and natural resources; • Supporting protection and sustainable management of water resources; • Promoting the conservation of natural heritage and indigenous cultural sites; • Ensuring diversification and improvement of tourist attraction sites/products;

Sector	Strategies
	• Coordinating infrastructure planning and development; and • Promoting tourism investment opportunities in the region.

Source: Kiambu County Spatial Plan (CSP) 2016-2026

2.9.2 Kiambu County Integrated Development Plan, 2018-2022

Kiambu County's basis for the preparation of its second County Integrated Development Plan (CIDP is under the County Government Act, Kenya Vision 2030 and Medium-Term Plans instituted by the National Government such as the Big-Four Agenda, Kenya Vision 2030, and National Spatial Plan. It has adopted appropriate policies for each sector in line with delivering the required services to its residents through planned and on-going projects. Some of the relevant initiatives discussed in this CIDP have been summarised in the table below.

Table 2-11: Relevant CIDP Strategies

Sector	Strategies
Urban Development	• Enhanced inclusive and sustainable urbanisation and capacity for participatory, integrated, and sustainable human settlement planning and management; • Densification of residential areas to curb urban sprawl; • Regularization and upgrading of informal settlement-Kibagare slums in Kiambaa in this case; • Provision of adequate sewer and solid waste disposal infrastructure in urban centres within the County; • Improve provision of social infrastructure; and • Enhance the accessibility of quality and affordable health and other social infrastructure.
Industrialization	• To create an enabling environment for industrial growth; • Promote innovative technologies; • Promote the establishment of *jua kali* and other light industries; and • Promote community-based financial institutions.
Agriculture and Rural Development	• Ensuring small-scale holder horticulture and promotion unit programme (SHEP-UP); • Promoting livestock production and curbing parasites and diseases; • Laying out proper physical infrastructure in agricultural zones linking them properly to the markets; • Improving livelihoods of the community adjoining forests while providing alternative income sources; and • Improving forest cover for biodiversity and water catchments.
ICT	• Supporting ICT infrastructure development hence ensuring efficiency inaccessibility; • Creating incentives for service providers to deploy services in rural and underserved areas; and

Sector	Strategies
	• Ensuring proper physical infrastructure layout to ensure proper connectivity between land uses enhancing mobility and accessibility.
Environment Conservation and Water	• Reclaiming the riparian reserve and maintaining them through planting vegetation cover; • Providing adequate potable water within the County; • Ensuring proper solid and liquid waste disposal mechanisms; and • Increasing the forest cover in the county mainly through afforestation and reforestation.
Community Facilities	• Ensuring proper distribution of educational facilities within the County; • Improving sanitation in schools at all levels; and • Improving health services by providing the appropriate number of health centres, equipping the health centres, and increasing the number of staff.

2.10 Cluster Potential

While pointing out to the lack of an integrated approach to development in the NMR, the SPC for NMR suggests that the region should consider using the cluster development strategy as an economic tool for enhancing competitiveness. Considering this, the likelihood of and potential for adoption of cluster development strategy was assessed. This assessment found that the defined four clusters in the Consultant's ToR have got some economic logic, as summarised in Table 2-12.

The key industry verticals within each of the four clusters fit in with the economic priorities of the NMR and fulfil specific economic roles essential to the growth and development of the entire region. The identified key economic planks in each town and urban corridor within the four clusters may be linked to one or more of the NMR Missions under Vision 2030 as described previously. The clusters, therefore, collectively complete the NMR economy and would serve as key economic drivers of the capital city and metropolitan region.

In addition, the economic activities, and features of the four clusters complement instead of competing with one another. One cluster's development into an education hub, for instance, would support the economic growth of another cluster by providing high-skilled industrial and tertiary workforce, thus boosting productivity as well as the economic output of the latter. Similarly, 'dormitory clusters' which have seen a high real estate growth, provide residences and commercial services to hundreds of thousands of workforces employed in the Central Business District of Nairobi as well as in other urban centres of the NMR. The economic spillovers from one cluster too, if absorbed optimally, will have major impacts on the growth and development of others. The need to identify, develop and nurture such economic complementarities and externalities has been highlighted in this strategic report and is recommended to be considered key in all NMR-level strategic planning and policy design.

Table 2-12: Assessment for adopting a Cluster-based Planning Strategy

Cluster no.	Town/ Corridor	Existing economic activities	Identified economic planks	Economic clustering potential
One	Juja	Agriculture, quarrying, small-scale businesses, manufacturing industry.	Education, real estate.	Education Real estate Transport hub.

Cluster no.	Town/ Corridor	Existing economic activities	Identified economic planks	Economic clustering potential
	Ruiru	Small and medium-scale businesses, agriculture, industry including *jua kali.*	Education, real estate.	
	Nairobi-Thika	Education, transport, real estate.	Education, real estate, agri-business, transport/freight services.	
Two	Kiambaa	Agriculture, small and medium-scale businesses-*jua kali*, transport services, real estate.	Agriculture, eco-tourism, real estate.	Farming Agro-industry Manufacturing.
	Kikuyu	Agriculture, fish farming, small and medium-scale businesses, transport services, real estate, industry.	Farming, agro-industry.	
	Limuru	Agriculture, manufacturing, small and medium-scale businesses, transport services.	Farming, agro-industry, manufacturing.	
Three	Kitengela	Services, real estate, agriculture, transport services, tourism.	Real estate, industrial, tourism.	Real estate Tourism Services.
	Ngong-	Services, agriculture, transport, hospitality, small -scale industry.	Real Estate, tourism.	
	Ongata Rongai and Kiserian	Services, agriculture, transport, industry.	Real estate, services.	
Four	Mavoko	Services, manufacturing, transport.	Industry, logistics and transportation.	Administrative hub Industry Logistics and transportation IT education and services.
	Nairobi-Malili	IT services, commercial, transport services.	Real estate, logistics and transportation, IT education and services.	

Source: VisionRI

2.11 Key Planning Issues

The key planning issues in Kiambaa Sub-County were identified based on the review of its Planning Context, and consultations with stakeholders. These issues are given in the table below:

Table 2-13: Key Planning Issues on the Planning Context

Sector	Key Highlights	Opportunities
Location	The area is strategically located within the NMR and the County.	Strategic location for investment.
	Presence of major roads like Limuru and Kiambu roads, and Northern and North Western Bypasses	Ease of movement and good connectivity.
Legal and Policy	Presence of enabling legal and policy framework.	Favourable laws and policies supporting institutional growth, governance, and citizen participation.
Cluster Potential	Kiambaa is designated as an agro-industrial town.	Existing economic base-agriculture, small and medium-sized enterprises (SME), transport services, and real estate.
		Good road connectivity to other nodes.

Source: VisionRI

PART II: SITUATIONAL ANALYSIS

3. PHYSIOGRAPHIC CHARACTERISTICS

3.1 Overview

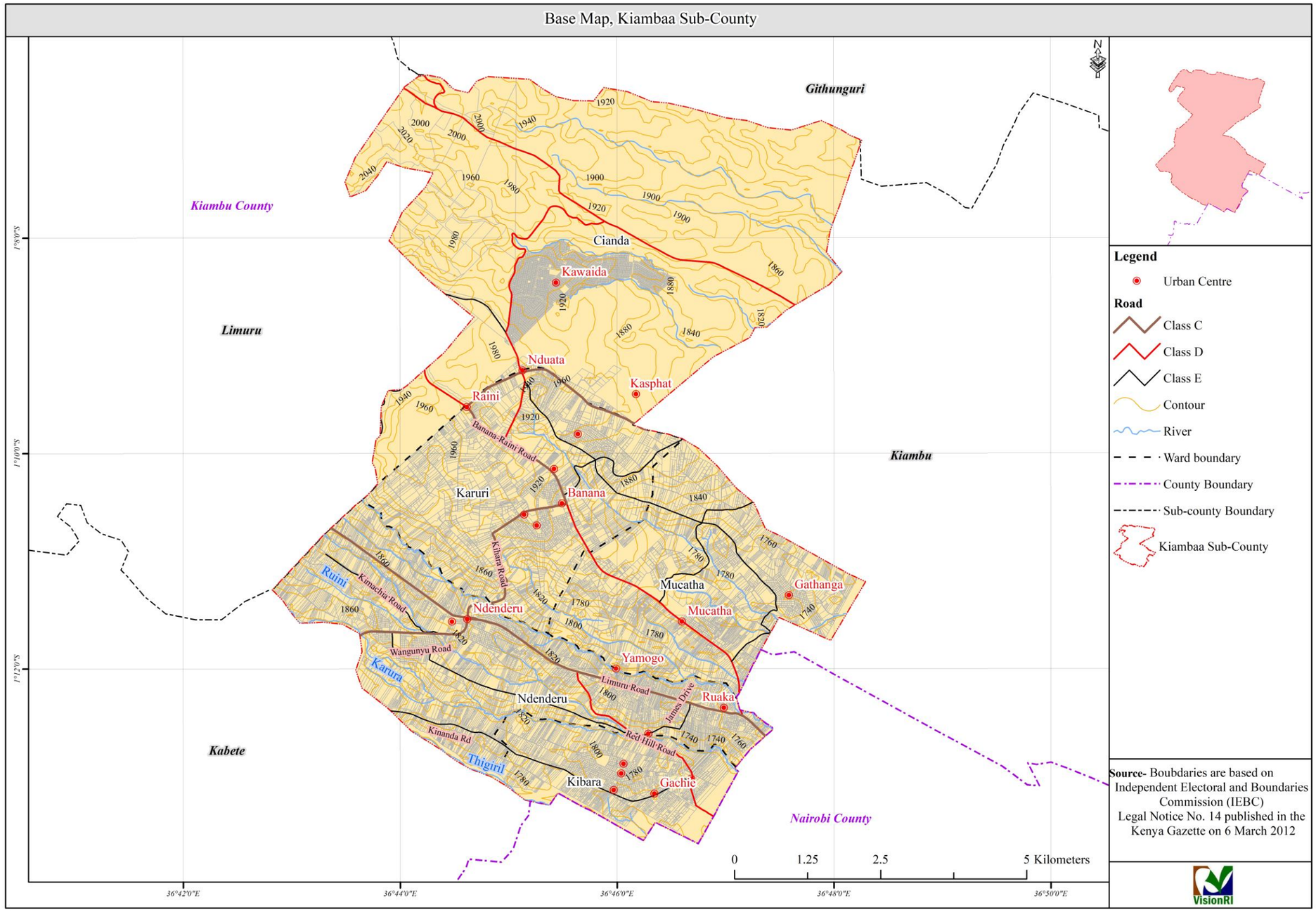
The chapter summarizes the physiographic characteristics of the planning area and analyses how and why they impact on planning and general development. The characteristics that were considered include rainfall patterns, hydrology, and temperatures as they influence vegetation, and utilisation of natural resources in Kiambaa Sub-County. Population and demography are also discussed in terms of growth changes and projections.

3.2 Base Map

The Kiambaa Sub-County base map is a clear depiction of the important natural and man-made features that structure the area. These features include transportation networks, water bodies, facilities, major landmarks, and boundaries both political and administrative.

To facilitate the preparation of the base map, hard copies of Registry Index Maps (RIMs) showing the land subdivisions, administrative boundaries, existing and proposed road networks, rivers, forests, public land, etc. were acquired from the Survey of Kenya's Headquarters which keeps a record of all land boundaries in Kenya. The RIMs were then scanned, geo-referenced and digitised into vector maps on the same coordinate system as the Sub-County's base map.

The Consultant also acquired high-resolution satellite imagery and used a hand-held global positioning system (GPS) device to fill in gaps and for verification purposes.



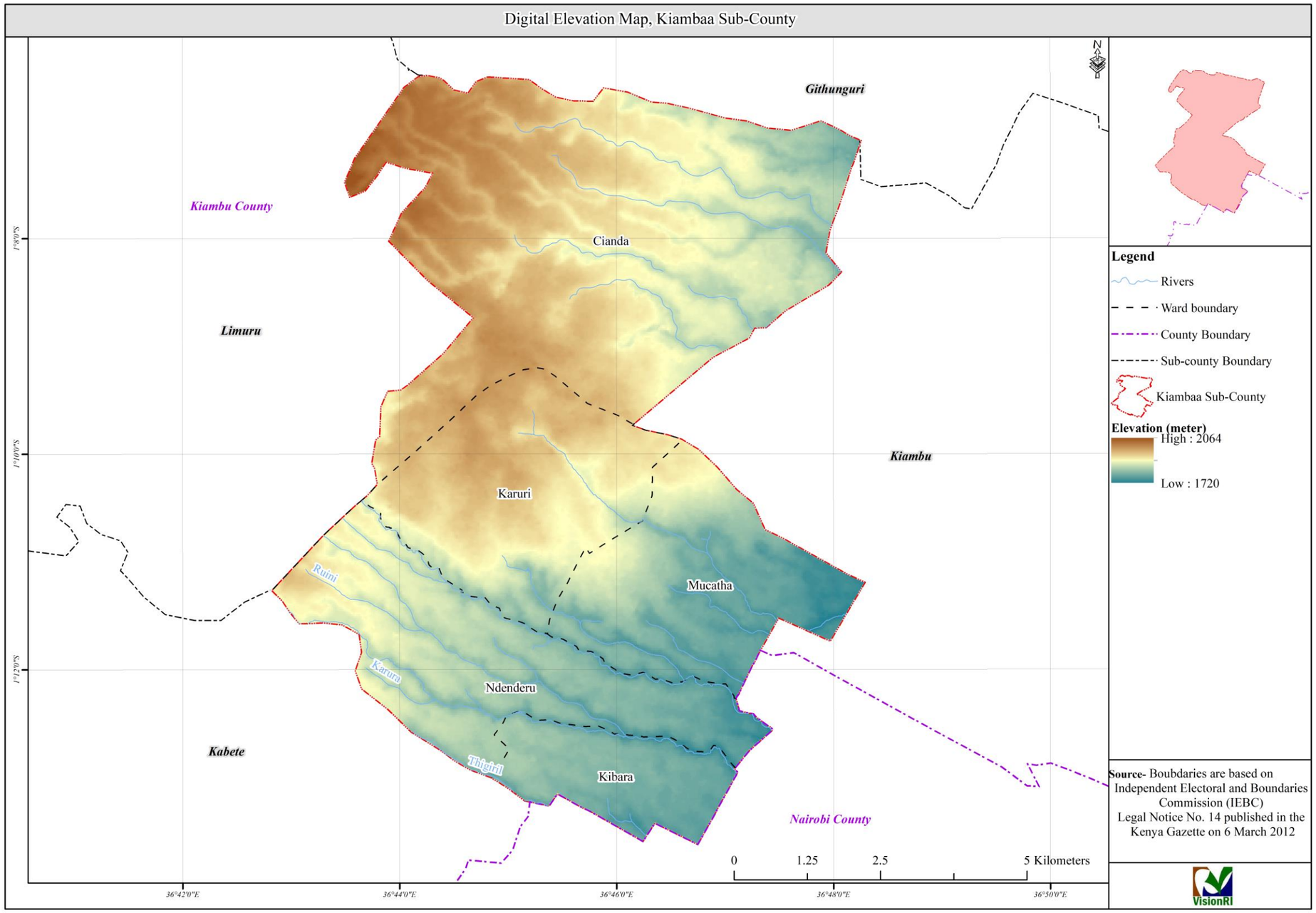
Map 3-1: Kiambaa Sub-County Base Map

Source: VisionRI

3.3 Topography and Landforms

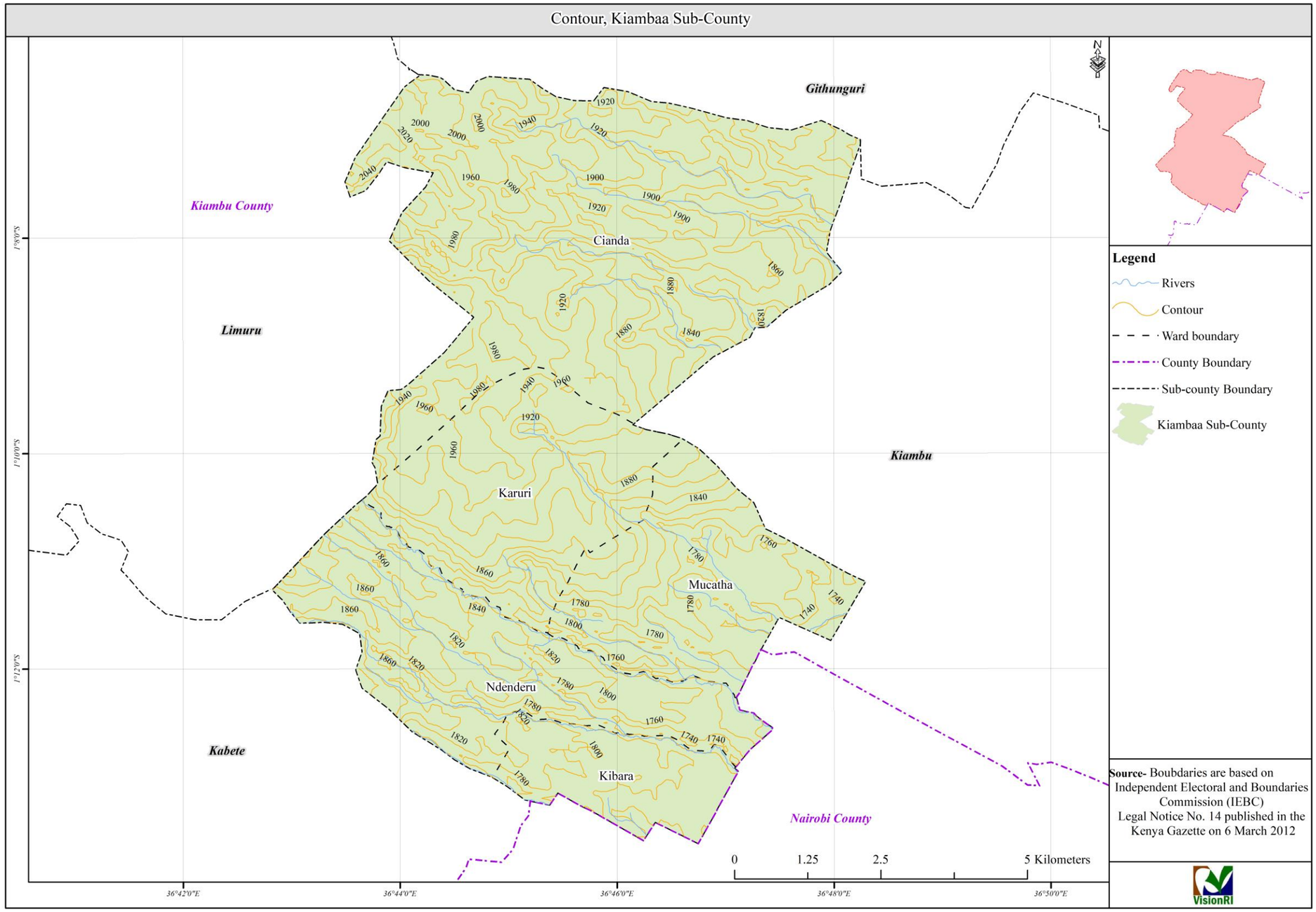
The planning area is in a region of relatively higher elevation. The altitude ranges between 1500 and 1800 metres above sea level. The area is traversed by Koski, Rui-Ruaka, Ruini and Karura rivers which emanate from the Aberdare ranges and forms the Athi River drainage system as discussed in the hydrology section of this report.

Being part of the lower eastern region of the Aberdare's mountain range, the planning area's terrain is characterised by undulating ridges and small river valleys. Hills, plateaus, and high-level structural plains that make it easy for the development of road network also characterize Kiambaa Sub-County. The map below provides details on contours and elevation.



Map 3-2: Elevation Map

Source: VisionRI

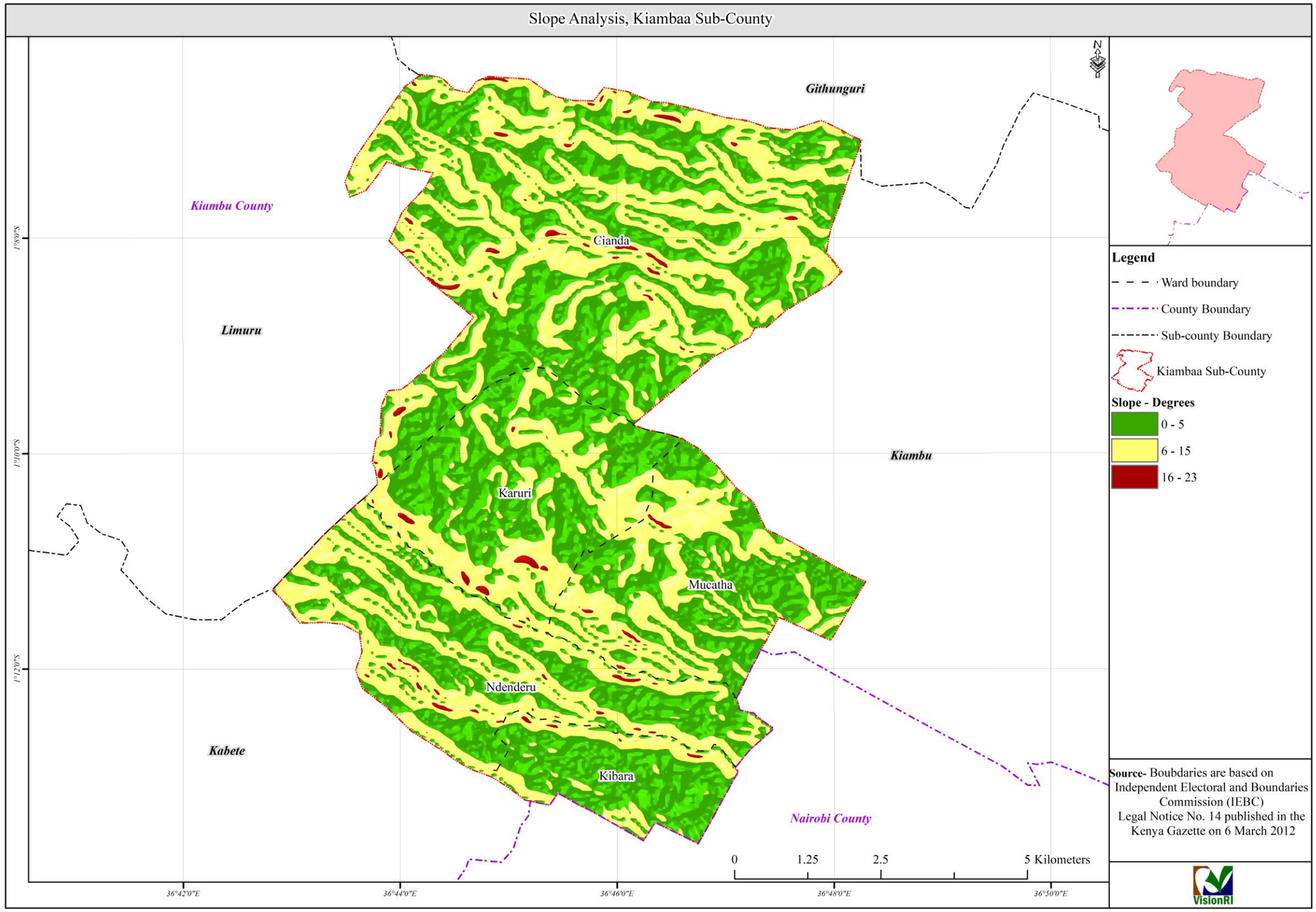


Map 3-3: Contour Map

Source: VisionRI

Generally, the whole area has a slope between 0-23^0. As per the Physical Planning Handbook (2007), the whole area is fit for human development. The Handbook has categorized areas between 5^0 and 25^0 as medium slopes and, therefore, suitable/can accommodate human settlement whereas areas with a slope above 25^0 as steep and, therefore, not fit for such developments.

However, there are several river valleys which have steeper slope compared to the rest of the areas but still the change in the steepness is within what may be considered fit for human development.



Map 3-4: Slope Analysis in Kiambaa

Source: VisionRI

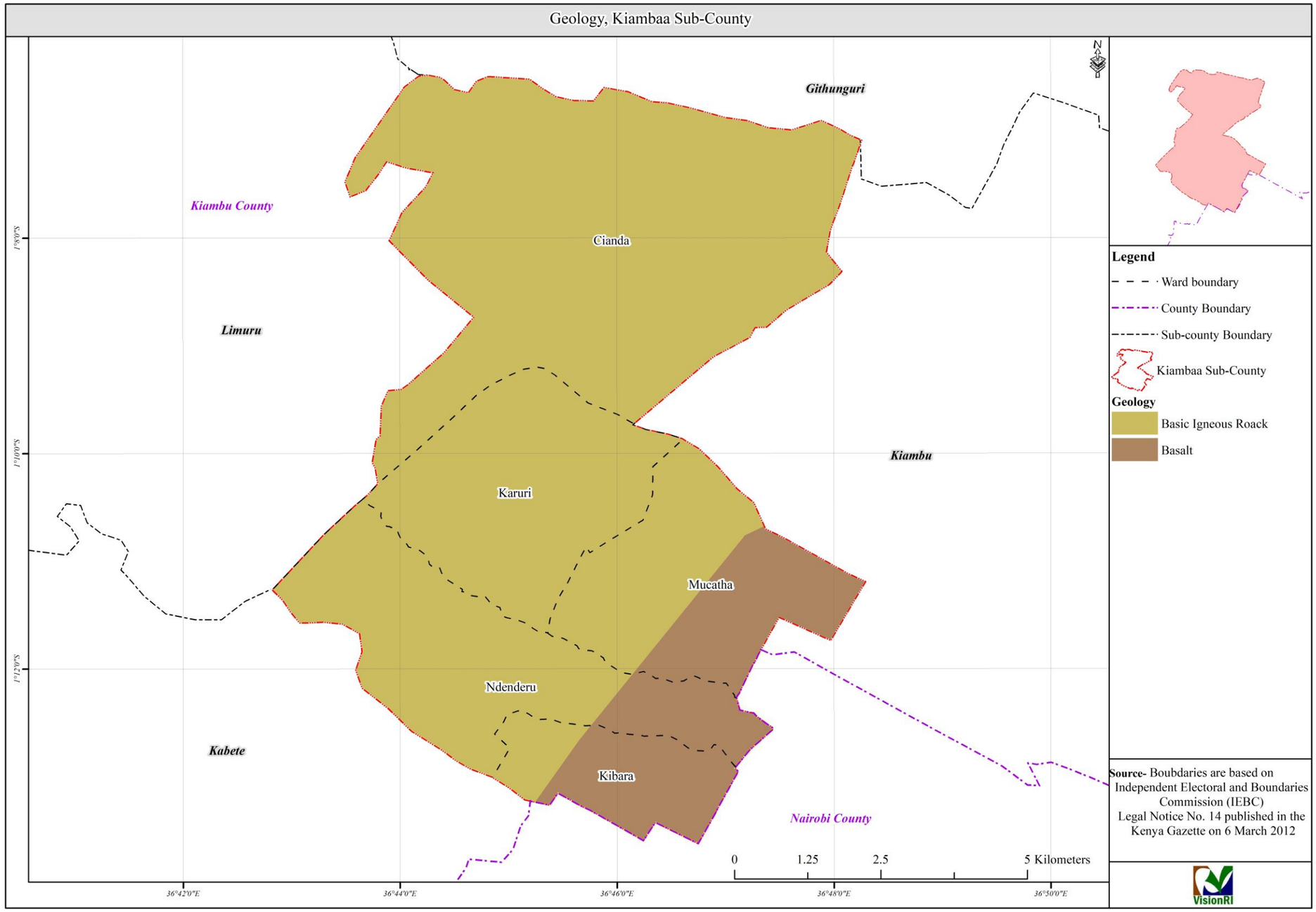
3.4 Geology and Soils

3.4.1 Geology

Kiambaa Sub-County lies on the volcanic rock of basalt igneous and basalt types. The basalt igneous cover the larger area whereas the pure basalt rock is towards the west of the area.

Basalt igneous rocks are extrusive rocks formed by the crystallization of volcanic magma. It is a dark coloured, fine-grained igneous rock mainly composed of plagioclase and pyroxene minerals.

Basalt on the other hand is the most common type of solidified lava. It is a dense dark grey fine-grained igneous rock that is composed chiefly of plagioclase feldspar and pyroxene.



Map 3-5: Geology Map

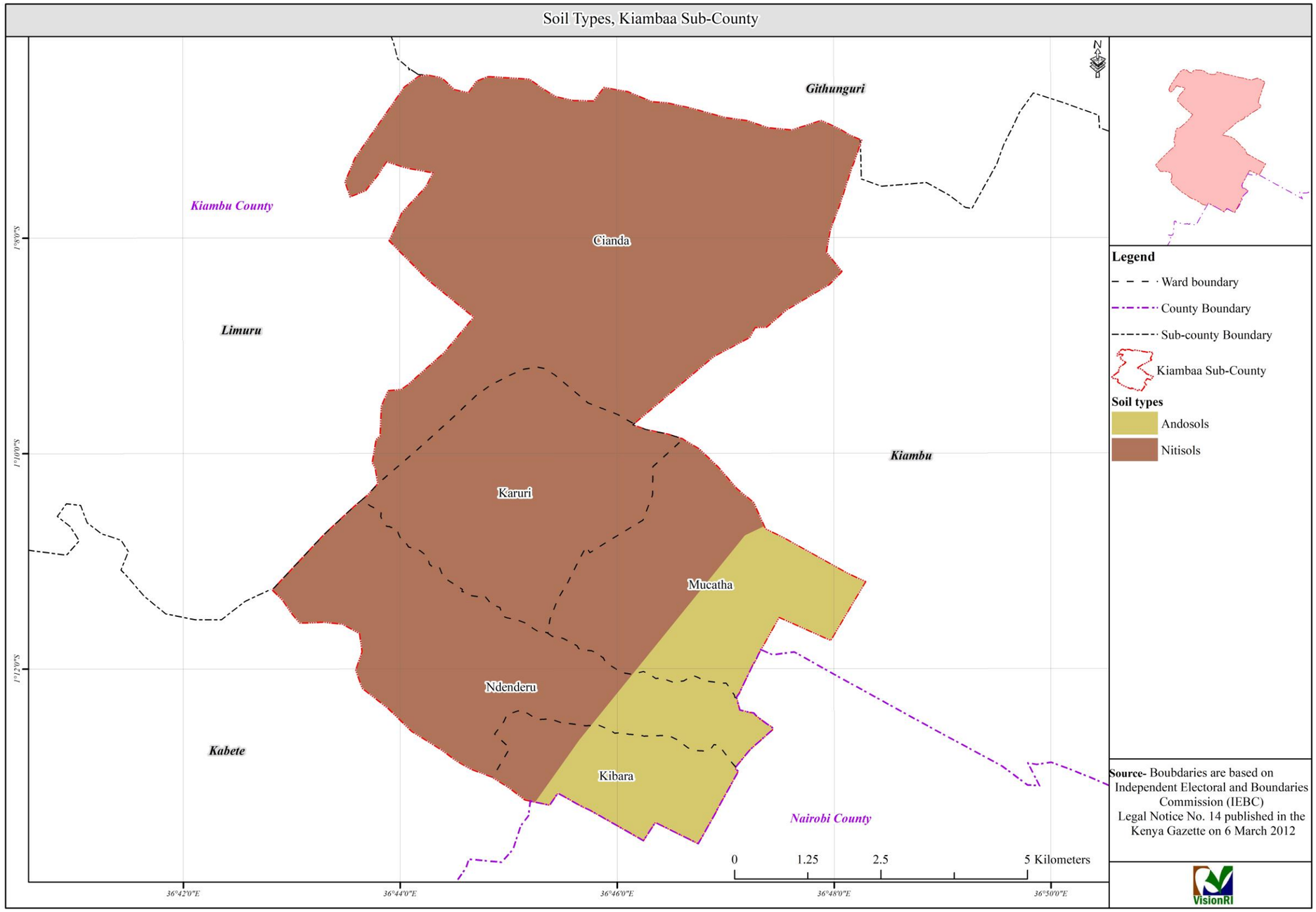
Source: VisionRI

3.4.2 Soil Types

Soils in Kiambaa Sub-County basically fall into two categories; nitisols and andosols with the former forming the larger part of the planning area. Nitisols are basically found in highlands and steep volcanic slopes. They are deep, stable, and well-drained. The soils have good water retention capacity and are very fertile, hence conducive for livestock keeping and growth of the crops both food crop and cash crops like tea, coffee, maize, beans, potatoes, amongst others.

Andosols on the other hand have a high-water retaining capacity and are prone to soil erosion as they occur mostly on steep slopes.

The map below shows the distribution of the two soil types in the area.

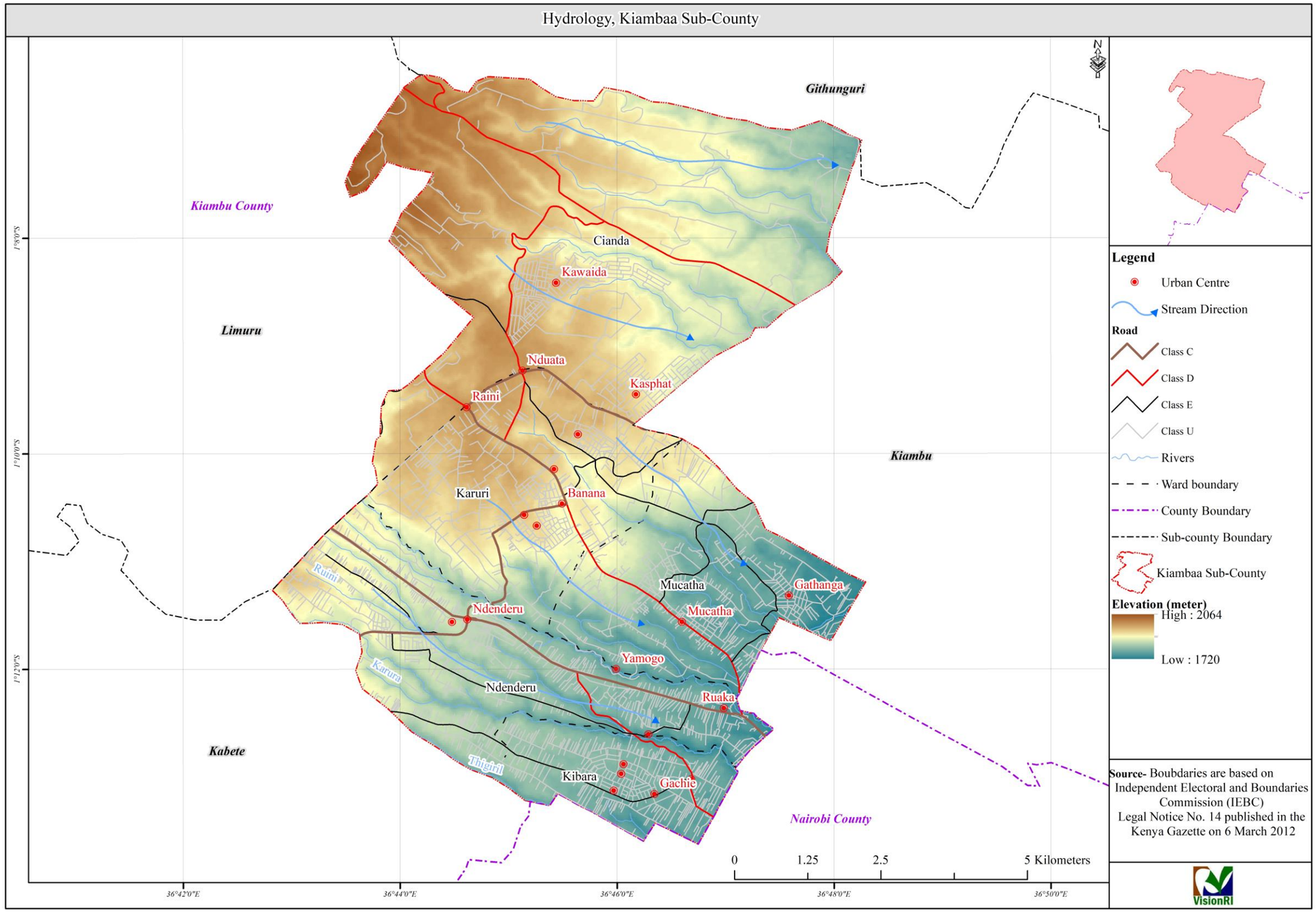


Map 3-6: Soil Map

Source: VisionRI

3.5 Hydrology

These include rivers, underground water, dams, lakes, and wetlands. The rivers that pass through the planning area include Koski, Rui-Ruaka, Ruini and Karura which emanate from the Aberdare ranges and form the Athi River drainage system. The rivers are permanent and flow throughout. However, human activities such as construction and agricultural activities have affected the water flow volumes and hygienic qualities of the rivers. There is low adherence to riparian reserves as required by the relevant authorities.

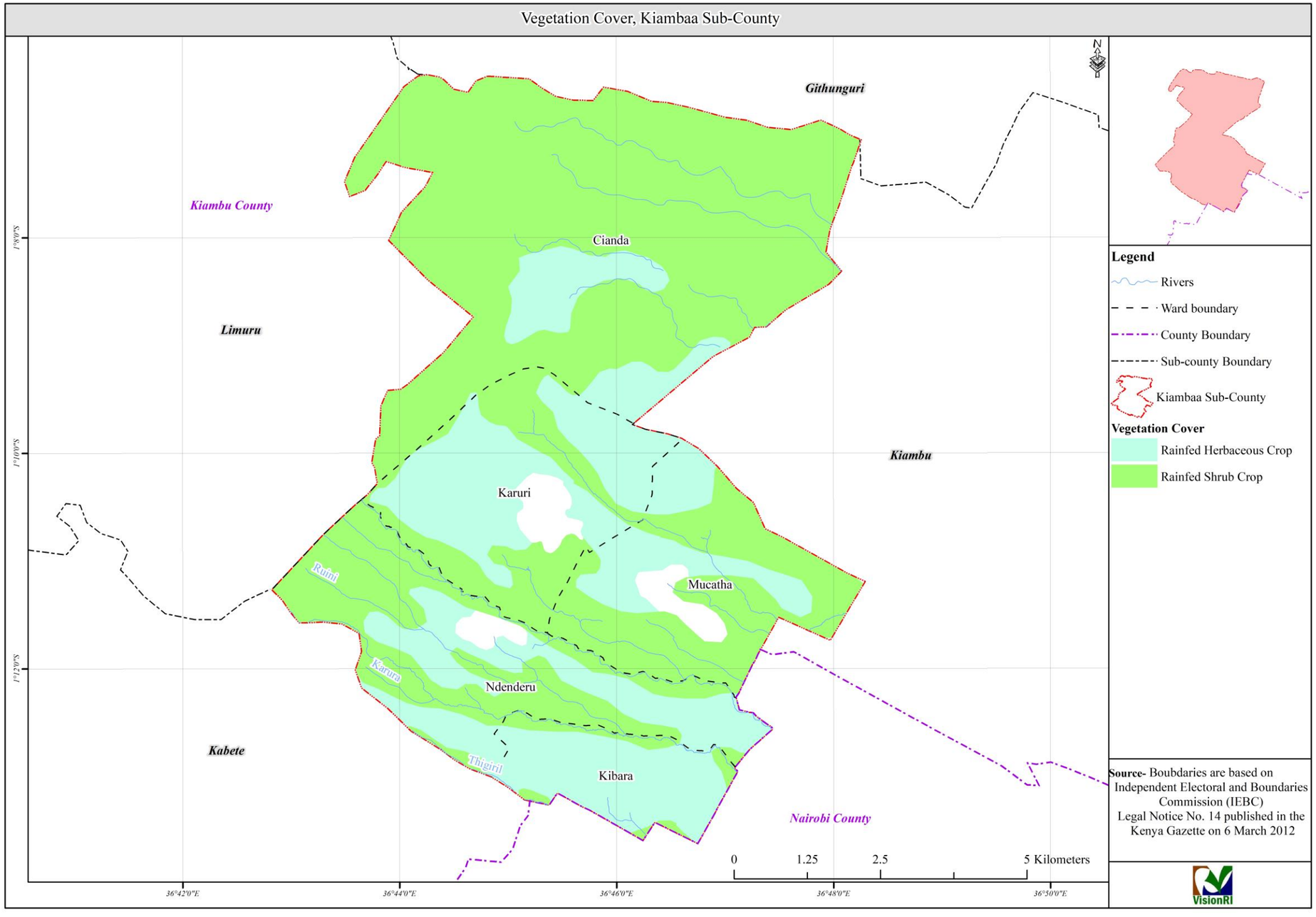


Map 3-7: Hydrology Map

Source: VisionRI

3.6 Vegetation – Forests and Scrublands

Natural vegetation continues to deplete in Kiambaa Sub-County due to intensive human activities. There is limited planted vegetation of eucalyptus and trees planted on coffee and tea farms that can serve as windbreakers. The general vegetation cover in Kiambaa Sub-County consists of grass, flowery shrubs, and bushes as well as large indigenous and exotic trees including cypress, croton megalocarpus, silver oak, eucalyptus which are found along the perimeter walls of homesteads.



Map 3-8: Vegetation Map

Source VisionRI

3.7 Wildlife

Kiambaa Sub-County is situated within a predominantly agricultural area, where human activities have altered the natural habitat for wildlife over the years. Consequently, there are no major animals in the environs except birds, insects, and small rodents. Some of the bird species in the Sub-County include sparrows, doves, and eagles, amongst others.

3.8 Climatic Conditions

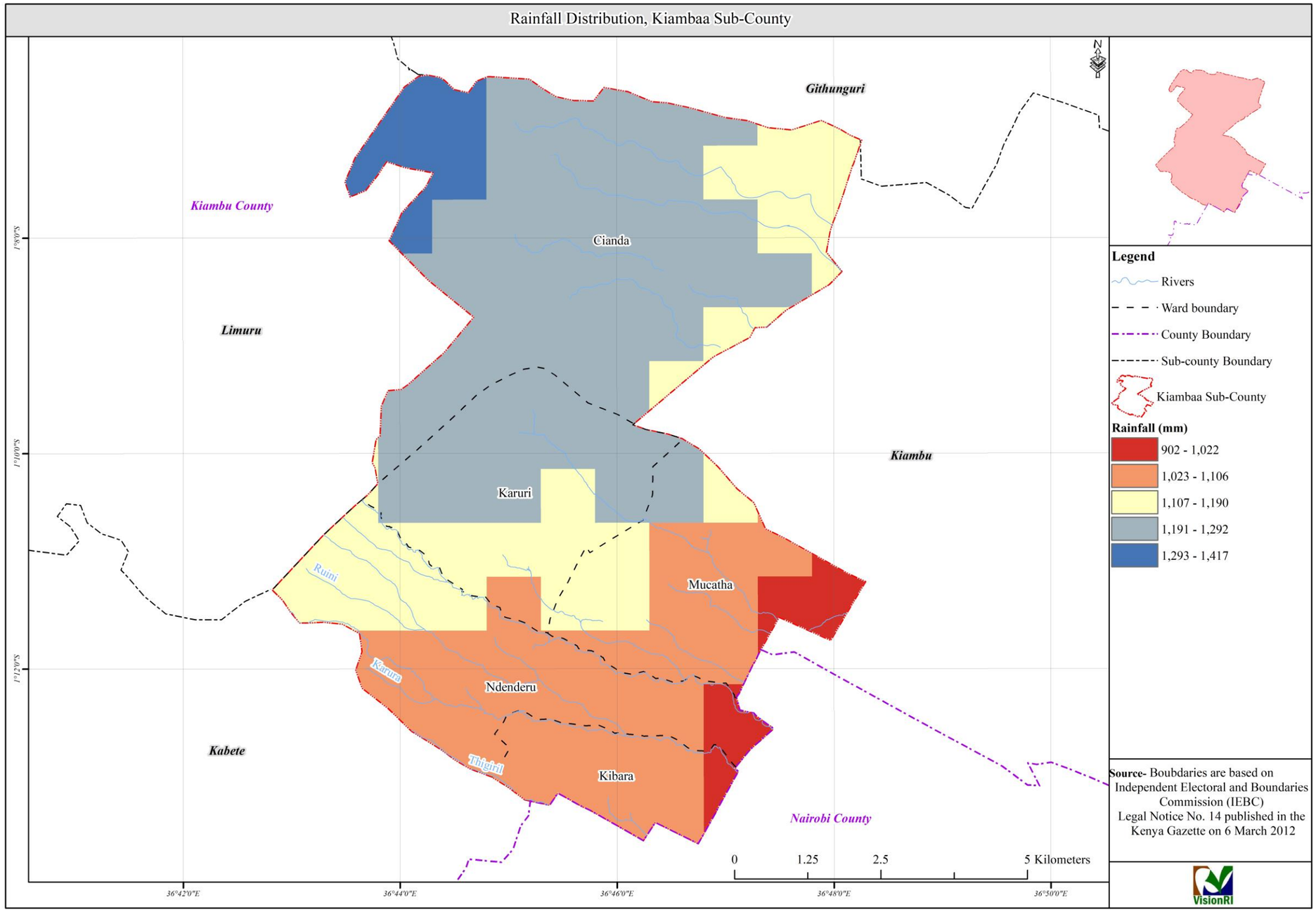
3.8.1 Rainfall

With routinely high relative humidity, Kiambaa Sub-County's climate enjoys reasonably high rainfall annually. Based on records from the past 50 years, the expected amount of rain ranges from 500 to 1500 mm, with the average reaching about 900 mm. The highest amount of rainfall occurs within the months of March to May and is called the "Long Rains" while less rainfall occurs within the months of October to December and is called the "Short Rains". The average rainfall amount for each month of the year, based on the records for 50 years is shown in Table 3-1.

Table 3-1: Average Rainfall (mm)

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
48	48	115	195	137	42	15	21	24	52	114	77

Source: Kenya Meteorological Department



Map 3-9: Rainfall Map

Source: Kenya Metrological Dept.

3.8.2 Average Winds

The wind direction is predominantly easterly throughout the entire year. It shifts to a north-easterly direction between October and April and shifts again to a south-easterly direction between May and September. The strongest winds occur right before the "Long Rains" season, reaching the speed of 20 to 25 miles per hour. During the rest of the year, winds are usually at speed of 10 to 15 miles per hour.

3.8.3 Evaporation

The annual mean evaporation is about 987 mm, with a mean monthly maximum of about 263 mm in March. The daily net evaporation rate is 3.98 mm.

Table 3-2: Net Evaporation Rate

Evaporation data	Annual evaporation	Mean monthly maximum	Daily net evaporation
Kiambaa – 2014 Data	987.43 mm	262.5 mm	3.98 mm

Source: Kenya Meteorological Department

3.8.4 Relative Humidity

Because of Kiambaa Sub-County's located at south of the equator and in combination with humid air pumped in from the Indian Ocean, humidity for each day is generally high as shown in Table 3-3 below. The easterly winds coming from the Indian Ocean tend to keep temperatures standard throughout the country. In the months of January to April, relative humidity values have been known to plummet to anywhere from 10% to 20%.

Table 3-3: Mean Relative Humidity Values (%)

Time	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
9. AM	79	74	82	86	85	85	83	85	82	80	36	83
3. PM	45	37	43	53	55	59	53	53	50	47	57	54

Source: Kenya Meteorological Department

3.8.5 Temperatures

Early mornings in Kiambaa Sub-County are often cloudy, but the sun peeks through by mid-morning. Throughout the year, there is an average of seven hours of sunshine per day. Thirty percent more sunlight reaches the ground during the afternoon than in the morning. Usually, there is a lot of sunshine during the summer months when the sun is overhead in the Southern Hemisphere. The annual average daily sunshine is 6.7 hours, with monthly high and low means of 9.0 and 2.9 hours observed in the months of January and August, respectively. The average daily temperature throughout the year is about 12° Celsius with the coolest months occurring from June to August. The hottest months are January, February, and March. Temperatures also vary within the year with a minimum of 8° degrees Celsius and a maximum of 30° degrees Celsius. However, the daily range is much higher, with the differences between maximum and minimum temperatures each day around 10° in May and up to 15° degrees in February.

Table 3-4: Average Daily Temperature in Kiambaa Sub-County

Month	Temperature (^{0}c)		
	Mean Maximum	Mean Minimum	Mean Range
January	26.8	13.1	13.7
February	28.0	13.4	14.6
March	27.4	14.4	13.0
April	24.6	14.3	10.3
May	24.1	14.2	9.9
June	23.1	12.6	10.5
July	22.3	11.5	10.8
August	22.7	11.8	10.9
September	25.3	12.2	13.1
October	26.2	13.7	12.5
November	23.6	14.4	9.2
December	25.1	13.8	11.6
Year	24.9	13.3	11.6

Source: Kenya Metrological Dept.

3.9 Key Planning Issues

The key planning issues with regard to the Sub-County's physiographic characteristics are given in the following table:

Table 3-5: Key Planning Issues on Physiographic Characteristics

Sector	Key Highlights	Opportunities
Topography	The area has undulating topography.	Undulating topography is less prone to flooding.
Geology and soils	The area has deep fertile soils.	The potential for agriculture activities is high.
Hydrology	Presence of many permanent rivers flowing through the area.	Can be harnessed for provision of water to the residents.
		Can be used for leisure activities.
Vegetation	Natural vegetation is under pressure from intensive human activities.	Good climate.
		Rich volcanic soils that can accommodate agriculture.
Wildlife	Area has no wild animals due to urbanisation and human activities.	There are still birds which can attract tourists.
Climatic Conditions	The area receives annual rainfall ranging between 945 and 1382 mm.	The hot and wet climate can sustain a lot of human activities including agriculture and settlements.
	Temperatures range between 13^{0}C and 28^{0}C.	

4. NATURAL ENVIRONMENT AND DISASTER RISK REDUCTION

4.1 Overview

This chapter analyses the natural environment, ecologically sensitive areas, and disaster risk issues.

4.2 Natural Environment

Natural environment refers to the non-human-made surroundings and conditions in which all living and non-living things exist on Earth. These include land, water bodies and forests.

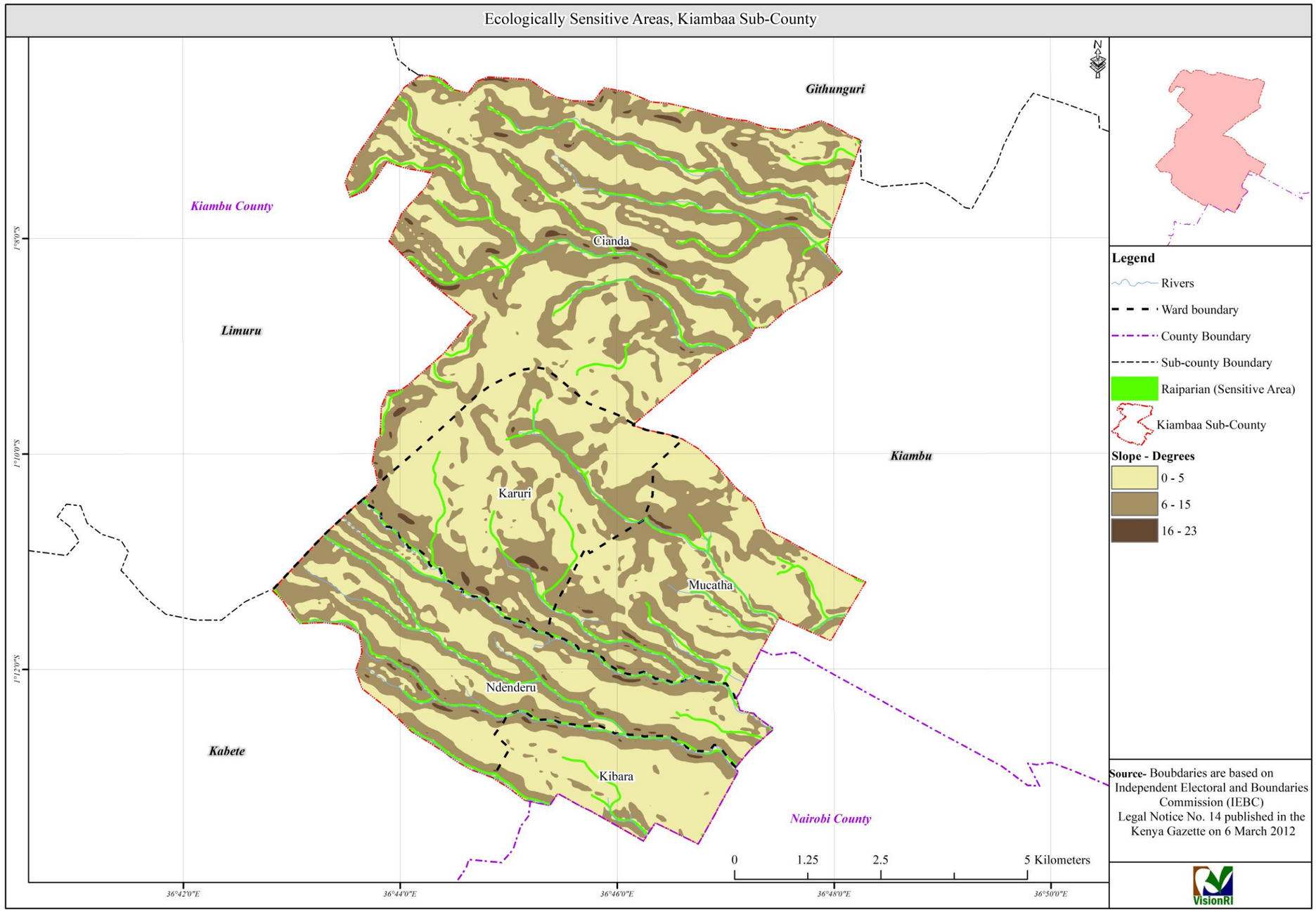
The land is the basis for agriculture encompassing soils, climate, vegetation, topography, and other natural resources (United Nations Food and Agriculture Organization). Kiambaa Sub-County falls in a hinterland, with fertile, well-drained soils that are suitable for agricultural activities.

The only type of water body found in the study area is rivers, which as earlier mentioned include Koski, Rui-Ruaka, Ruini and Karura.

4.3 Ecological Sensitive Areas

These are areas that would be threatened by unrestricted development, therefore, require special protection because of their landscape, wildlife, or historical value. The Physical Planning Handbook (2007) notes these to be hilly areas, rivers, water catchment areas, and areas with very steep slopes.

In the planning area, rivers are the main environmentally fragile areas. Others are the steep slopes along river valleys. These have over time been encroached and polluted as a result of urbanisation and agriculture. The map below shows the ecologically sensitive areas.



Map 4-1: Ecological Sensitive Areas

Source: VisionRI

4.4 Green and public open spaces

Open space are areas reserved for parks, green spaces, and other open areas. These provide areas for recreation, aesthetic value, and positive health impacts.

There are no open spaces in the planning area. This indicates a major gap according to the United Nations recommendation that for every 5,000 people, 1.5 hectares of open space should be provided.

For overall human development, this Plan proposes setting aside land for the purpose of open spaces.

4.5 Environmental Issues

These are the harmful effects of human activities on the biophysical environment. The key environmental issues that were observed in Kiambaa Sub-county are given in the table below:

Table 4-1: Environmental Issues

Types	Causes	Effects
Water pollution	• Disposal of household, commercial and industrial effluent into the rivers like Rui-Ruaka, Ruini and Karura; • The use of septic tanks for liquid waste disposal leads to contamination of underground water; • Use of inorganic fertilizers in agricultural practices; and • Dumping of solid waste such as plastics as well as food waste in water bodies.	• Waterborne diseases such as typhoid, cholera and bilharzia; and • Loss of flora and fauna in the water bodies.
Encroachment of fragile ecosystems	• Cultivation on riparian land; and • Construction along the riparian reserve.	• Flooding; • Loss of flora; and • Pollution of rivers.
Soil erosion	• Human activities on steep slopes.	• Loss of fertile agricultural land; and • Siltation.
Flooding	• Lack of drainage channels in some areas; and • Blockage of drainage channels as a result of poor solid waste management and lack of routine maintenance.	• Destruction of property.

4.6 Disaster Risk Reduction and Management

Disaster Risk Management is the application of policies and strategies in order to reduce existing and prevent new disasters from occurring, thereby contributing to the strengthening of resilience and reduction of losses.

4.6.1 Natural disasters

A natural disaster is an adverse event resulting from the natural processes of the Earth. Some of the natural disasters evidenced in the Sub-County include:

- **Landslides:** These emanate from encroachments on environmentally sensitive areas such as on the banks of Ruaka and Riara rivers and agricultural activities on sloping lands posing threats of soil erosion, landslides, and accelerated surface water run-off; and
- **Flooding:** This is experienced around Banana Hill Centre and along Limuru road where stormwater drains get blocked during heavy rains.

4.6.2 Man-made disasters

These are anthropogenic hazards caused by human action or inaction. These kinds of disasters have an element of human intent, negligence or error involving a failure of a man-made system. Below is a list of man-made disasters experienced in the Sub-County:

- Collapse of buildings due to poor construction and failure to follow required guidelines;
- Road accidents which mainly involve motorcycles;
- Fire incidents; and
- Drugs and substance abuse such as alcohol poisoning.

4.7 Key Planning Issues

The key planning issues in the Sub-County with regard to the natural environment and disaster risks are given in the table below.

Table 4-2: Key Planning Issues on the Natural Environment and Disaster Risk

Sectors	Key Highlights	Opportunities
Natural environment	Area has a rich inventory of permanent rivers.	The rivers act as natural drainage channels.
Ecologically sensitive areas	Encroachment of river valleys and riparian reserves.	Presence/existing laws on how riparian reserves should be observed.
Greenery and public open spaces	The planning area does not have open public spaces.	Riparian areas present potentials for the provision of linear public open spaces.
Environmental issues	Water pollution is rampant	Existence of laws to curb pollution and demarcating riparian reserves.
DRR	There are instances of the collapse of buildings in Ruaka.	Existence of planning and building laws.

Source: VisionRI

5. POPULATION AND DEMOGRAPHY

5.1 Population Size

The current population of Kiambaa Sub-County stands at 234,600[3] as per the 2019 census. This represents a growth of 55.6% from the 2009 population of 145,053. This growth is mainly driven by rapid urbanisation and increase in human settlements in the Ruaka, Ndenderu and Karura areas. The Sub-County continues to experience increased demand for residential land use leading to the uncontrolled conversion of previous agricultural lands (large coffee farms). This phenomenon is common along the Ruaka-Ndenderu-Limuru Road and on the Ruaka, Banana Hill to Kiambaa Road.

Table 5-1: Historical Growth of Population

Wards	Population		Percentage Change
	2009	2019	
Karuri	30,660	41,879	73.5%
Ndenderu	35,853	67,071	27.7%
Muchatha	26,544	53,168	55%
Kihara	36,877	53,474	69.4%
Cianda	15,119	20,808	63.6%
Total	145, 053	236,400	55.6%

Source: Kenya National Bureau of Statistics (KNBS) Population Census 2019 Report

5.1.1 Population distribution and density

- **Population density:** The population densities for the various wards in the planning area are shown in the table below.

Table 5-2: Population Density by Ward

Wards	Population	Area (sq. Km)	Density (pop. Per sq.km)
Cianda	20,808	36.7	567.1
Karuri	41,879	14.5	2,898.2
Ndenderu	67,071	15.0	4,486.4
Muchatha	53,168	11.8	4,521.1
Kihara	53,474	5.4	9,976.5
Total	234,600	83.2	2,819.4

Source: Based on KNBS, 2019 Census Report

3 2019 Kenya Population and Housing Census – Volume 1.

5.1.2 Population Structure

The bulk of the population of both sexes is largely youthful. As per the 2019 census, 38% of the population is below the age of 20. Another 33% is between 20 and 35 years of age. The population between the age of 35-50 years accounts for 18%. Only 9.6% is above the age of 50 years. This is also an indication on the need for facilities that directly provide services for the youth such as schools, colleges, and healthcare for under-fives, as well as adequate housing for new families as this is the childbearing age. Figure 5-1 shows the population structure in the planning area.

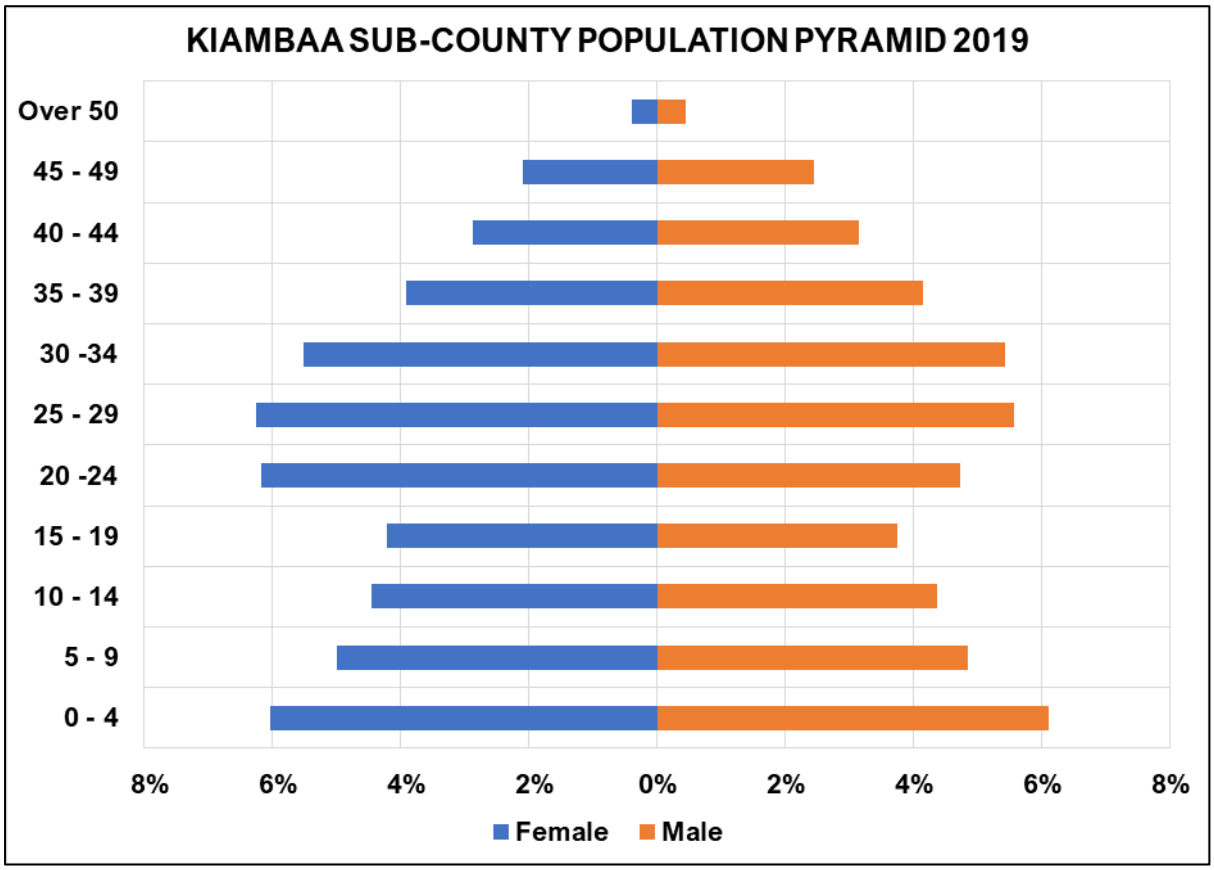


Figure 5-1: Population Structure

Source: Adapted from KNBS Census Report 2019

5.1.3 Population Projections

The planning area's population is expected to grow from 236,400 in 2019 to 416,534 by the end of the planning period in 2030 at a steady annual growth rate of 6.17% as shown in Table 5-3. The ongoing urbanisation and construction of major infrastructure including link roads across the Sub-County as well as the extension of additional services, e.g. sewer, piped water provision, etc., are expected to attract more investments in Kiambaa Sub-County leading to population increase.

Table 5-3: Projected Population, 2019 to 2030

Ward	Year		
	2019	2024	2030
Cianda	20,808	28,069	40,202
Karuri	41,879	56,494	80,912

Ward	Year		
	2019	2024	2030
Ndenderu	67,071	90,478	129,585
Muchatha	53,168	71,723	102,723
Kihara	53,474	72,135	103,314
Total	236,400	318,899	416,534

Source: Based on KNBS, 2019 Census Report

Note:

Population growth rate formula
PGR = P (t) – P (t0) / (P (t0) * (t - t0))

Previous Population: 0

Current Population: t

5.2 Demography

Kiambaa Sub-County's growth has been attributed to its proximity to Nairobi, presence of good transportation links, and availability of land for development.

According to the SPC for the NMR, Kiambaa is the ninth fastest expanding urban centre amongst the 24 centres in the region in terms of population growth. Its growth rate was calculated at 6.16%, almost double that of Nairobi, which was at 3.89%.

5.2.1 Average Household Size

The average household size in the Sub-County is 2.9. On the other hand, Kiambu County's average household size is 3.0 which is lower than the national average of 3.9 persons per household.

5.2.2 Literacy Levels

Literacy levels in the Sub-County are quite high with 48% having completed their studies and another 32.6% of the population currently in schools. Only 4.4% of the residents have never set foot in a classroom. Another 14.3% began school but could not complete due to varied reasons. The chart below shows the distribution of literacy levels in the Sub-County.

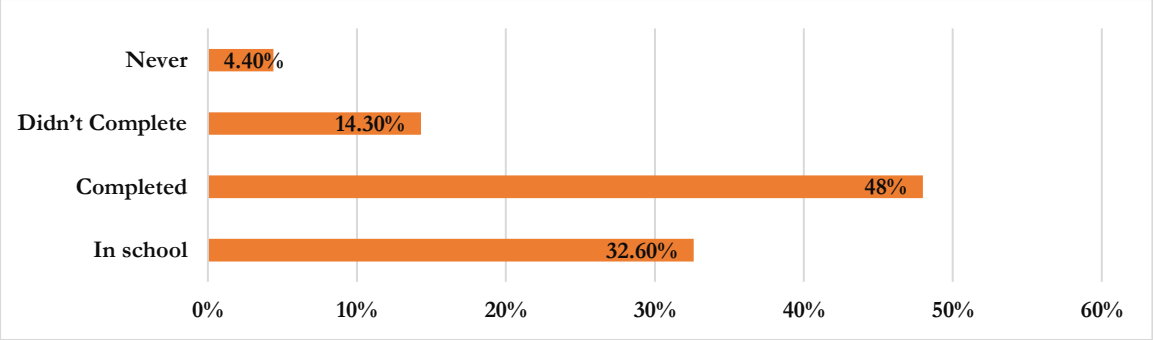


Chart 5-1: Literacy Levels

Source: Kenya Population and Household Census 2019

Out of those currently in schools, about 50% are in primary schools, 21% in secondary and 19% in pre-primary. The chart below shows the distribution of these.

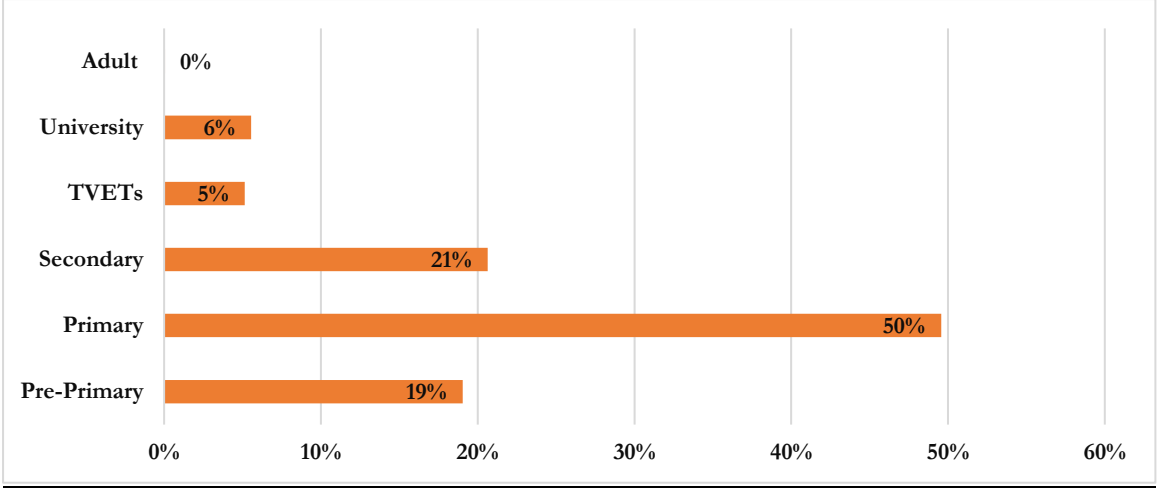


Chart 5-2: Population Currently in School

Source: Kenya Population and Household Census 2019

Out of the 207,042 who have attended schools, about 22% have studied beyond secondary school level. Another 37% dropped out after primary school. The national government has put in place a policy to achieve a 100% transition from primary to secondary schools. By these, the national government intends to have a majority of the population attain a minimum of secondary education.

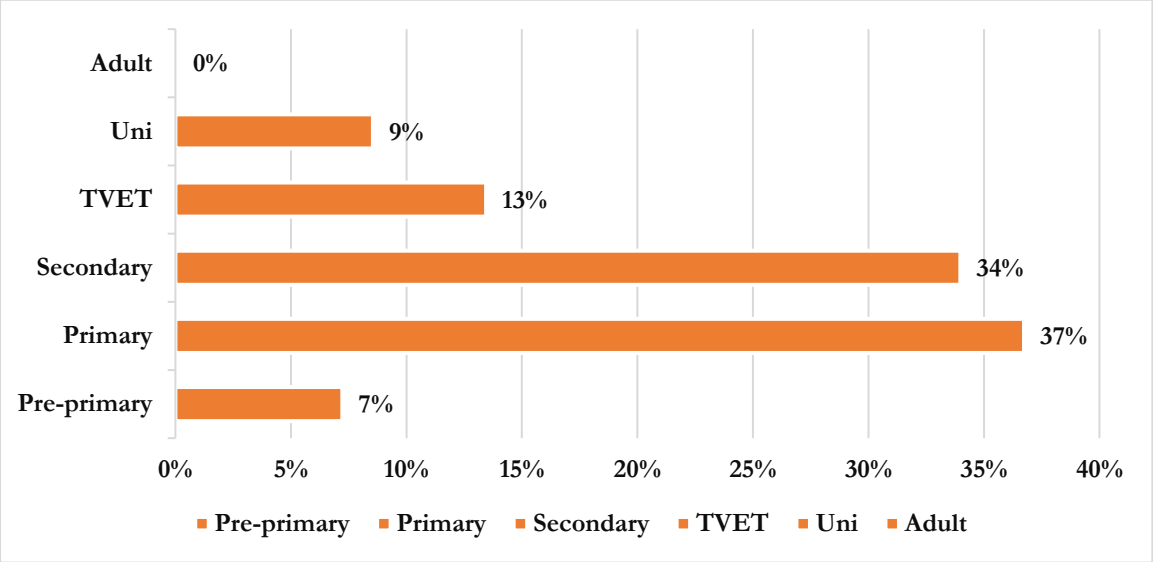


Chart 5-3: Highest Level of Education Attained

Source: Kenya Population and Household Census 2019

5.2.3 Migration trends

Migration into Kiambaa Sub-County is attributable to its proximity to the city of Nairobi, presence of good transportation links and availability of land for development. This has, therefore, driven the residential sector to growth spurred by the demand from the expanding working population of Nairobi.

According to the SPC for the NMR, Kiambaa Sub-County was the ninth fastest-growing urban centre amongst the 24 centres in the NMR in terms of population growth. During the period from

1999 to 2009, population growth in Kiambaa was calculated at 6.16%, almost double the growth rate of Nairobi, which was at 3.89%. The fast population growth resulted in increasing densities within Karuri town and its environs such that Kiambaa Sub-County was rated as having the second-highest population density in Kiambu County in 2009 (CIDP, 2013-2017). The Sub-County's population density during that year was calculated at about 1,979 persons per square kilometre, which was next to Kabete Sub-County's density of about 2,329 persons per square kilometre. Within the Kiambaa urban centre, the density in 2009 was at 389 persons per hectare (ppha) which is more than seven times higher than Nairobi's 54 ppha (SPC for NMR). From a national perspective, Karuri, which is the largest urban centre in Kiambaa Sub-County, was the 16th largest urban centre in Kenya in 2009 in terms of population.[4]

5.2.4 Death rate

There are several concepts related to death rate such as age-specific death rate, child mortality, crude death rate, infant mortality, maternal mortality death, and under 5 mortality rates. These rates are vividly observed as the population transitions from one age group to another from conception. The most common death rates are under 5 mortality and infant mortality rates. The maternal mortality ratio is the number of women who die during pregnancy and childbearing. The highest death rate in the planning area, as well as any population, is the crude death rate. The crude death rate is described as the annual number of deaths occurring per a thousand mid-year population. As the population transitions from one age group to another, the number of deaths is recorded. It is evidently seen in the age-sex pyramid that the bars fluctuate in length. This indicates that a high number of people died as they transitioned to 30 - 34, 35 - 39, and 40 - 44 age groups.

5.2.5 Life expectancy

This is the average number of years a person is expected to live. According to the World Health Organization, the average life expectancy in Kenya was 52.81 years in 1999; 57.80 years in 2009; and 66.44 years in 2019, a 0.39% increase from 2018. The increase in life expectancy is attributed to an improvement in people's health.

5.3 Social Analysis

5.3.1 Cultural dynamics

A close look at the family in its socio-cultural context shows that the African family has undergone numerous transformations in structure, form, and functioning, resulting in various dimensions with distinctive characteristics. The family and kinship networks provide the basic support network for most rural communities. They are also responsible for socialising children, caring for the dependent and provide other kinds of support to the members of the concerned community.

Kiambaa Sub-County has experienced tremendous social-cultural changes due to its proximity to the capital city coupled with the land use/tenure transformations that are responsible for accommodating a diversity of ethnic groups. As the newcomers join the indigenous farmers and residents, several consequences emerge such as the breakdown of communal, kinship and familial ties. The intrusion by the newcomers not tied to local customs and norms has weakened the cohesion amongst the members of the formerly rural communities.

[4] https://www.opendata.go.ke

5.3.2 Heritage

Karuri Town is the traditional centre of the planning area. The town was established as a meeting centre in the pre-colonial era where Kikuyu Paramount Chief used to meet for deliberations. The town is named after a paramount chief, Karuri wa Gakure. It is well known internationally for its Banana Hill suburb, which is considered a centre for contemporary arts and is home to the Banana Hill Art Studio.

Natural heritages also exist with the rivers Riu Ruaka ("river of women", where women used to undergo circumcision), and many hills and valleys that call for conservation.

5.3.3 Religion

The Agikuyu people embraced Christianity as early as the sunset of the 19th century, a phenomenon that completely changed moral, social, economic, and even political aspects. Kiambaa Sub-County is a predominantly Christian area and thus churches have taken up a new space of communal get-together where members meet to support each other in times of need such as during bereavements, weddings or sickness; thus, mirroring most of the customary organisational attributes and functions. These are the roles that *Mbari* (family group or sub-clan) members primarily perform, though still being practised by some of the family/clan members in the area who have continued to practice their *mbari*.

5.3.4 Marginalized and Minorities

Marginalised and minority groups include those amongst the population who are unable to access goods and services due to underlying circumstances such as gender, disability, or harsh climatic conditions. The dominant factors affecting the minorities and marginalized communities include inadequate political representation, high unemployment levels, low literacy, poverty, lack of social amenities and retrogressive cultural practices. In this ISUDP, these elements are covered in different chapters/sections under specific thematic areas. An important disclaimer is that although the two concepts are used together, being a minority is not always an aspect of marginalization.

5.4 Key Planning Issues

The key planning issues with regard to population and demography are given in the table below.

Table 5-4: Key Planning Issues on Population and Demography

Sector	Key Highlights	Opportunities
Population size and structure	• The area is experiencing rapid population growth; • There are more younger people compared to the elderly; • The 2019 population has grown by 55.6% from the 2009 population; • The population density stands at 2,819 persons per square kilometre; and	• The increased population creates demand and ready market for goods and services produced; • Young people may be part of the labour force, both skilled and unskilled; • To consider TOD development options; • Mixed-use development to maximize land availability; and • Social inclusion through planning options.

Sector	Key Highlights	Opportunities
	• The population is projected to reach 416,534 by the end of the planning period in 2030.	
Demography	• Kiambaa Sub-County boasts of high literacy levels amongst its populace.	• Young people may be part of the labour force, both skilled and unskilled.
Social analysis	• As the town becomes more urbanized, the indigenous culture and way of life of the inhabitants become eroded as they become assimilated into ways perceived to be urban.	• Immigrants are able to fit in without having to conform to the cultures of the initial inhabitants of the area.

Source: VisionRI

6. LAND ANALYSIS

6.1 Overview

This chapter discusses the various land tenure systems, land administration and management, land use patterns, suitability, and land market values in the area.

6.2 Land Tenure Systems

There are three types of land categories in Kenya as outlined in Article 61 of the Constitution and National Land Policy. They include: (i) private land which is held by an individual under freehold tenure system or leasehold system or any other land described as private by any other Act; (ii) public land which is held by the government or state organ; and (iii) community land which is held by a community on the basis of ethnicity, culture or other similar interests. In Kiambaa Sub-County, most of the land is held by individuals as leasehold, especially in the urban centers' large-scale tea and coffee estates. In the peri-urban and rural areas, the land is under freehold systems. The two systems of land ownership present different opportunities for planning with leasehold being subjected to planning standards, while freehold up until the enactment of the 2010 Constitution, Physical and Land Use Planning Act 2019, etc. has been largely operating without strict planning requirement. This has led to land fragmentation and conversion of land to urban use with minimal land use planning input.

6.3 Administration and Management Functions

Land administration and management refer to the process of registration and dissemination of land information in relation to land transactions. It can also be described as a process of managing the use and development of land resources. An efficient land administration and management system ensures ease in land transactions, hence enhancing the security of tenure, support land taxation, urban and regional planning, as well as valuation.

Land administration and management in Kenya are undertaken at two levels, namely the National and County. At the National level, it is undertaken by the National Land Commission (NLC), Department of Surveys and Department of Lands. The NLC manages public land through activities like renewal and extension of leases and allocation of public land. The NLC also carries out the inspection of public land allotment for adherence to planning requirements. It also encourages the use of alternative and traditional dispute resolution mechanism in land dispute amongst others.

On the other hand, there is a Land Registry at the County where all land transactions are recorded. However, the County Land Registry is still operating on analogue platforms which make access to land information difficult.

The District Land Office handles land registration while the County is involved in land use planning, development control, processing of applications like building plans, change of user and land sub-divisions.

The County's major land functions include inter-alia processing change of user, approval of the subdivision, granting of preliminary approvals for extension of the user, sub-division of public land, renewal of the lease, and extension of the lease to be approved by the NLC subject to Physical Planning and Survey Acts.

The key actors in land administration and management at the National land County levels are provided in Table 6-1.

Table 6-1: Key Actors in Land Administration and Management

Level	Key Actors	Roles	Guiding Legislation
National Government	National Land Commission	Amongst other functions of the NLC, the main ones are: • Manage public land on behalf of National and County Governments; • Monitor and have oversight responsibilities over land use planning in the country; and • Alienate public land.	• Kenya Constitution 2010 Article 67; and • National Land Commission Act of 2012.
	National Director of Physical Planning	• Advise government on strategic physical and land use planning matters; • Formulate policies, guidelines, and standards; and • Capacity building and technical support on County planning staff.	• Physical and Land Use Planning Act of 2019.
	Director of Survey	• Establish and maintain a national geodetic control network to facilitate other surveys and research; • Produce and maintain plans of property boundaries in support of land registration; • Produce and continuously update national topographical basic maps; • Maintain national and international boundaries; and • Prepare and publish the National Atlas of Kenya, as documentation of National Heritage and promotion of Nation's identity.	• Survey Act.
	Director of Land Administration	• Establish and manage land control boards; • Process and approve development applications e.g. issuance of consents to charge, lease, or transfer; • Process ownership documents such as titles/grants for both public and community; • Setting apart land for public use; • Custody and maintenance of land records; and • Document public land and preservation of fragile ecosystems, e.g. wetlands and water catchment areas for purposes of conservation.	• Land Act of 2016; and • Land Registration Act of 2012.

Level	Key Actors	Roles	Guiding Legislation
	Principal Land Registrar/Chief Land Registrar	• Registers land titles, leases.	• Land Registration Act of 2012; and • Community Land Regulations of 2017.
County Government	County Executive Committee Members of Land	• Oversees the entire County Land Management and Administration team.	• County Government Act of 2012; • Urban Areas and Cities Act; and • County Government Act, 2012.
	County Director of Physical Planning	• Develop sustainable strategies on urban and rural development and management; • Formulate, implement, and review various policies in the Department; • Promote and facilitate the development of decent housing; and • Achieve timely delivery of planning decisions on private sector and community development initiatives.	
	County Director of Survey	• Carry out surveys on public land; • Develop a GIS and Land Information System database for spatial data management; and • Provide efficient land and property management for effective County land documentation and land taxation.	• County Government Act of 2012; and • Survey Act, 1961 (Revised 2012).
	Land Control Board	• Approve or reject subdivision requests on agricultural land; • Approve transactions such as sale, transfer, or mortgage of shares in private companies or cooperative societies that own agricultural land; and • Issue consent to carry out transactions on majorly agricultural land (freehold land).	• Land Control Act Cap 302 (Revised 2017).
Other Key Players	Registered Physical Planners	• Development approval applications to the County; and • Advise County on innovations in the land and planning sector.	• Urban Areas and Cities Act, 2011;

Level	Key Actors	Roles	Guiding Legislation
			• Physical and Land Use Planning Act, 2019; • Physical Planners Registration Act, 1996; • Land Act, 2012 (Amended 2016); and • Water Act, 2002.
	Registered Land Surveyors Land and Environment Court	• Boundary confirmation; • Beaconing of approved subdivision and amalgamation scheme; • Amendment of RIM; and • Preparation of deed plans.	• Survey Act, 1961 (Revised 2012).

6.4 Major Challenges

Certain gaps in management and administration legislation at the county level have affected smooth land transactions. As a result, below are some of the challenges faced in land administration in the Sub-County:

- Poor coordination and communication between different actors such as Land Control Boards and the County; Director of Survey and County; District Land Officer and County; NLC, County Government and District Land Officer. This eventually leads to delays in the delivery of services related to land;
- The existing land register is still analogue. This makes it difficult to access information related to land and monitor land transactions;
- Land Control Boards play a critical role in land administration and management, yet they have inadequate capacities on matters relating to land use planning and standards requirements;
- Once an application is submitted, it is normally subjected to a number of stops/departments, which leads to unnecessary delays ;
- The complex nature of the processes of land administration involving land transactions;
- Lengthy process of amalgamation, subdivision, change of user, etc., leading to many people avoiding the process resulting in unplanned development;
- Inadequate governance, creating a negative attitude to delivering services in the sector and opening up avenues for misinformation in the public domain;
- Misunderstanding of the mandate of the Land Control Board by the public–for example, once a party obtains consent to subdivide land, they do not proceed to the respective County Government department to seek approval of that particular transaction. This leads to an uncontrolled subdivision of land and loss of revenue;
- Rate charging on agricultural land has caused a lot of complaints from the public; and
- Land-use planning has been a preserve of urban areas, hence neglecting rural and agricultural land resulting in subdivision and land uses, which led to the loss of vital agricultural, forest and land uses.

6.5 Land Use Patterns

The planning area generally rests on undulating and hilly terrain accentuate by steep slopes towards the rivers at the southeast. Land use is predominantly open, agricultural, and residential at the northern, central, and southern portions of the town. There are marked urban concentrations in three highly commercial nodes namely, Karuri Town at the junction of Banana-Raini Road and Ndenderu-Banana Road, Muchatha along Banana-Raini Road and Ruaka town at the junction of the Northern By-pass Road and Limuru Road. The latter is notably the most urbanised of the three nodes due to relatively flat terrain and good accessibility. Ruaka already hosts several mid-rise flats as well as commercial establishments.

Secondary urban concentrations are observed in Gachie, particularly around the hospital and police station, and in Ndenderu being at the junction of Limuru Road, Gitaru Road and Ndenderu-Banana Link Road. Lesser density urban concentrations may be found at the junction locations of Wangunyu and Nduota. These mainly serve as local transport nodes.

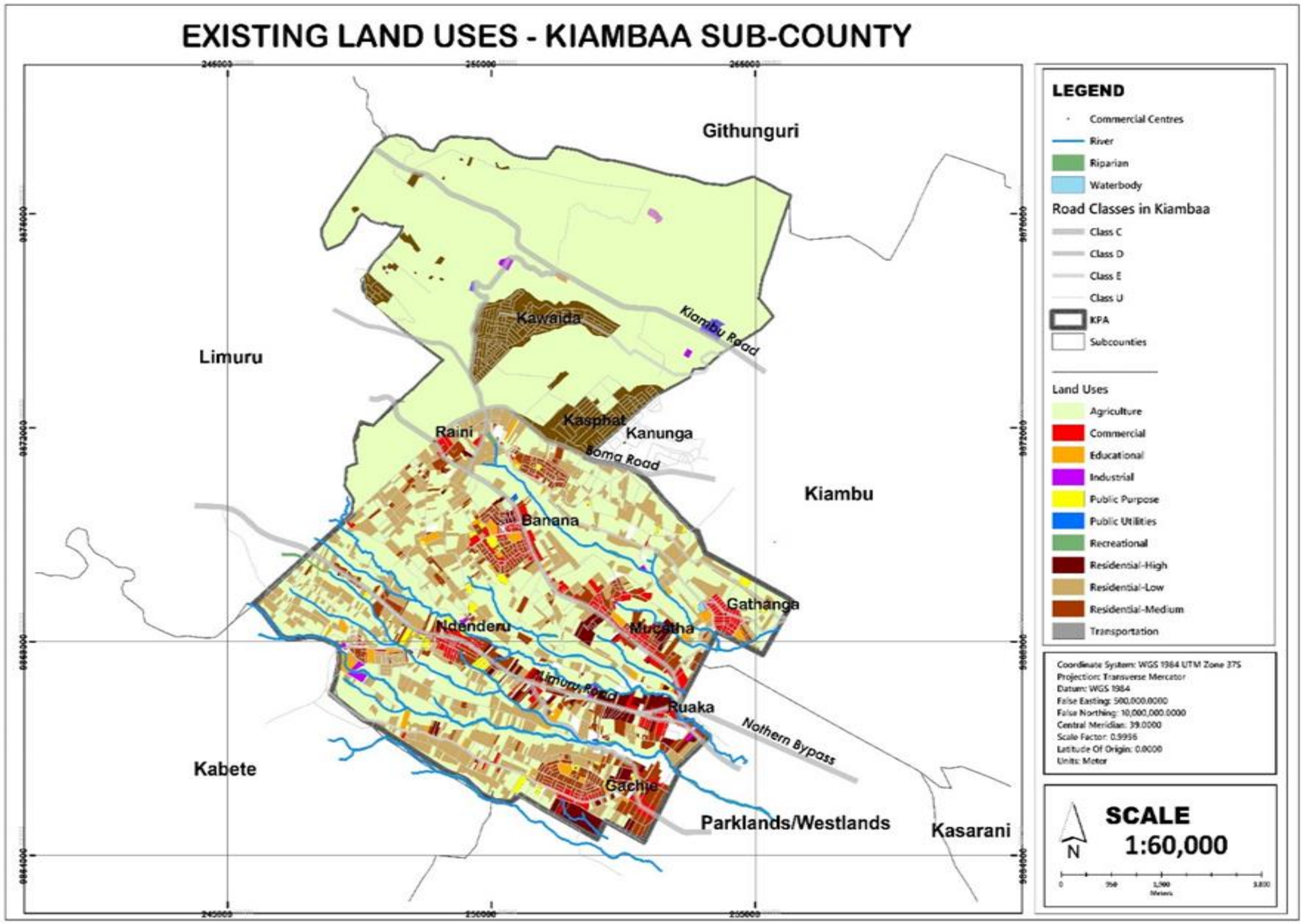
An urban corridor is observed to be fast developing along Boma Road from Karuri CBD to Muchatha town. The corridor's extension towards Ruaka town is somehow hampered by steep

terrain along Boma Road. However, residential flats were observed to already have been built on the sloping areas of Banana and Muchatha wards.

Incongruous developments that were observed include residential houses at the edge of the abandoned quarry along Kihara-Karura Road; public cemetery near residential homes along Ndenderu-Banana road; and the church next to a night club/bar in Karuri CBD. Map 6-1 shows the existing land uses in the planning area. Most of the development is following the transport corridors within a radius of 100-200 metres. Settlements have also structured the terrain due to the river's valley and slope.

Figure 6-1: Karuri Urban Centre

Source: Field Study



Map 6-1: Existing Land Use Map

Source: VisionRI

6.6 Land Suitability

Normally, the suitability of land is gauged by how it can accommodate human activities and urbanisation by analysing parameters like slope, soil types and climate, amongst others. Generally, land in Kiambaa Sub-County is suitable for both agriculture and urban functions, if the three parameters are analysed. However, there are spots/zones where conservation efforts should be enhanced particularly along the rivers, hills, and areas with large tea/coffee plantations. s observed in the earlier section chapter 3 above, much of Kiambaa Sub-County has a slope of $0\text{-}5^0$ and $6\text{-}15^0$ for the river valleys. The steepest areas have a slope of 23^0. As per the Physical Planning Handbook (2007), this still falls within what is considered fit for development as it has categorised that areas between 5^0 and 25^0 are medium slopes and suitable/can accommodate human settlement whereas areas with a slope above 25^0 as steep and therefore not fit for such developments.

6.7 Land Values/Market

According to Maina (2013), land conversions in Kiambaa Sub-County are taking place in circumstances where the practice of farming communities in introducing changes without necessarily selling or converting agricultural land to residential purposes is becoming severely affected by radically evolving new economic, social, cultural, and environmental pressures.

The above situation is overwhelming existing local capacities to respond to rapid changes and pressures. As a result, some residents have ended up selling their land parcels without any clear plan on what to do with sale proceeds. This has contributed to increased squalor in the midst of abundant resources as the Sub-County boasts enormous wealth.

In general, land in the Sub-County is expensive, similarly, land in the urban-rural fringe is expensive in comparison to those in more rural settings. This is advantageous to landholders since they are able to sell their small portions of land and buy bigger sized ones in farther rural areas. In addition, the land market is fairly active in the area, thus land sales, subdivisions, and change of use are frequently undertaken.

In addition, land prices have been increasing rapidly. For instance, in Ndenderu/Ruaka an acre of agricultural land was Kenya Shillings 20 million in 2015. Evidence from the market indicates that the price of a similar acreage was about Kshs 150 million in 2019. This depicts an increase of about 750% in 4 years. As illustrated in the table below, the appreciation in land prices in the Sub-County was in most cases more than 100%.

The rapid increase in land values, although good for the rich landowners, poses great challenges to potential developers, government, and the poor members of the community. This is because it makes land less accessible. Thus, both County and National Governments are faced with serious challenges in accessing land for infrastructure development.

6.8 Key Planning Issues

The key planning issues with regard to the land sector is given in the table below.

Table 6-2: Key planning issues in the land sector

Sector	Key Highlights	Opportunities
Land Administration	• Land administration is still analogue; and	Presence of institutional systems at the national and county levels.

Sector	Key Highlights	Opportunities
	• Consents from Land Control Boards should pave way for physical planning processes but not be used to skip them.	
Land Use Patterns	• There is a shift from agriculture to urbanisation in the form of residential and commercial. This shift is not sustainable in the long run.	Increased economic activities provide potentials for the Sub-County's development.
Land suitability	• The slope of the planning area is suitable for urban development; and • There is a need to conserve the tea plantations and the river valleys.	• Enabling zoning regulations; and • Enabling planning regulations regarding riparian reserves.
Land Values	• As the demand for housing soars, prices continue to rise.	Enabling zoning regulations.

Source: VisionRI

7. HUMAN SETTLEMENTS

7.1 Overview

Urban growth in Kiambaa Sub-County has intensified and sprawled over recent years. This is attributable to its proximity to the city of Nairobi, the presence of good transportation links and the availability of land for development.

The SPC 2012 for the NMR, which was based on the 2009 census, ranked Kiambaa as one of the fastest-growing urban centres amongst the 24 centres in the NMR in terms of population growth. As at that time, its population density stood at 1,979 persons per square kilometre. In 2019, this number increased to 2,595 persons per square kilometre making it the second highest densely populated Sub-County in Kiambu County after Kabete Sub-County which had a density of 3,289 persons per square kilometre.

While urban growth has spurred economic development, it, however, occurred in an "unplanned, uncoordinated and uncontrolled" manner (CIDP, 2018-2023) thus exerting strains to the provision of urban facilities and services and put development pressure to a sensitive highland environment.

Many privately owned lands have been subdivided and developed on a piecemeal basis, without approved planning schemes. There are many cases where such developments are without adequate utility and infrastructure, such as potable water and sanitation systems, leading to a decline in the quality of the urban environment.

There are also cases where inappropriate developments were made on environmentally sensitive locations such as vegetated or sloping sites. These, in turn, have led to the degradation of the natural ecosystem by way of desertification, soil erosion, increased surface water run-off, etc.

7.2 Hierarchy of Urban Nodes and their functions

The urban development, trends for Kiambaa is well represented by the analysis of the key nodes existing along the main spines and on major road junctions. There are six major activity nodes in the planning area, namely, Karuri, Muchatha, Ruaka, Gachie, Ndenderu and Kiambaa. Their characteristics are presented in the following sections.

7.2.1 Karuri Town

The traditional centre of the planning area is also known as Banana Hill and is the location of the popular Banana Hill Art Gallery. The town is a planned settlement and the roads are laid in a grid fashion. The predominant land use is commercial with a prevalence of low-rise (single to two storeys) buildings.

There are a few mixed residential-commercial buildings having four or five storeys. Most buildings are old and ill-maintained. Significant landmarks include the Karuri Catholic Church, Police Station, Banana Plaza, and Banana Hill Art Gallery.

Boma Road and Ndenderu-Banana Road are all-weather, but the interior roads are mostly of the earth surface. The town lacks paved pedestrian sidewalks as well as appropriate road drainage systems. The lack of paving gives the town a rustic rural ambience.

Vehicle parking facilities are an issue. Some private commercial-residential establishments do not have parking provisions. The bus park is congested and matatus are observed to park even on the road carriageway.

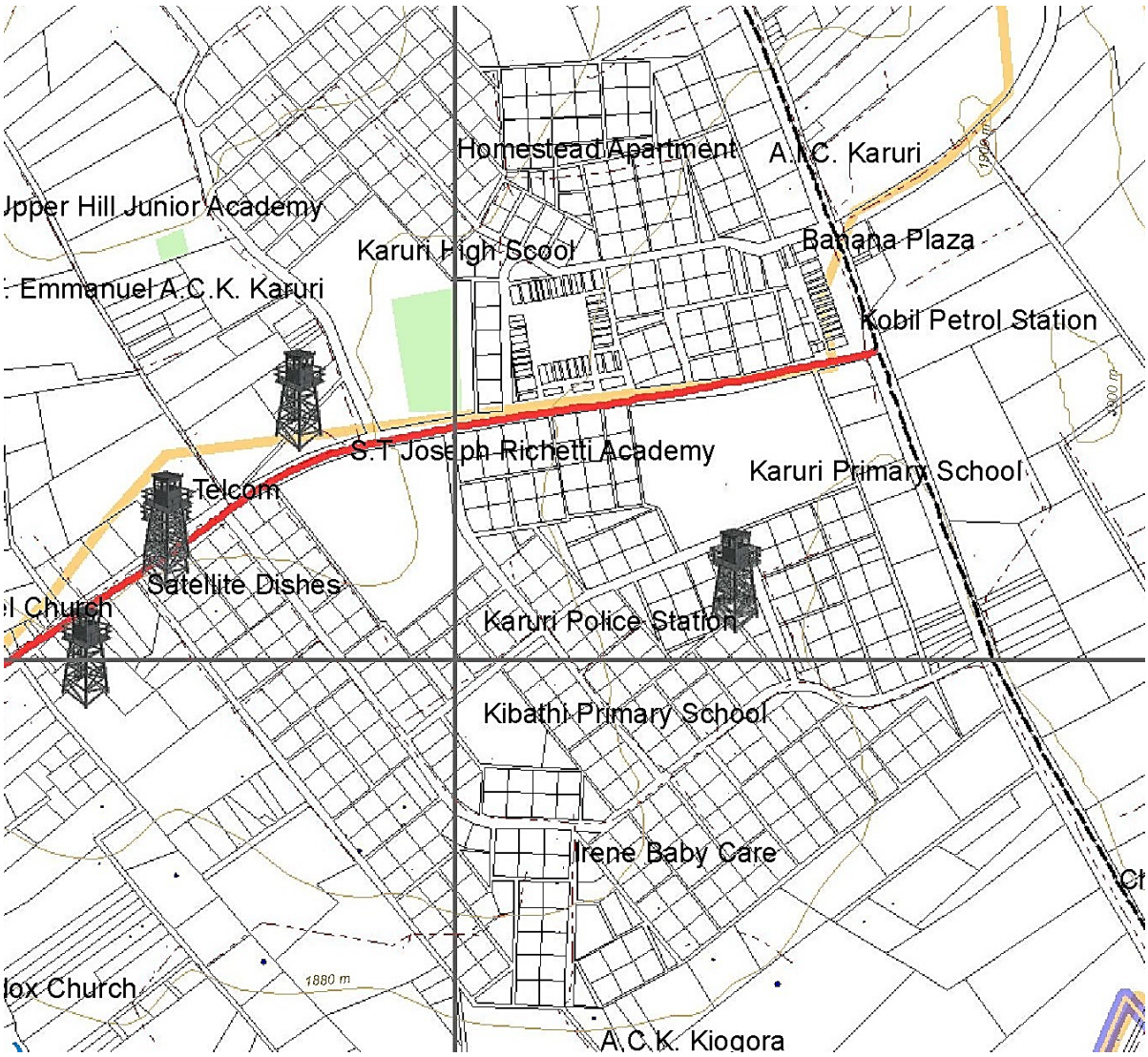


Figure 7-1: Layout of Karuri

Source: Field Survey

7.2.2 Muchatha

This activity node also lies along Banana-Raini Road although it is of smaller scale compared to Karuri Town. It has a rectilinear structure along Boma Road supplemented by parallel street blocks at the North-Eastern side of Banana-Raini Road. Land use in Muchatha is also predominantly commercial along Banana-Raini Road. This becomes increasingly residential towards the interior of the area. Building heights also range from one to five storeys.

The Mary Immaculate Catholic Church is a significant landmark along the main road. Similar to Karuri Town, only the main road is paved while interior roads are earth-surfaced. There is also a lack of pedestrian sidewalks and road drainage facilities.

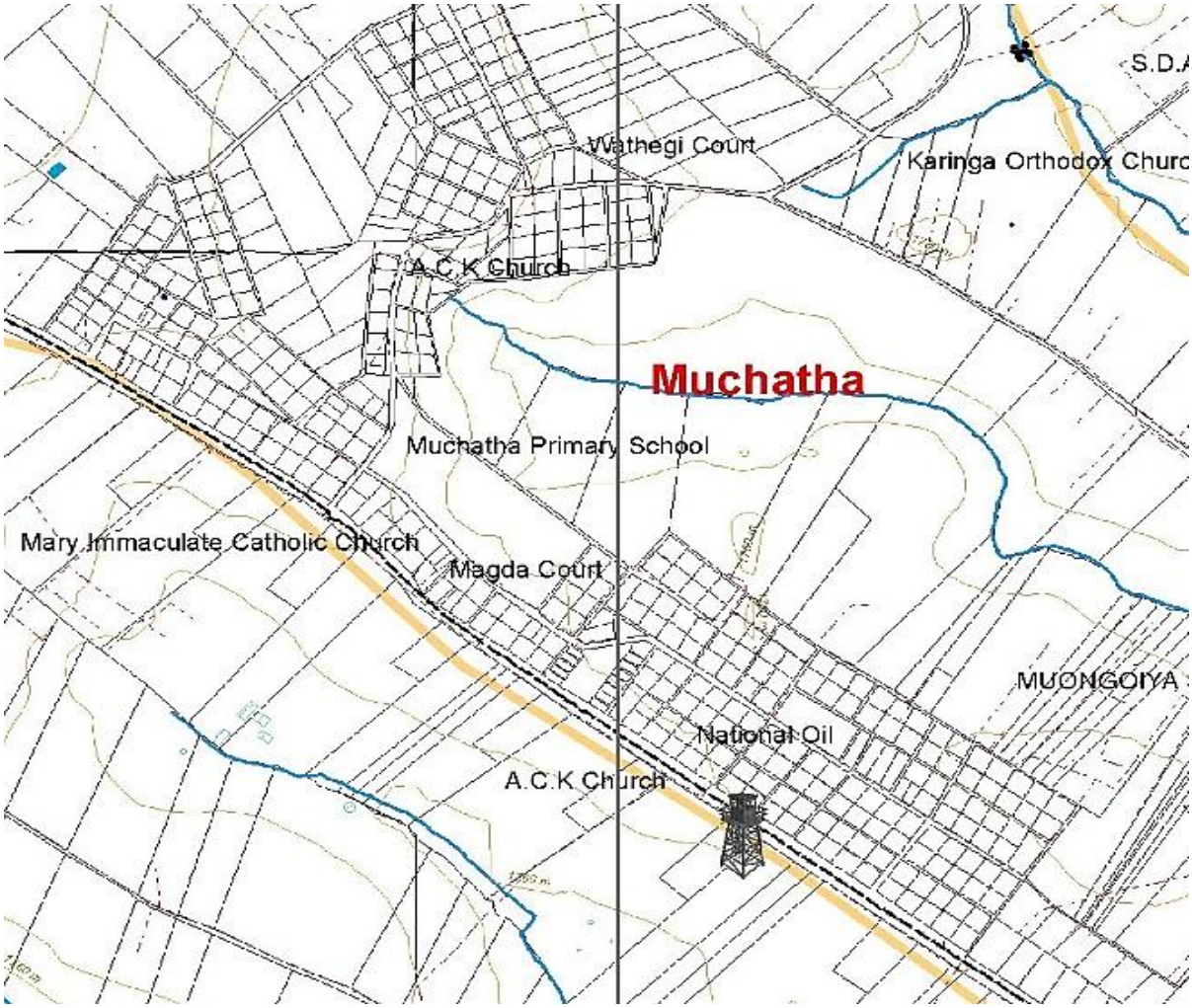


Figure 7-2: Layout of Muchatha

Source: Field Survey

7.2.3 Ruaka

The area lies at three major road intersections, namely, Banana-Raini Road, Limuru Road, and the Northern Bypass Road. This crossroads location has evidently spurred rapid growth giving the area a bustling urban ambience. This largely contrasts to the laid back almost rural character of the upper portions of the planning area. Ruaka has a linear structure and is observable that local road infrastructure is yet to catch up with the rapid development of residential apartments and commercial buildings.

Land use is predominantly residential with requisite commercial developments including banks, hospitals, and major retail outlets like Quickmart, Cleanshelf and Tuskys. The area hosts an array of mid-rise residential flats and mixed-use establishments, five storeys and up to 10-storeys, with the visible continuous building. Developments are closely built giving a very dense character to the area. This is attributable to the rectangular shape of individual lot parcels – narrow frontages with elongated interiors. The informal market, having temporary stalls at the centre of town, occupies the road reserve.

There are also three secondary nodes-Gachie at the south just off Red Hill Road, Ndenderu at the western central portion and Kiambaa at the northern part of the planning area.

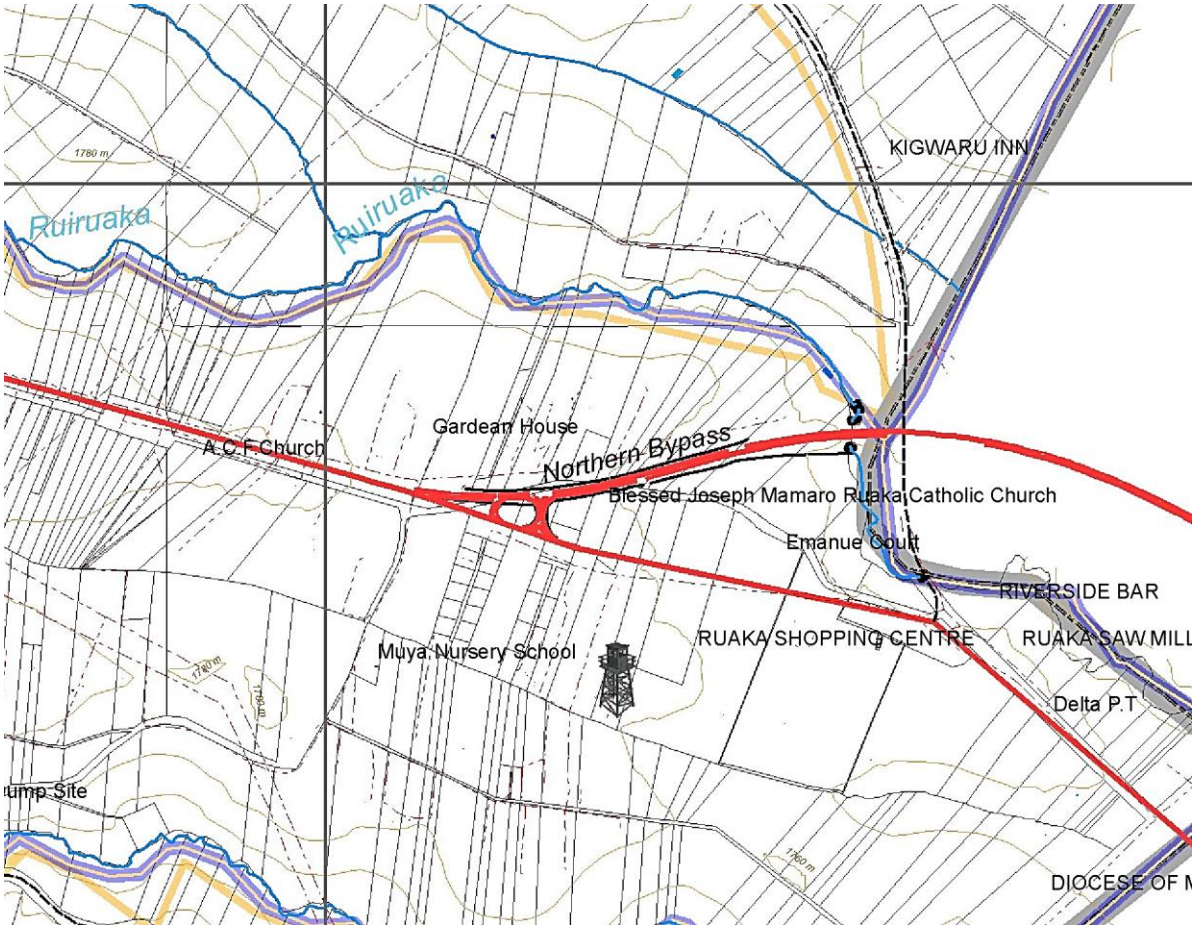


Figure 7-3: Layout of Ruaka Town

Source: Field Survey

.2.4 Gachie

This node hosts a bustling residential community where urban growth is being driven by proximity to Nairobi via Waiyaki way - Red Hill Road. It is laid out in a radial pattern built around community facilities such as Gachie Academy and Kihara Level 4 Hospital (formerly Gachie Health Centre). Land use is predominantly residential although there is a commercial strip along Kihara-Karura Road.

Developments are mostly one to two storeys although there are already emerging four to five-storey residential developments. There is a mixture of old and new buildings in the area. There are no sidewalks and other pedestrian amenities in the area. Matatus and boda-bodas park along the road reserve since the area has no formal bus park.

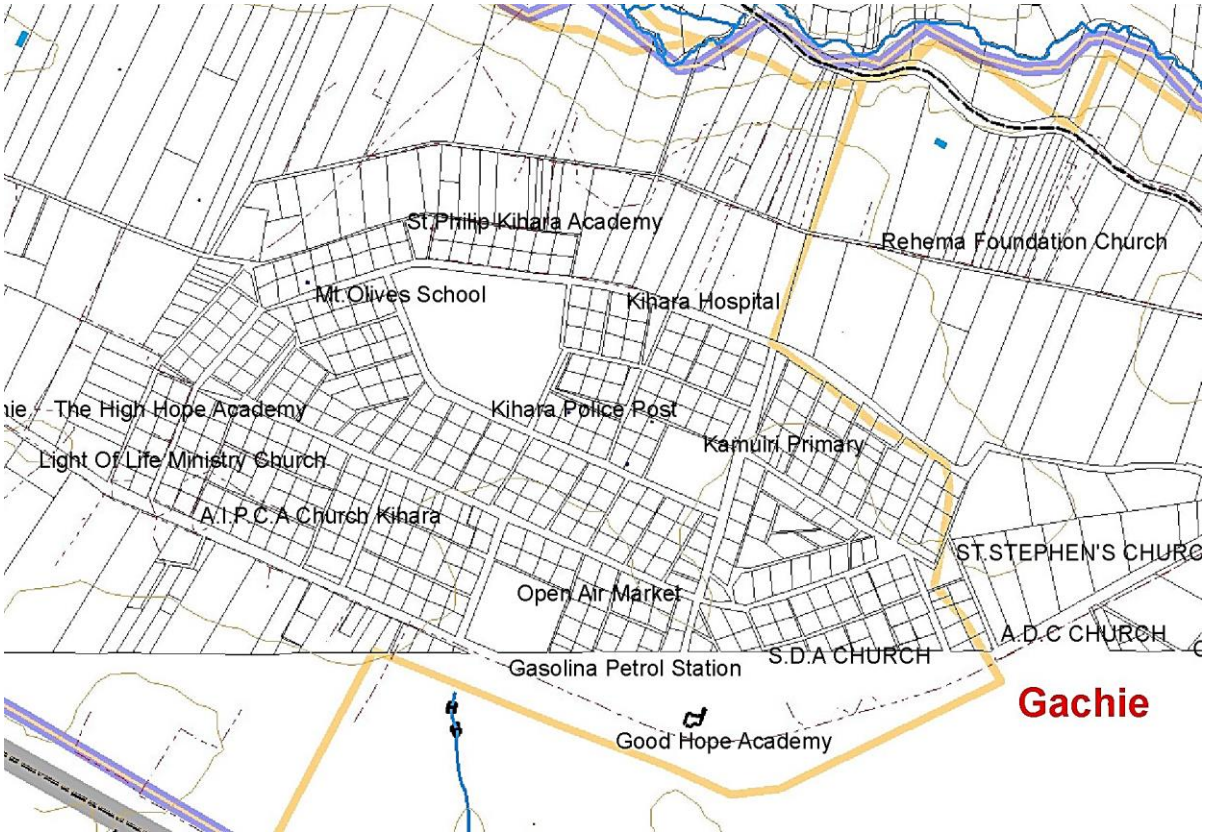


Figure 7-4: Layout of Gachie Town

Source: Field Survey

7.2.5 Ndenderu

This is a commercial-residential node that is also growing due to its strategic crossroads location although at a slower pace and density if compared to others in the planning area. It is also laid out in a rectilinear fashion with the long side extending along Limuru Road due to more favourable terrain. Buildings are mostly one to two storeys in height with few five storeys structures. There are several newly built flats in the area, which may be attributed to the increasing demand for the residential market. Characteristically, only the main road is paved, and the area lacks pedestrian sidewalks and road drainage facilities.

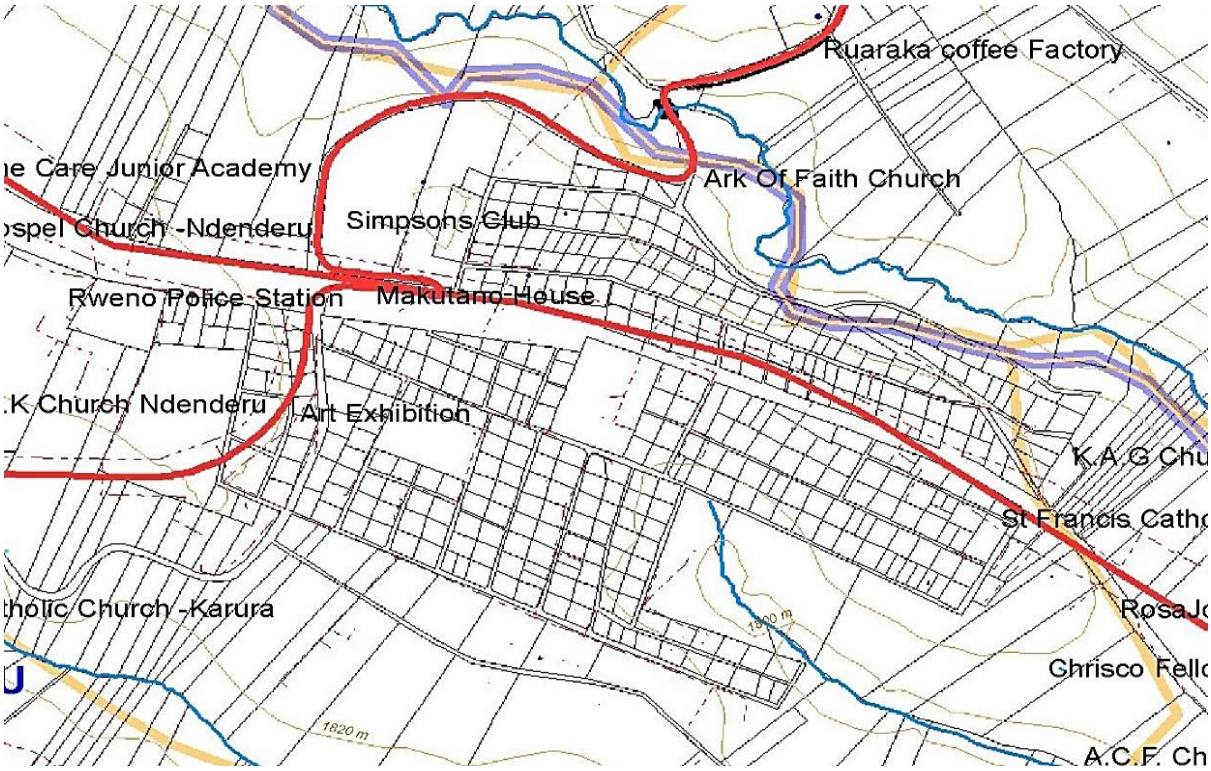


Figure 7-5: Existing Layout of Ndenderu

Source: Field Survey

7.2.6 Urban Corridors

The planning area's linear spines define its urban growth corridors. These spines include Banana-Raini Road, Limuru Road and Kihara-Gachie-Karura Road. The first two roads have the advantage of being scenic corridors as their higher elevation affords panoramic views of the surrounding areas. There are also tree-lined segments along these roads, which give the planning area a unique natural environmental quality. These assets are, however, being threatened by uncontrolled urban sprawl and largely unregulated developments.

7.3 Urban Form and Morphology

The urban growth in Kiambaa Sub-County is defined by five (5) urban nodes, namely, Karuri, Ruaka, Muchatha, Ndenderu and Gachie. Over the years, the commercial development of these urban centres has been concentrated within the centre's residential developments have formed linear patterns along the major roads. Apart from the CBDs which have a character of formal

planning, most of these other areas lack a defined urban form and design characterised by amorphous growth lacking streetscapes, clear urban edges, and districts.

7.4 Urban Structure

The planning area is structured linearly in a northwest-southeast direction. This structure is defined by the direction of four rivers running along the same direction, which drain the upper regions of the Aberdare range. Two major roads-Limuru Road and Banana-Raini Road accentuate the structure of the planning area in pincer shape fashion. These roads intersect at Ruaka where they are joined by the Northern by-pass road forming a fast urbanising growth triangle.

A third road, the Kihara-Gachie-Karura Road, complements the above major roads and provides access to the southeast part of the planning area. A fourth parallel road traverses the northeast portion of the planning area and traverses the sub-locations of Gathanga and Karuri. These parallel roads are linked by two windings roads that cut across the slopes of the ridges. These are Banana Hill Road, which links Gachie to Limuru Road and Gitaru Road-Banana Ndenderu Link Road, which links Ndenderu and Karuri Towns.

The north-eastern, north-western, and south-western portions of the planning area are still mostly rural due to access and terrain conditions. Significant vegetation and agricultural areas may be found in the planning area along with scenic views. The former is particularly found along Red Hill Road where urban developments are constrained by steep terrain.

Tree-lined skylines may be observed along the upper portions of Limuru Road and along and Gitaru Road-Banana Ndenderu Link Road, which affords scenic hillside views. These natural environmental characteristics give a predominantly urban ambience to the central, south-western, and north-western portions of the planning area.

7.5 Delineation of Urban Edge

The urban core of the five urban centres is defined by the transportation systems.

- **Karuri** is a convergence of Banana-Raini road and Banana-Posta road. The extents of the urban area are limited by Kaski river to the north, Ruiruaka to the south, and road adjoining St. Marks Church. The town is experiencing sprawl along Banana-Raini and Banana-Posta roads. Other areas the town is expanding into is along Kanunga-Kiambaa road and towards Ndenderu-Banana link road.
- **Ruaka** has a linear structure defined by Limuru Road to the west with residential development extending to Ndenderu. Other limits are defined by Redhill road to the south and Kigwaru to the west. Since the town is a border town with Nairobi County, there is limited sprawl to the east.
- **Muchatha** is characterised by corridor development along Banana-Raini road. On either side of the road, the urban limit is about 500 metres. Most of the development is residential with commercial activities along the spine.
- **Gachie** is radial pattern development mainly along Kihara-Gachie-Karura road. To the south, the urban edge extends to Kinanda road, to the north is Karura river, and to the east, it borders Nairobi. The centre is predominantly residential with a commercial strip along Kihara-Gachie-Karura Road.
- **Ndenderu** is defined by a rectilinear structure mainly along Limuru road and Ndenderu-Wangige-Gitaru road (Western Bypass). To the north, the urban limit is

defined by Ruiruaka and Karura river to the south. The developments are about 500 metres off Limuru road.

7.6 Housing

7.6.1 Introduction

Major infrastructure developments such as the Northern bypass and Ruaka-Limuru road are ushering growth and development of the area. Population increase has created a surge in demand for housing. Mega mixed-use developments such as Two Rivers, and large-scale residential developments such as the Cytonns, Alma and Taraji Heights, amongst others, are continuously adding quality housing to the locality, and consequently increasing rental value. The area is also undergoing increased commercial activity. However, this rapid development is happening in the context of inadequate physical infrastructure such as sewer, and there is increased traffic congestion due to population pressure. Rental apartments and single dwellings are scattered in the countryside.

7.6.2 Building Materials & Construction Sub-sector

At 80%, the iron sheet is the dominant material used for roofing houses in Kiambaa Sub-County. Another 16% who live in storied apartments have slab/concrete as their roof. The remaining few have tiles as their roofing material.

For walls, 34.3% have used iron sheets. Another 58.5% live in stone-walled houses. 3.4% live in houses made of timber walls.

For floors, 90.7% live in houses with floors made of concrete, cement, terrazzo, or tiles. Only 5.6% live in houses with earth floors.

Developers have to incur transport costs to have these materials delivered to their construction sites. Only timber and iron sheets can be sourced from local hardware shops, the rest are sourced from neighbouring sub-counties or counties. Table 7-1 below shows where these materials are sourced from.

Table 7-1: Sources of Selected Building Materials

Material	Source	Remarks
Quarry Stones	Mainly from Juja and Ruiru Sub-counties of Kiambu.	Sourced from 15- 20 kilometres away.
Sand	Machakos and Narok Counties.	30 – 45 kilometres away.
Timber	Within the Sub-County and from rest of Kiambu County.	Available largely within the County although hardwood is imported from Meru, Uganda, and DRC Congo.
Steel	Industrial Area, Nairobi.	Available through local hardware shops.
Galvanised Iron Sheet	Local hardware shops.	Available locally.

Source: Discussions with key informants, 2018

7.6.3 Housing tenure and typology

The proximity of Kiambu County to the city of Nairobi has seen the conversion of large pieces of land into residential houses. The presence of good all weathered roads has accelerated this by giving those working in Nairobi an opportunity to reside within the County. Going by census reports, this housing development phenomenon is mostly driven by the private sector with the government and parastatals only providing less than 1% of the housing stock in Kiambaa Sub-County.

Table 7-2: Distribution of Houses by Tenure

Tenure Status (Conventional Households)						Total
Owned		Rented/Provided		Not Stated		
Number	%	Number	%	Number	%	
24,745	30.8	55,535	69.1	36	0	80,332

Source: KNBS 2019

In total, there are about 80,332 households in Kiambaa Sub-County. Out of these, the bulk (70%) live in rented houses with only 30% owning their houses.

Table 7-3: Distribution of Owned Households by mode of acquisition

Owned	Mode of Acquisition					
	Purchased		Constructed		Inherited	
	Number	%	Number	%	Number	%
24,745	680	2.7	21,287	86	2,778	11.2

Source: KNB 2019

For those who own their properties, 86% constructed their houses, another 2.7% purchased readymade houses while 11.2% inherited their houses.

7.6.4 Housing Stock and Projections

Housing is an important aspect of urban planning as it takes a significant portion of the total land-use area. Currently, there are 80,332 households in Kiambaa Sub-County. Holding all factors constant, the population is set to increase steadily. The population projection for the year 2030 is estimated to be at 416,534. With an average household of 2.9, there will be about 143,633 households.

Table 7-4: Housing Stock and Projections into 2030

Items	2019	2024	2030
Projected Population	236,400	318,899	416,534
No. of Households	80,332	109,965	143,633

Source: Based on 2019 Population and Housing Census Report Vol. II

7.7 Key Challenges

The key challenges with regard to human settlements are given in the table below.

Table 7-5: Key challenges on human settlements

Sector	Key Highlights	Opportunities
Urban form, structure, and morphology	• Settlement development tend to occur along corridors; and • Lack of defined urban designs.	• Integrate transit-oriented development (TOD) model to improve planning and development proposals; and • Integrate urban design principles while undertaking projects.
Urban limit and edge	The urban limits of the towns are mainly defined by existing roads and natural features like rivers.	Use the existing structuring elements in defining the urban edge.
Urban-rural linkage	The urban nodes are physically connected to the hinterlands and peri-urban areas by existing roads and functionally by being service areas where the latter obtain their low and high order goods.	Existing road connections.
Human settlements	Human settlements in Kiambaa Sub-County are intensive in nodes and along the road corridors.	Availability of land away from the roads which present an opportunity for densification.
Existing centres and nodes	The Sub-County has several existing centres/nodes which are evenly distributed.	These centres can be exploited as centres/poles of growth of the whole Sub-County.
Housing	• 70% of residents live in rented housing; and • The government has contributed to only less than 1%.	The government can create a conducive environment where the private sector can invest in the sector and increase the housing stock.

Source: VisionRI

8. PHYSICAL INFRASTRUCTURE

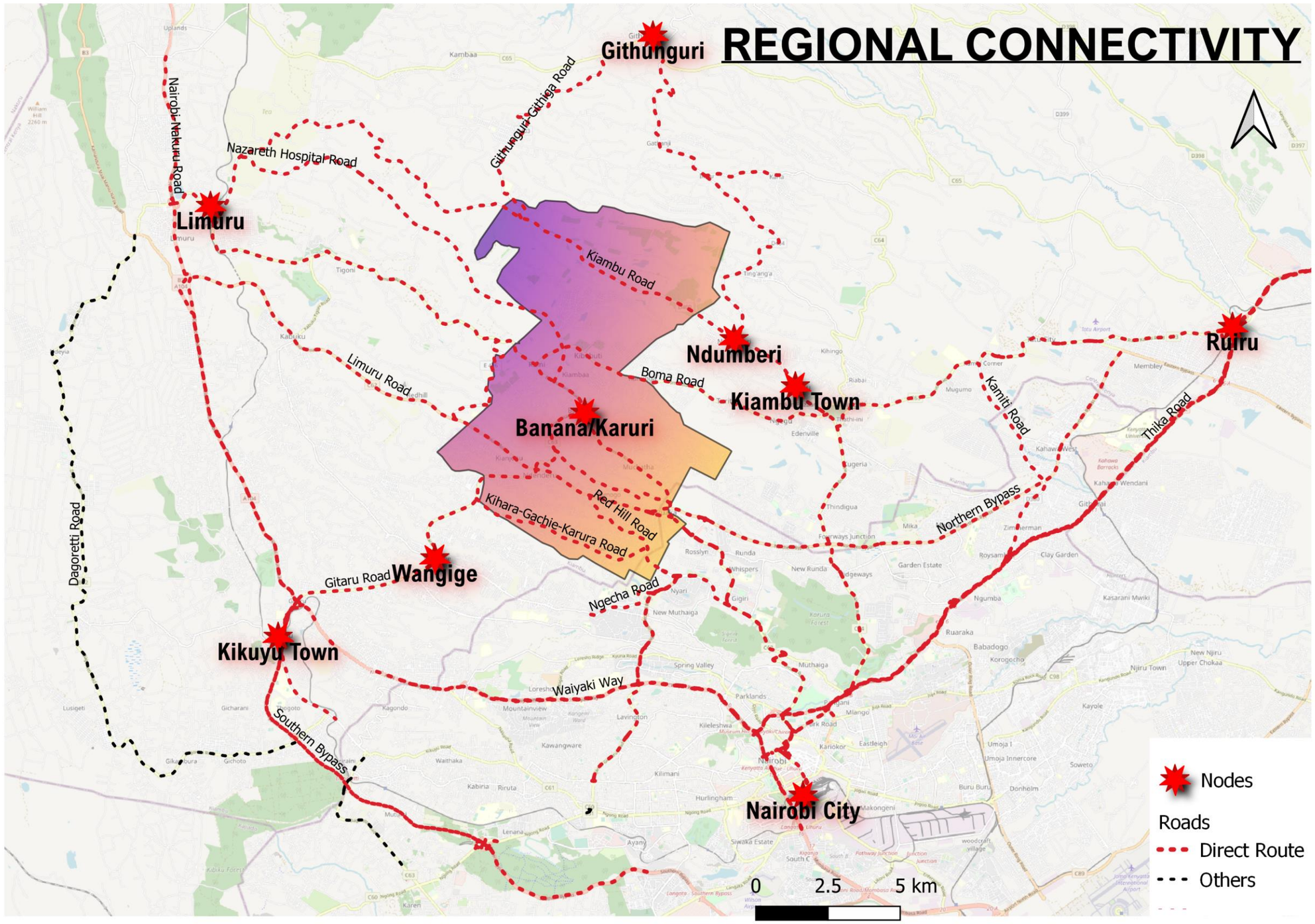
8.1 Overview

This chapter analyses the availability and adequacy of the physical infrastructure in the Sub-County. It covers infrastructure used in road mobility, the transmission of water, and infrastructure used to handle/manage waste and stormwater.

8.2 Transportation

8.2.1 Regional Connectivity

Kiambaa Sub-County enjoys good network connectivity to other neighbouring towns and counties. The Sub-County is directly linked to Nairobi county, and Kabete, Kikuyu, Limuru, Kiambu, Githunguri Sub-Counties.



Map 8-1: Regional Connectivity in Kiambaa Sub-County

Source: VisionRI

8.2.2 Interconnectivity and Trip Generation

The Sub-County is a convergence of routes within Kiambu County such as Kiambu, Githunguri, Limuru, Ruaka and Nairobi. These are the main sources of external traffic. Many trips within the town originate from key areas such as Karuri, Muchatha, Ruaka, Gachie, and Ndenderu.

8.2.3 Modal split

The modal split for Ruiru Municipality may be used as representative of the trend in Kiambaa Sub-County. According to IDS (2016), the modal split for Ruiru is as follows: walking 37%, matatu 36%, motorcycle 17%, cycle 7%, car 2%, and 1% others (the private car that operates as public transport).

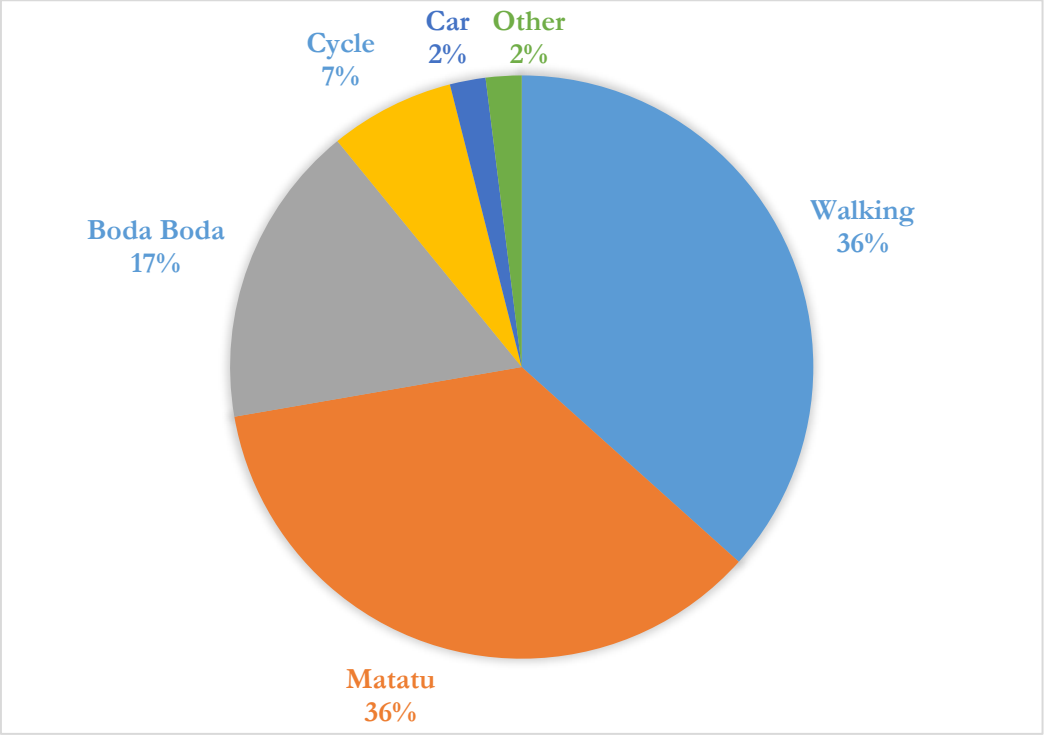


Figure 8-1: Transport modal split

Source: Field Survey

Kiambaa Sub-County is well connected to Nairobi city through Limuru road and Banana-Raini road. It is directly linked to the city of Nairobi to the east and Ruiru town at the north by the Northern By-pass Road. It is also linked to Limuru town at the west by two major roads, namely, Limuru Road and Banana-Hill Raini Road. The road is the only mode of transport in Kiambaa Sub-County.

Although road conditions are poor, Kiambaa Sub-County is well connected to the neighbouring towns such as Limuru (Limuru road and Raini-Tigoni-Limuru Road), Kikuyu (Karuri-Ndenderu road and Ndenderu-Gitaru road), Kiambu road (via Banana Raini road), Ruiru (via Northern Bypass), Kanunga, Ruaka, and Gachie.

Kiambaa Sub-County is at the crossroads to Kiambu, Limuru, Nairobi, and Kikuyu, which makes it one of the highly accessible sub-counties in the NMR. The main roads providing inter- and intra-connectivity in Kiambaa Sub-County are listed in Table 8-1.

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Table 8-1: Main roads in Kiambaa Sub-County

Road name	Link	Length within the planning area (km)	Surface type	Condition	Average Daily Trip volumes (both directions)	
					NMT	MT
Banana-Raini Road (D407)	Ruaka to Kiambu through Karuri and Raini.	30	Paved	Fair to the poor (presence of many potholes)	5,141	6,122
Kigwaru-Gathanga Road	Kigwaru (along Banana Raini road) to Gathanga shopping Centre.	4	Paved	Good	-	-
Muchatha-Gathanga Road (E1519)	Muchatha to Gathanga shopping Centre and finally connects to Kiambu road.	4	Gravel	Poor	-	-
Mombasa Road	Mombasa bus stop to the Police Station.	2	Gravel	Fair to poor (poorest during rainy seasons)	-	-
Karuri-Kiamba-Kanunga Road	Karuri to Kanunga through Kiambaa.	6	Paved	Very poor (bitumen is completely worn out)	2,838	4,736
Four Road-Gathanga Road	Karuri to Gathanga.	3	The road is being upgraded to gravel standards	Ranges from fair to poor	-	-
Karuri Shopping Centre Road	Karuri to Banana-Raini road.	5	Gravel	Fair to bad (during rainy seasons)	-	-
Rudi Mashambani/ Nazarene Hospital Road	Raini to Nazarene hospital road.	5	Paved	Good	-	-
Police Station Road	Karuri-Ndenderu road to the	3	Paved	Good	-	-

Road name	Link	Length within the planning area (km)	Surface type	Condition	Average Daily Trip volumes (both directions)	
					NMT	MT
	Police Station.					
Karuri-Ndenderu Road	Karuri to Ndenderu.	10	Paved	Good	7355	11, 035
Muthurwa-Njoro Road	Muthurwa to Njiku.	4	Paved	Poor-bitumen is completely worn out.	-	-
Njoro-Muchatha Road	Njoro to Muchatha then Ruaka.	6	Gravel	Fair	-	-
Ndenderu-Gitaru Road (C63)	Ndenderu to Gitaru through Wangige.	10	Paved	Fair	-	-
Karura-Wangunyu Road	Karura-Wangunyu-Gachie.	15	Gravel	Poor	-	-
Karura Kanyugu-Kiahara Road (E425)	Karura Kanyungu-Kihara-Gachie.	25	Paved	Fair	-	-
Kihara Hospital Road	E425-Kihara Hospital-E425(loop)	2.5	Paved	Fair (has potholes)	-	-
Gachie-Gacharage Road	Gachie to Limuru road (at Gacharage).	7	Paved	Fair	-	-
Redhill Road	Gigiri to Gachie.	5	Paved	Fair (has potholes)	-	-
Ruaka River Road (E1517)	Gacharage road to Limuru road.	3	Gravel	Fair to poor (especially during the rainy season)	-	-
Limuru Road	Nairobi-Ruaka-Ndenderu-A104.	15	Paved	Fair (has potholes in some areas)	5,060	9,933
Northern Bypass	Ruaka to Eastern Bypass.	5	Paved	Good	-	-

Source: Kiambu County Road Department

Note: NMT = Non-Motorised Transport; MT = Motorised Transport.

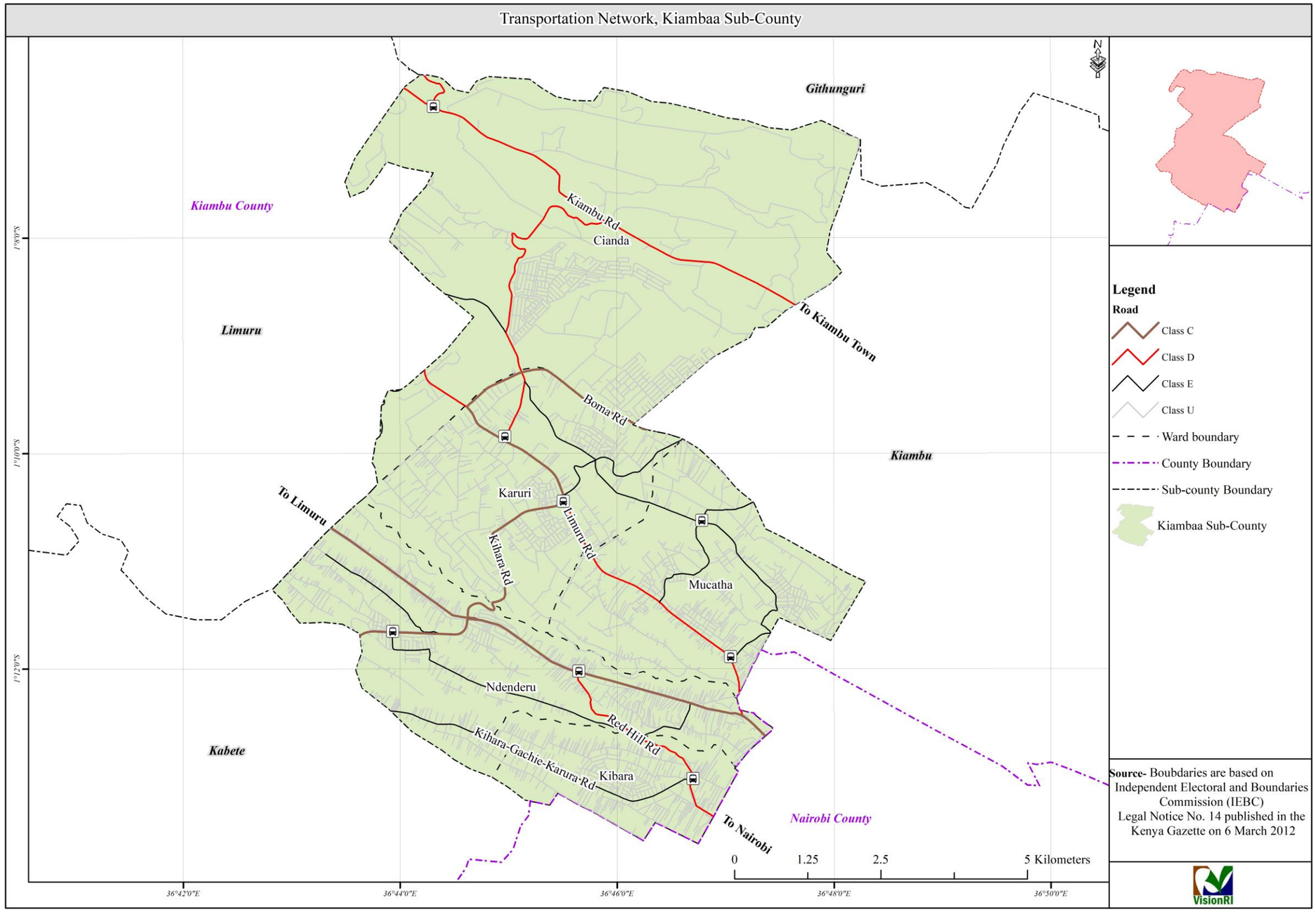


Figure 8-2: Map showing transport network in Kiambaa Sub-County

Source: VisionRI

8.2.4 Means of Transport

i. **Non-Motorised Transport:** As indicated above, 42% of trips in Kiambaa Sub-County are made by walking and cycling. Unfortunately, the demand does not meet the infrastructural provision as most streets lack non-motorised transport (NMT) facilities. Where NMT facilities exist, they are in poor quality due to poor maintenance and are often encroached by vendors and parked cars. This results in a high number of pedestrians walking on the carriageway conflicting with moving cars. Additionally, there are few safe pedestrian crossings in Kiambaa Sub-County. Inadequate pedestrian crossings expose pedestrians to high risks of accidents making it unsafe, especially for school-going children. Cycle tracks are completely absent in Kiambaa Sub-County. This explains the lower number of cyclists in the area. Further, there are no designated safe and secure cycle parking areas in urban centres including Kiambaa Sub-County.

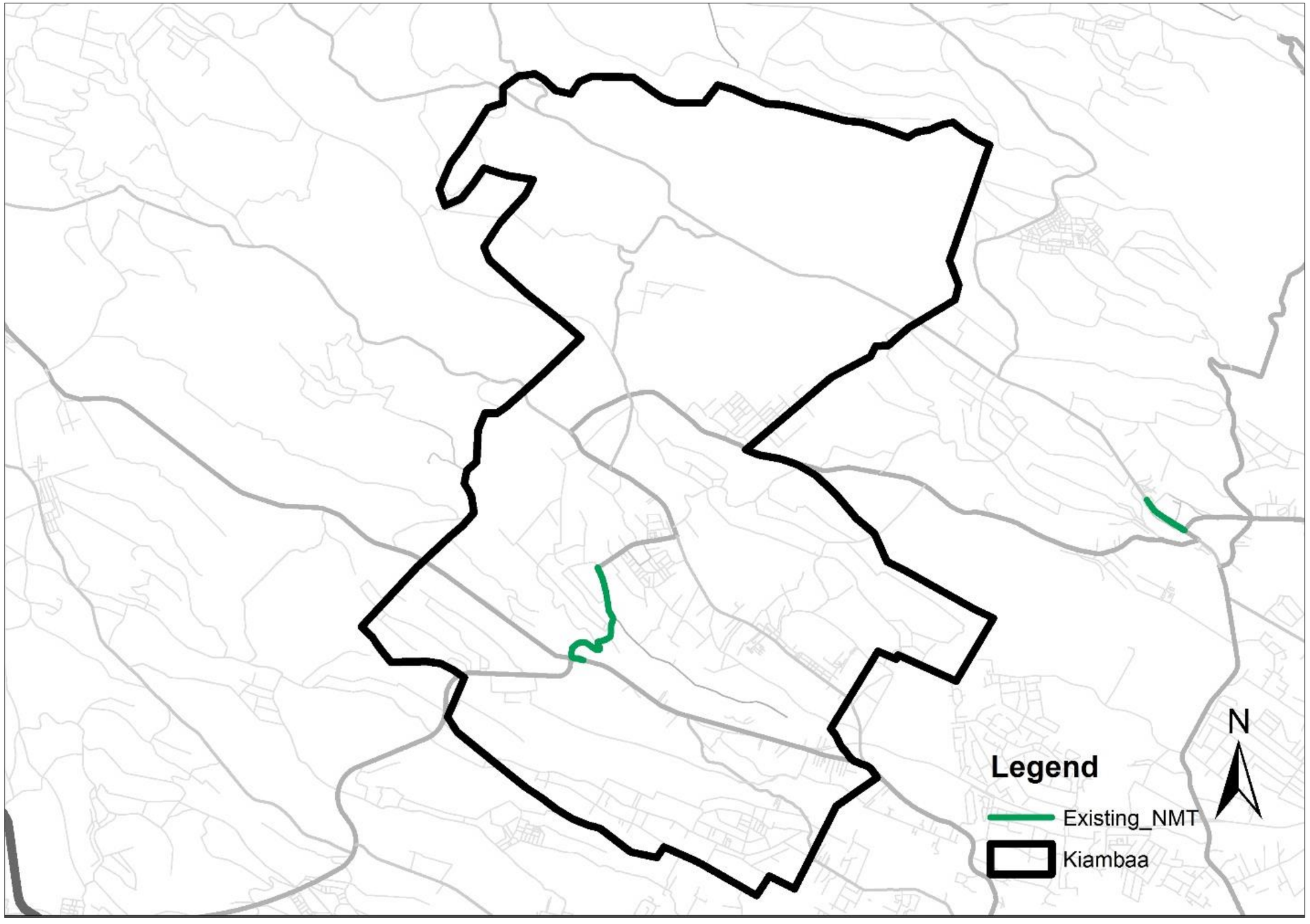


Figure 8-3: Map showing the existing footpath in Kiambaa Sub-County

Source: Field Survey

Figure 8-4: Pedestrian walking on a footpath in Karuri town (left). Pedestrians crossing the road without designated pedestrian crossings (right).

Source: Field Survey

Figure 8-5: Cyclist using the carriageway due to lack of dedicated cycle tracks in Karuri town (left). Heavy encroachment of footpaths by vendors (right).

Source: Field Survey

ii. Motorised Transport

- **Public Transport:** After walking, public transport is the second most commonly used mode in Kiambaa Sub-County. Public transport is largely provided by privately-owned minibuses and buses known as matatus. Within Kiambaa Sub-County, the National Transport Safety Authority (NTSA) has registered over nine matatu Savings and Credit Cooperative Organizations (SACCOs) with approximately 920 vehicles, with the majority being 14-seater matatus. The matatus ply routes within Kiambu County to towns like Limuru, Ruiru, Ruaka, and Kiambu as well as the neighbouring county of Nairobi.

Kiambaa Sub-County has one main bus park located in Karuri town with a capacity of 25 matatus. The bus park becomes congested especially in peak hours and lacks adequate facilities such as public toilets, customer information, and waste bins. Other urban centres within Kiambaa Sub-County such as Gachie and Ruaka lack dedicate bus parks and hence matatus are forced to operate on the roadside causing obstructions to traffic flow.

The matatus are demand-driven and this is seen in their competition for customers. At the bus park, a matatu only departs when all seats are occupied. This inconveniences majority of passengers waiting for public transport. Fares are not regulated and often increase during peak hours.

Figure 8-6: Karuri town bus park

Source: Field Survey

- **Boda-bodas:** Taxis provide door-to-door services without intermediate stops. Vehicles providing taxi services include cars, tuk-tuks, motorbikes, and bicycle boda-bodas. They serve short trips within town centres and improve last-mile connectivity to public transport and paratransit. According to the County Government of Kiambu, approximately 500 boda-bodas are operating in Kiambaa Sub-County. The number could increase due to the high demand of passengers as well as a high unemployment rate in the country.

  Motorcycle boda-bodas operate from 'stands' within the Karuri CBD, in residential areas, trading centres, at commercial centres and the passenger service stops along main and minor roads. The stands are manned by informal stage

managers. The operators typically pay a stage fee ranging from Kenya shillings 250-350 per month. There are two types of operating structure which are dependent on a 'stand': compete for clients or queue and go in turns.

The boda-boda is organized in SACCOs and is largely regulated by NTSA. The prices are not fixed and are dependent on the distance covered and operator. There is a slow adaptation of technology in the area such as Uber boda-bodas, Safe Boda, Bolt, etc.

Figure 8-7: Boda-boda shed in Karuri Town

Source: Field Survey

- **Taxis:** Taxis provide door-to-door services without intermediate stops. They serve short trips within town centres and improve last-mile connectivity to public transport. The taxi operators have adopted modern technology of taxi services such as Uber, Little Cab and Taxify. They are mainly registered and regulated in SACCOs under the County Government.

8.2.5 Travel Demand

Without significant improvements in public transport and walking and cycling networks to cater to the growing travel demand, the general trend of increasing car ownership is bound to continue. According to the Master Plan for Nairobi, the city experiences a 5% annual growth in car

ownership.[5] Considering that Kiambu County is a dormitory for Nairobi city, it may be assumed that the trend in Kiambu is similar to Nairobi county. Using the modal split of as representative of the typical trends in towns across Kiambu County together with population and car growth forecasts, a simple modal share projection as per the modal split may be developed as indicated below.

Table 8-2: Transport mode shares under three scenarios

Mode	2016	2030: Status Quo	2030: Sustainable
Walk	37%	30%	40%
Cycle	7%	6%	10%
Public transport (matatus + city bus + BRT)	36%	33%	40%
Motorcycle	17%	23%	5%
Private car	2%	7%	3%
Other/probox taxi	1%	<1%	2%
Total	100%	100%	100%

Source: Study Team

Under the sustainable mode scenario, it is assumed that the proposed bus rapid transit (BRT) in Nairobi, as well as investments in NMT facilities, will be implemented by 2030 increasing the ridership of public transport, walking and cycling hence reducing the ridership in the use of private cars.

- **Parking:** Parking in Kiambaa Sub-County is largely unregulated. Most streets in its various towns lack any physical definition of spaces for different street uses, such as pedestrian movement, vending and parking. Since parking rules are not defined, enforcement is arbitrary, and many vehicles elude parking fees. Parking management has centred on raising revenues for the local authority while keeping fees low in an attempt to make the town centre attractive for visitors. Less attention has been paid to the potential role of parking in managing travel demand.

  Currently, the County Government charges Kshs30 and 50 per day for on-street parking in Kiambaa and Ruaka, respectively. These charges are far too low to have a sizable impact on commuter behaviour. Consequently, the town centres experience localised shortages with some of the most visible parking facilities being full despite the overall availability of parking space.

[5] JICA 2014, Integrated urban development masterplan for Nairobi City County https://www.jica.go.jp/english/news/field/2015/c8h0vm0000966zqy-att/c8h0vm0000966zvu.pdf

Figure 8-8: Cars parked on footpaths obstructing pedestrian movement

Source: Field Survey

8.2.6 Strategies

- **Provide non-motorised transport:** Based on both the current and projected modal split, the majority of Kiambaa Sub-County's residents will be walking. There is thus a need for making walking and cycling safe and attractive for all users including the elderly, children, and persons with disabilities.

  In order to achieve a walkable urban area in Kiambaa Sub-County, complete street designs need to be articulated. Complete street designs ensure that all streets have dedicated spaces for NMT modes, designated cycle parking facilities, traffic calming with at-grade crossing facilities for pedestrians, well maintained NMT facilities with smooth surface conditions and with ramps at grade changes to enhance universal accessibility, provision of shade, street furniture and landscaping to enhance attractiveness and comfort of pedestrians and cyclists. All intersections need to provide at-grade pedestrian crossings to enhance the comfort and convenience of pedestrians especially, the elderly and children. Where space allows, street furniture such as benches, trees, and flowers/landscaping should be provided. The County Government needs to put strict measures to ensure that parking, as well as street vending, are prohibited in pedestrian facilities.

- **Public Transport:** Being the second most common mode of transport in Kiambaa Sub-County, public transport has to be improved in order to meet the needs of the current commuters as well as projected growth. The Karuri bus park needs to be expanded in order to accommodate the volume of matatus. In other urban areas like Ruaka and Gachie, the land needs to be acquired to build modern bus parks in order to reduce operations of public utility vehicles along the road shoulders. Some of the key facilities that may be incorporated in new bus parks are public toilets to

include those for persons with disabilities and baby changing stations, ample passengers' sitting areas with shelters, luggage storage facilities, and customer information booths. Bus stops with shelters should also be provided at various intervals as needed.

- **Boda-boda:** Boda-bodas play key roles for last-mile connectivity especially in areas where public transport is not readily available. The following are ways in which the boda-boda sector may be improved:
    - Mandatory requirement for all boda-boda operators to join a registered SACCO for easier regulation;
    - County Government should provide dedicated stands/stops for the operators;
    - Mandate all boda-boda operators to take advantage of the technologies in boda-boda operators e.g. Safe boda, Uber boda-boda, etc. to avoid overcrowding in urban centres; and
    - Regular training and inspection for compliance.

- **Parking management:** Effective parking management is an essential tool to facilitate the efficient use of road space and to ensure the mobility of public transport, pedestrians, and cyclists. In addition, appropriate parking fees can act as levers to manage the use of personal motor vehicles and ensure that personal motor vehicle users compensate the County for the use of valuable land on which they park their vehicles. Kiambu County needs to define parking areas in order to prevent encroachment of parking into other areas including footpaths.

For a parking system to succeed, users need clarity on where they can and cannot park. This requires a physical definition of spaces for parking and protection of pedestrian spaces from encroachment through physical barriers such as bollards and strict enforcement. Secondly, customer information is key to ensuring successful parking management.

On-street parking charges should vary by location with higher fees levied in areas with high demand. This results in a high turnover of parking slots as it discourages motorist from unnecessary long parking. This increases revenue generation by the County Government. Higher parking fees encourage people to use sustainable modes of transports including walking, cycling and public transport. Finally, enforcement is the key to ensuring that parking rules and regulation are maintained, and offenders are penalised.

8.3 Water

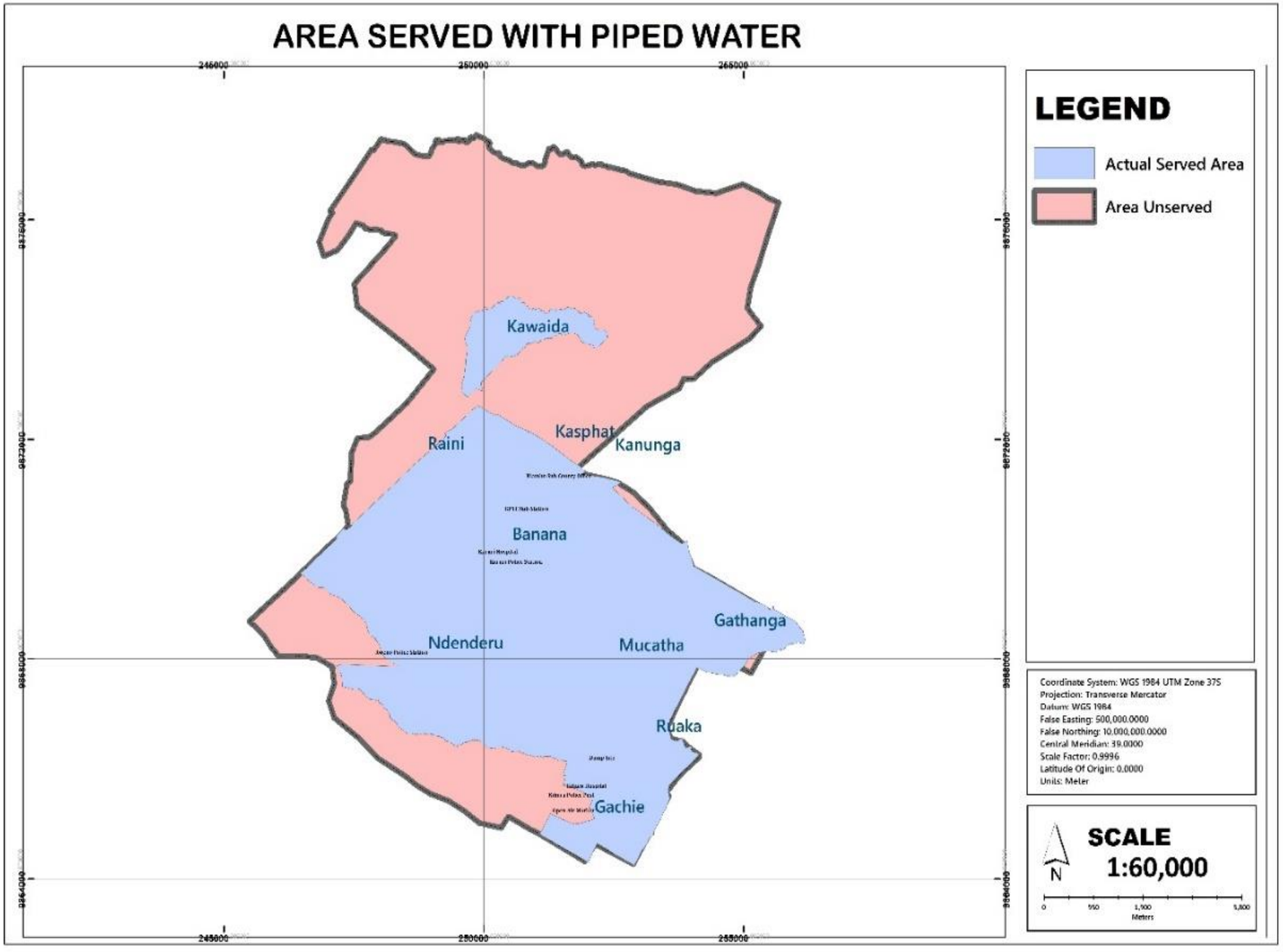
Karuri Water and Sanitation Company (KAWSCO) supplies water in the Sub-County. So far, the company has managed to supply 49.8% of total households with water. The table below shows the coverage per ward.

Table 8-3: Water Supply Coverage in Kiambaa Sub-County

Wards	Water coverage
Kihara	58%
Karuri	64%
Ndenderu	58%
Muchatha	37%
Cianda	32%

Wards	Water coverage
Total Coverage	49.8%

Source: Karuri Water and Sanitation Company 2020



Map 8-2: Areas served with piped water

Source: KAWSCO

KAWSCO currently sources its water from 14 boreholes scattered across Kiambaa Sub-County as well as from Ite Dam.

Table 8-4: Water Sources in Kiambaa Sub-County

Ward	No. of water sources	Description of water sources
Karuri	6	• Mombasa borehole with a yield of 18 m^3/hr.; • Karuri borehole (20m^3/hr.); • Raini (42m^3/hr.); • Nairobi water; and • Ite dam (25m^3/hr.).
Cianda	3	• Broomhill (8m^3/hr.); • Milimani (4m^3/hr.); and • Kawaida pry borehole (12m^3/hr.).
Muchatha	4	• Gathanga (10m^3/hr.); • Cannon (8m^3/hr.); • Gait Huma (8m^3/hr.); and • Nairobi water offtakes at Waguthu and Muchatha.
Ndenderu	5	• Gacharage (15m^3/hr.); • Kianjogu (4m^3/hr.); • Ndenderu dispensary (25m^3/hr.); • Wagunyu (4m^3/hr.); and • Nairobi water offtake at Ruaka.
Kihara	1	• Nairobi Water Offtake at Gachie.

Source: KAWSCO

8.3.1 Demand and Volumes Produced

Currently, the company has 10,139 connections with only 6,960 of them being active. The combined production from Nairobi Water and Sewerage Company (NWSC) and KAWSCO is 3,100m^3/hr. with NWSC contributing 1,400m^3/day and KAWSCO boreholes 1,700m^3/day. This is against a demand of 18,000 m^3/day. Rationing of water in the area can, therefore, be attributed to this unmet demand.

8.3.2 Projected Demand

The projected demand by the year 2030 is 32,000 m^3/day. The demand will be driven by the increase in population and water-intensive activities like agriculture and industrial development.

8.4 Waste Management

8.4.1 Solid Waste Management

Solid waste management includes all the necessary operations to remove solid wastes from the source of generation to the disposal site and activities at the dumpsite to ensure environmental safety. Basically, it covers the management of generation, storage, collection, transport, and disposal of waste.

The Kiambaa Sub-County administration, typical to other sub-counties, is struggling to manage their waste. Currently, the Sub-County only manages to collect 6.9% of the total waste generated in the area. This is due to minimal waste management infrastructure against an increasing population. The Sub-County has to make do with only one skip loader and one dump truck against the recommended four and three, respectively. This explains why a majority of households (41.9%) still use informal methods of waste disposal like burning which eventually results in air pollution.

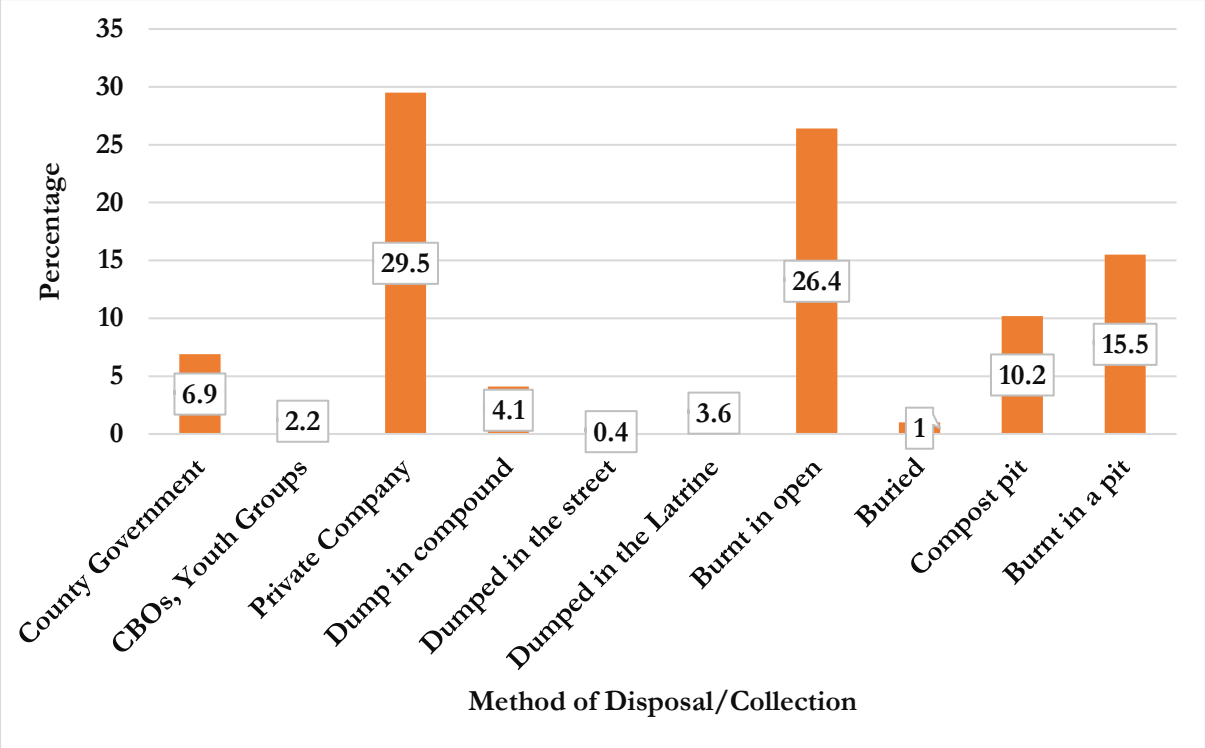


Figure 8-9: Waste Collection

Source: 2019 Kenya Population and Housing Census

To complement the efforts of the Sub-County administration, there are seven private companies that have been licensed by the County Government to assist in waste collection. So far, these companies are only able to collect waste from 29.5% of total households in Kiambaa Sub-County. There is still a need to encourage more players in this sector as it plays a key role in the economy particularly, in providing employment opportunities, and in promoting public health.

Table 8-5: Licenced Private Waste Collection Companies

Company/Youth Group	
i. Clean Bins Collection	vi. Sir Neat Solutions
ii. Ruaka Sanitary	vii. Ruaka Sanitary Work LTD
iii. Zoa Collectors	viii. Quartz Agencies
iv. Shins with Sky Blue	
v. Taka Taka solutions	

Source: Department of Environment, 2020

To effectively manage waste within the Sub-County and County at large, the County Government is finalizing plans to construct a modern landfill within the Makongeni area in Thika town that will serve the entire County. Waste segregation, recycling and reuse are part of the programme to reduce the volume of collection and/or maximise the life span of the proposed landfill. The

Kiambu County Government and NEMA will also provide environmental education to the people on the importance of solid waste segregation, recycling and reuse and health impacts.

These efforts will eventually help household members in the highly populated locations of Kiambaa Sub-County, which generate a considerable amount of solid wastes.

The County Department of Water, Environment, Energy and Natural Resources conducted a baseline survey that revealed that some factories had not been paying waste tipping charges and consequently, the County had been losing a substantial amount of revenue. To address this, the department initiated a regulatory mechanism whereby, before the issuance of a single business permit, industries and factories must provide:

- A copy of a valid license to transport waste for the current year, issued by the County Government;
- A copy of the logbook of the licensed waste transporting vehicle; and
- Invoices/receipts issued by the licensed waste transporter, as tracing documents on waste.

Other efforts towards proper waste management in the Sub-County are through the assistance of Kenya Urban Support Programme (KUSP) which plans to construct one waste transfer station, acquire 20 skips, two skip loaders, and one backhoe.

Figure 8-10: Waste Disposed on one of the Illegal Dumpsites

Source: Field Survey, 2018

In addition, the Sub-County needs to come up with interventions to address challenges in solid waste management through the following measures:

- Encourage proper waste management techniques;
- Increase the waste collection services to cover the entire Sub-County; and
- Provide waste receptacles and transfer stations in strategic locations.

8.4.1 Liquid Waste Management

As per the 2019 census, only 2.6% of households are connected to the sewer while a majority of 58.6% use pit latrines.

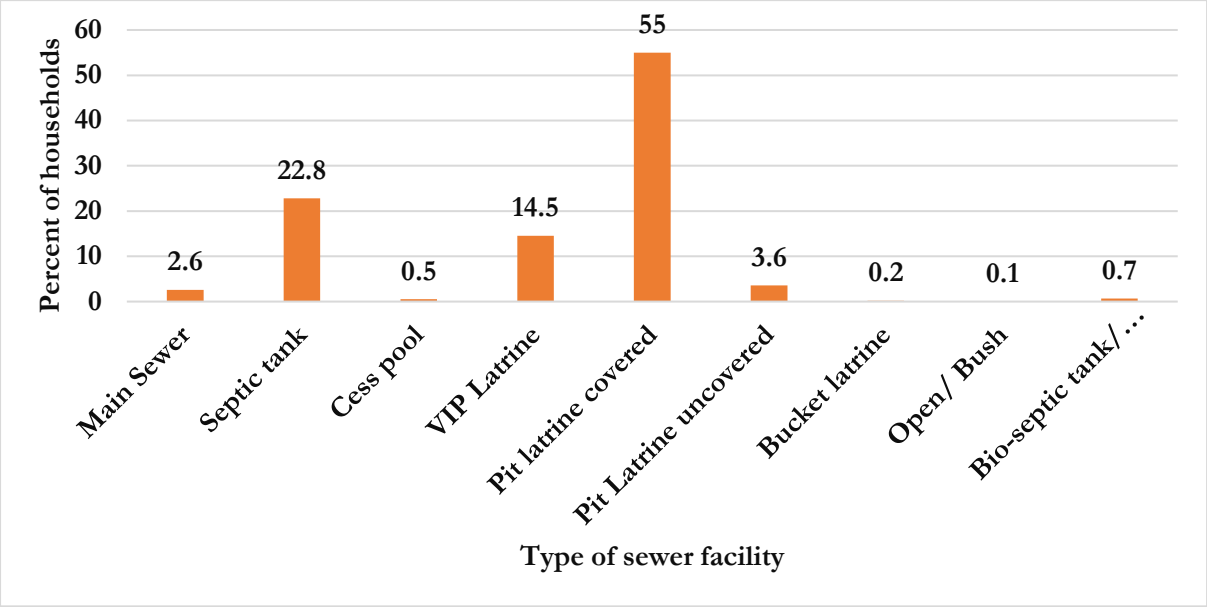


Figure 8-11: Type of sewer facility

Source: KNBS

The Athi Water Works Development Authority (AWWDA) is in the process of installing sewer lines to serve parts of Ndenderu, Ruaka town and Muchatha. This will be complemented by the ongoing construction of Kiambu-Ruaka Sewer & Water Project set to be complete in 2022. The Project details include:

- Construction of approximately 21.388 km of trunk sewer diameter 450 mm along Ruaka river from Ndenderu to Thika road Nairobi Water Company sewer;
- Connection of approximately 1,000 individual sewer connections; and
- Construction of approximately 18.8 km of lateral sewers diameter 300 mm, i.e., 15.4 km in Ruaka and Muchatha, and 3.4 km in Kanda Komu.

8.5 Storm Water Management

There is an existing common drainage system which drains the area through Kihara Drain. Kiambaa Sub-County is well facilitated with stormwater drains in major centres such as Ruaka, Muchatha, and Banana. The system is, however, inadequate as evidenced by ponding along roadsides and on-road pavements, amongst others.

Figure 8-12: A stormwater drain in Gachie urban centre

Source: Field Survey

8.6 Energy Infrastructure

According to the census 2019, the main source of cooking energy is gas (Liquified Petroleum Gas) in 62.8% of the 80,316 conventional households in the area. The main source of lighting is electricity. This could be a testament to the concerted government efforts to encourage the use of these two energy sources.

Other sources of cooking energy used in the area include paraffin, charcoal, and firewood. Uptake of renewable sources of energy like biogas and solar is still low as can be seen from the table below.

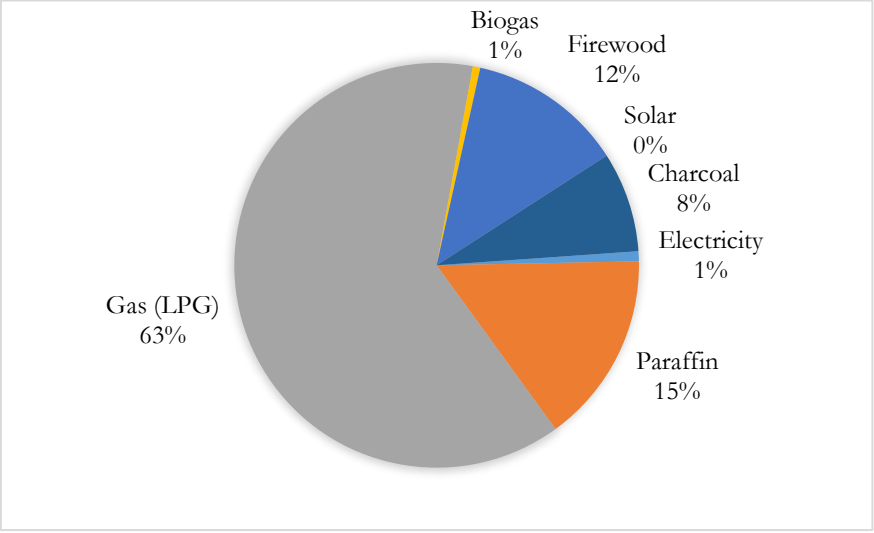


Figure 8-13: Percentage Distribution of Conventional Households by Main Type of Cooking Fuel

Source: 2019 Kenya Population and Housing Census

For lighting, other sources of energy include paraffin lamps and candles. Likewise, the uptake of renewable sources like solar and biogas is still low as seen in

Figure 8-13.

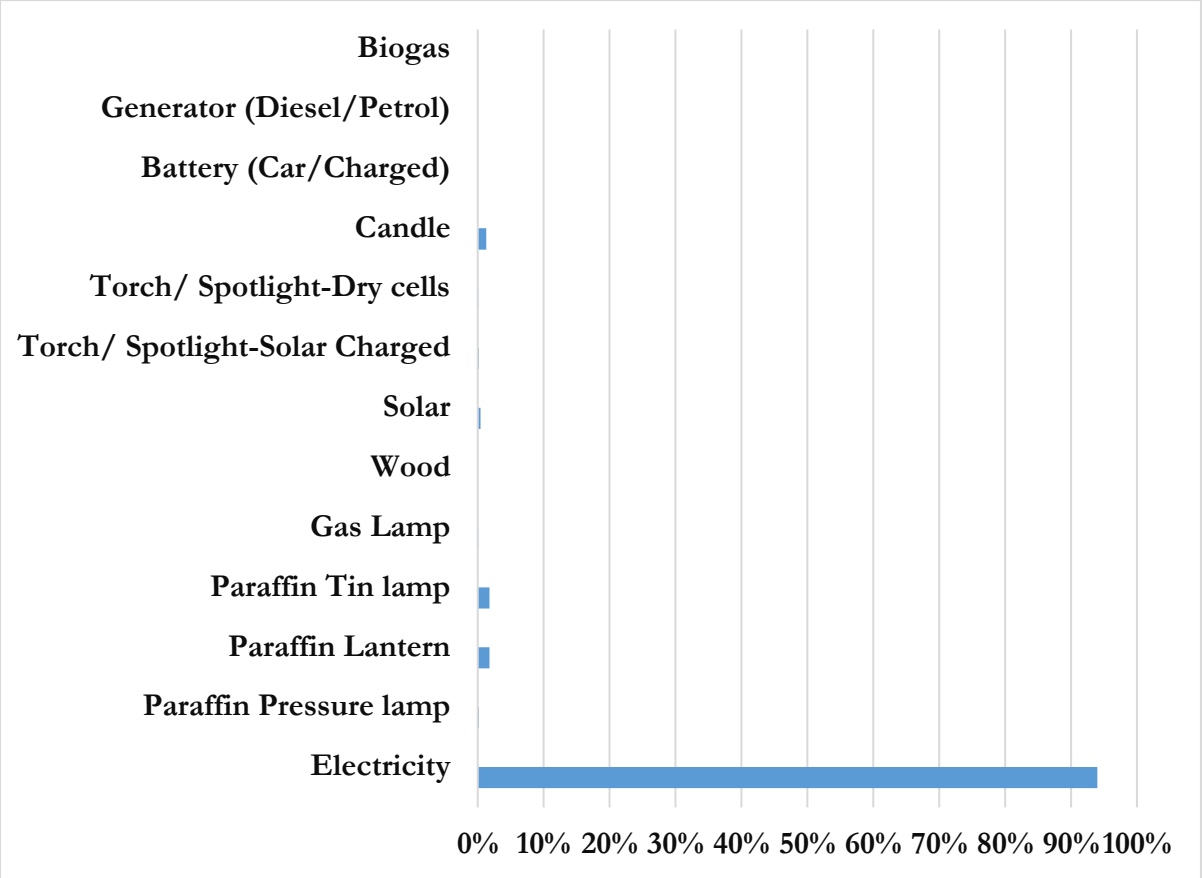


Figure 8-14: Percentage Distribution of Conventional Households by Main Type of Lighting Fuel

Source: 2019 Kenya Population and Housing Census

The Sub-County enjoys connection to the national electric grid and consequentially most households are connected. The Sub-County also houses several sub-stations located in Cianda, Gachie and Banana.

8.7 Information and Communication Technology (ICT)

Information and Communications Technology (ICT) is the way information is disseminated and accessed through the internet, information-education-communication (IEC) materials, and use of mobile phones, computers, and business process outsourcing. It is an important sector in the development of the Sub-County. At present, most cyber cafés are based in towns and urban centres like Karuri, Ruaka, Ndenderu and Gachie where demand is high and there is a need to spread them out, hence enhance ICT coverage. The Sub-County also has existing ICT training institutes.

The main mobile networks in the area are Safaricom, Airtel, and Telkom. The signal reception for all the networks is excellent in the entire planning area. Internet is widely used as evidenced by the presence of several cyber cafes, several computer colleges, and wi-fi in public service vehicles. There is an on-going installation of optic fibre cable in the Sub-County.

8.8 Key Planning Issues

The key planning issues on physical infrastructure are given in the table below.

Table 8-6: Key planning issues on physical infrastructure

Sector	Key Highlights	Opportunities
Transport	• The Sub-County is well endowed with good road connectivity; • Pedestrian-friendly walkways and infrastructure are lacking on many roads.	• Ease of movement of people and goods; and • Investment opportunities.
Water	• Half of the population do not have household connections; • Use of shallow wells which might lead to water contamination due to congestion and close proximity to pit latrines; and • Need to double water production by 2030 to meet the demand.	• The Sub-County is endowed with water resources-rivers and groundwater; • Awareness of safe water use; • Existence of a water company; and • Expand infrastructure for potable water supply.
Waste Management	• Low coverage of solid waste collection (35% of households); • Low awareness of safe waste disposal methods; • Inadequate waste collection equipment; and • Lack of waste transfer stations.	• An existing pool of private waste collectors to assist in waste collection.
Storm Water Management	Inadequate stormwater drainage infrastructure.	The gently sloping topography is easy to drain once the necessary infrastructure is in place.
Energy	The area enjoys connection to the national grid.	Opportunity for businesses to grow and capitalize on the availability of energy supply.
ICT	Presence of major ICT providers.	• Easy way of communication; • E-business opportunities; and • Internet-based innovations.

Source: VisionRI

9. SOCIAL INFRASTRUCTURE

9.1 Overview

This chapter discusses the social infrastructure in the Sub-County. These include education, health, and other social facilities and amenities.

9.2 Education Facilities

Access to affordable, accessible, and high-quality education provision childcare (preschool and school-age) can play a significant role in the development of children and positively influence school-readiness, future educational attainment, economic participation, and health. Universal, high-quality education and care not only benefit the whole population but can also particularly benefit children from the most disadvantaged backgrounds.

Kiambu County has a teacher-pupil/student ratio of 1:40 for early childhood development (ECD) centres, 1:38 for primary schools, and 1:25 for secondary schools. Kiambaa Sub-County has a well-distributed network of ECDs, as well as primary and secondary schools. In addition, the Sub-County has two Vocational Education Training Centres, and three adult education centres.

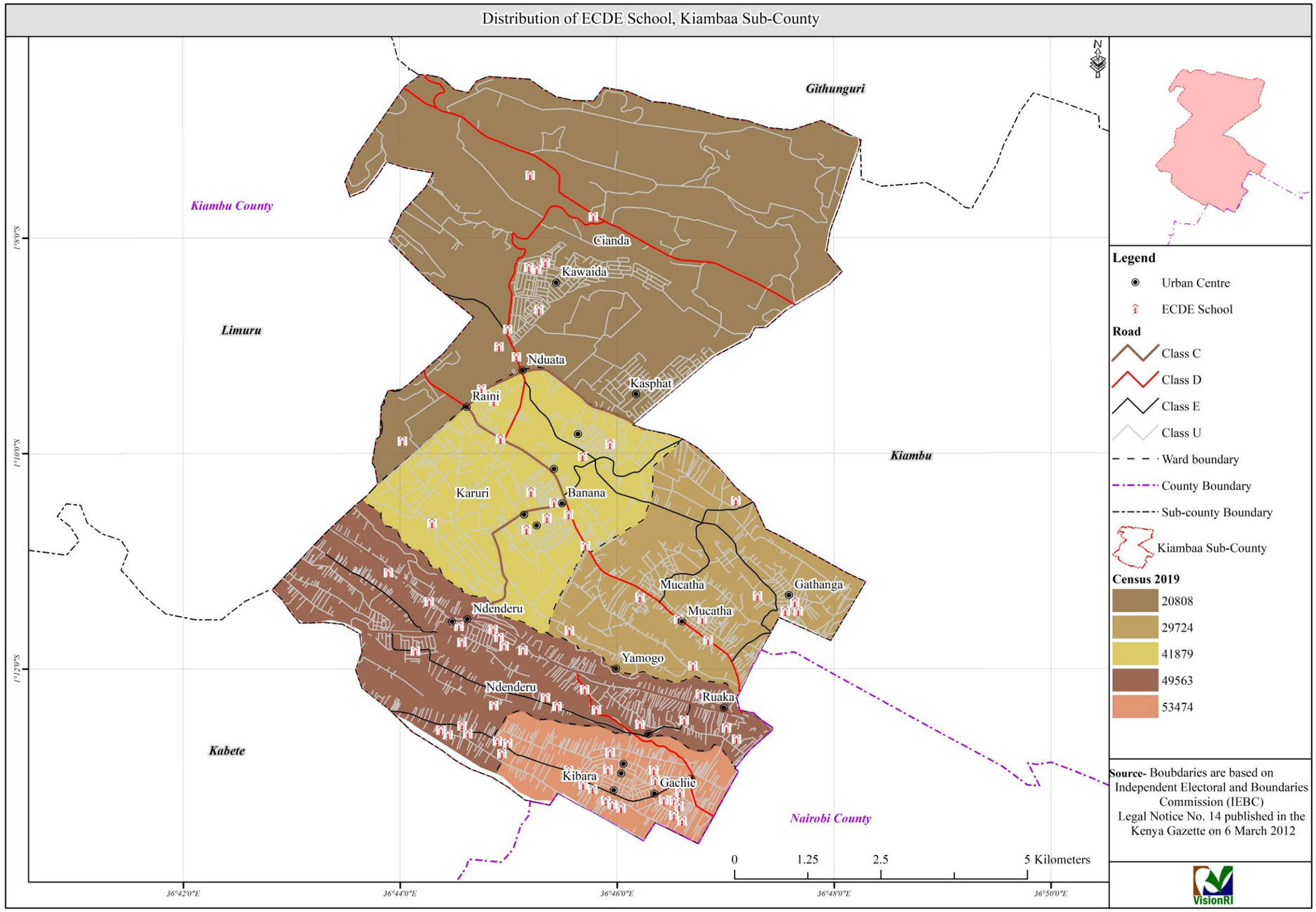
From the 2019 census, 47% of Kiambu County's population has attained a secondary school level of education and above. Only 4.4% lack formal education (KNBS 2019). The County is renowned for education performance in national examinations. As mentioned in the population chapter, Kiambaa Sub-County has 71,027 students currently in learning institutions.

9.2.1 Early Childhood Development Education (ECDE) Facilities

ECDE centres are for 2-6-year-olds. There are 109 ECDE centres in Kiambaa Sub-County of which 26 are public and 83 are private. This is a clear indication of the heavy private sector investment in the education sector.

As per the Physical Planning Handbook (2007), one ECD facility should serve a catchment population of 2500. The child should also not walk more than 500 metres to access such a facility.

Currently, Kiambaa Sub-County has a population of 236,400. For this population alone, there should be 94 ECDE facilities. As it is, this does not indicate a deficit. However, in terms of location, there are areas which are underserved especially in Cianda Ward, albeit the area is largely on large-scale farming. The map below shows these areas and the distribution of these facilities.



Map 9-1: Distribution of ECDs In Kiambaa Sub-county

Source: VisionRI and Urban Lines Consultants

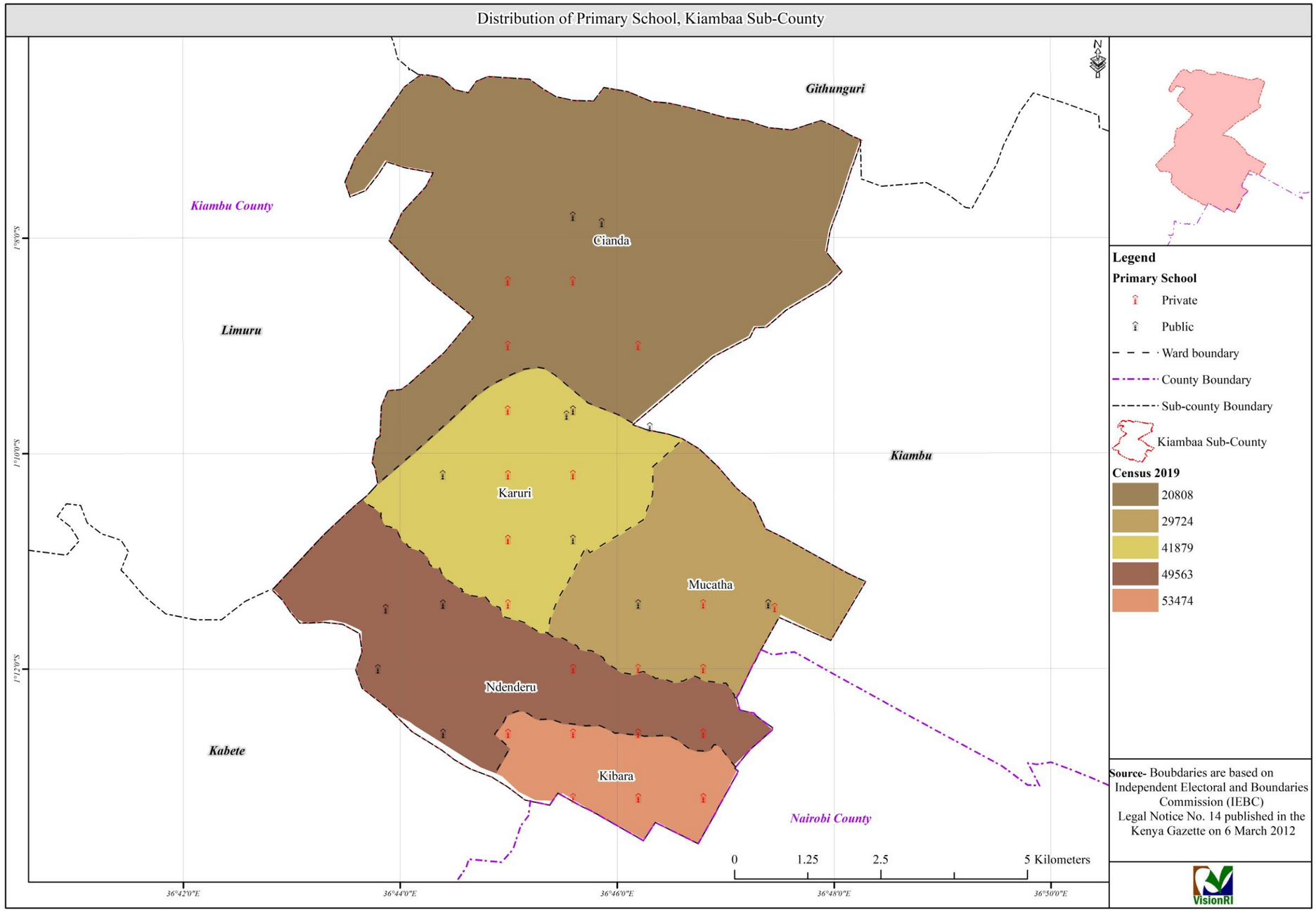
By the end of the planning period in 2030, the area is projected to have a population of 416,534. To serve this population, a total of 167 ECDE centres will be required. This means that 58 additional ECDE centres should be provided during the planning period.

9.2.2 Primary School Facilities

In 2019, there were 24 public primary schools in the Sub-County with a total enrolment of 16,065 pupils. On the other hand, there were 51 private primary schools. A primary school should serve a catchment population of 4,000 and within a 2-kilometre radius. As per the 2019 population statistics, the Sub-County would have required 59 schools but as seen above, there was a total of 75 surpassing the requirement. However, private schools are normally market-driven and may not be financially accessible to poor households. Secondly, some of the schools draw their pupils outside Kiambaa Sub-County hence not serving the local population.

By the end of the planning period in 2030, the Sub-County is projected to have a population of 416,534. To serve this population, a total of 104 primary schools will be required. This indicates that 29 primary schools should be provided during the planning period.

Private schools may increase in number and continue to service a specific market.



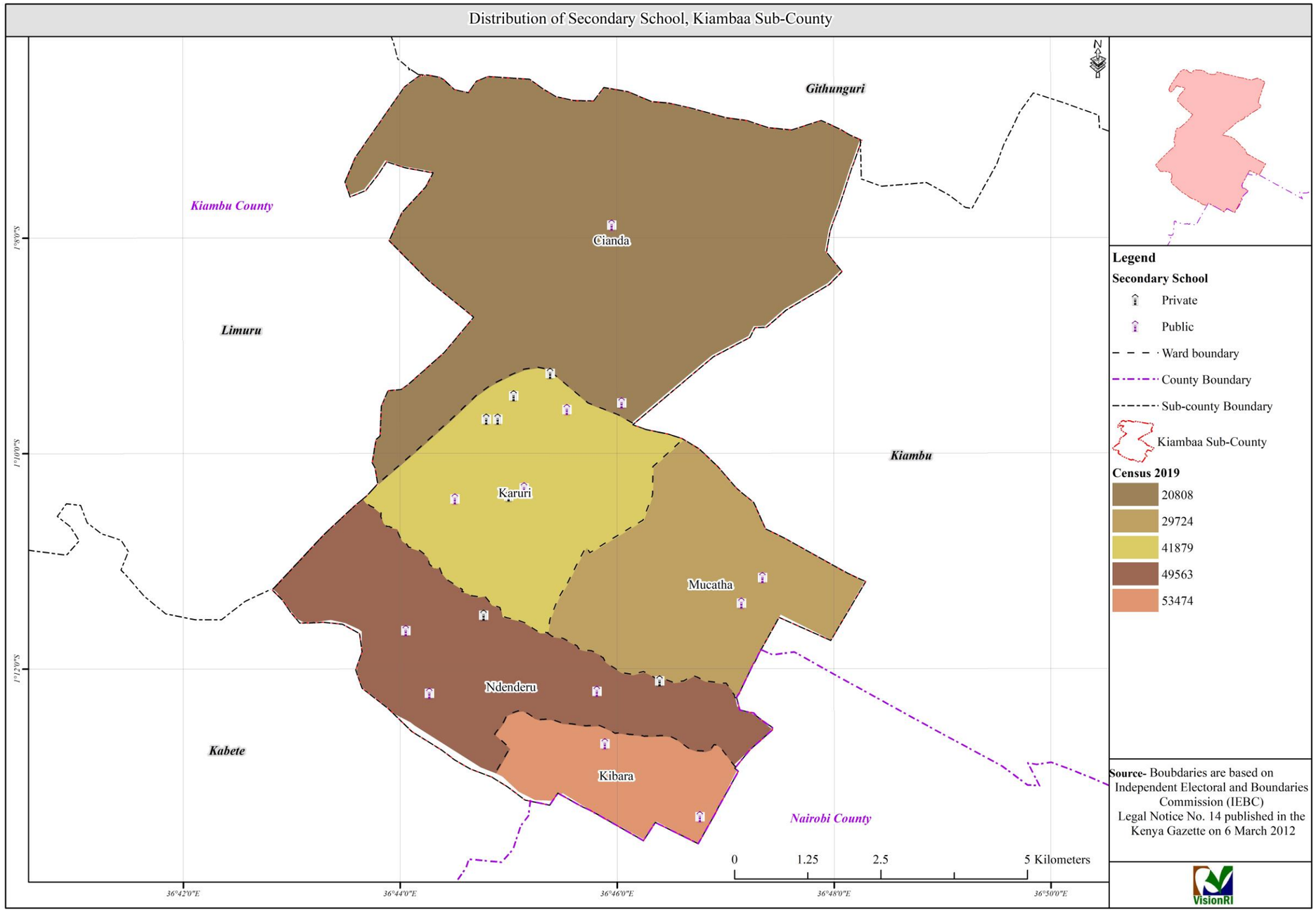
Map 9-2: Primary Schools in Kiambaa Sub-County

Source: VisionRI and ULS

9.2.3 Secondary Schools

There are 19 secondary schools in the planning area which include Karuri, Senior Chief Koinange, Kanunga, Muthurwa, Thimbigwa, Kiambaa, Gacharage, Kihara, Wangunyo, Ndenderu, St. Joseph Gathanja, Mwongoiya, Karura, Gachie, Cianda and Kibathi.

At the 2019 population level of 234,600, the planning area required 29 secondary schools (at a ratio of 1:8000). It is projected that at the end of the planning period, the population of the Sub-County will reach 416,534. The number of secondary schools required will, therefore, be 52 leading to a deficit of 36.



Map 9-3: Secondary Schools in Kiambaa Sub-County

Source: VisionRI

9.2.4 Vocational Centres

The Sub-County has two vocational centres, namely, Ndenderu and Sacred Heart Domestic Science Training Centre.

9.2.5 Adult Education Centres

There are three full-time adult education centres in the Sub-County. These have an enrolment of 26 male and 44 female learners. This number is low in reference to the 2019 census that indicated that 4.4% (9,649) of the total population above the school-going age of three years have never been to a learning institution. As enrolment per centre is low, the provision of literacy classes in all public primary schools by the end of the planning period should bring the service closer to learners. By the end of the planning period, the required number of centres should increase to 71.

9.2.6 Summary of Projections and Needs

The Physical Planning Handbook (2007) outlines the required education standards for the country. These standards are critical in the projection of needed educational facilities. The Handbook provides for one nursery school for a population of 2,500 and should cover an area of 0.25 ha., one primary school for a population of 4,000 covering an area of 3.25 ha., and one secondary school for a population of 8,000 covering an area of 6.9 ha. Based on the standards provided, the current number of primary schools in Kiambaa Sub-County is adequate and will be enough through the years until 2025. The projected number of required public educational facilities are given in the table below.

Table 9-1: Public Educational Facilities Projections

Educational Facility	Year	2019		2030
Nursery School	Population	236,400		416,534
	Number of facilities	Available	109	-
		Required	94	167
		Deficit	0	58
	Total Land Required (Ha/facility)			
Primary Schools	Population	236,400		416,534
	Number of facilities	Available	75	-
		Required	59	104
		Deficit	0	29
	Total Land Required (Ha)			
Secondary Schools	Population	236,400		416,534
	Number of facilities	Available	16	
		Required		
		Deficit		
	Total Land Required (Ha)			
Adult educational	Population	236,400		416,534
	Number of facilities	Available	3	

Educational Facility	Year	2019		2030
centres		Required		
		Deficit		
	Total Land Required (Ha)			

Source: VisionRI

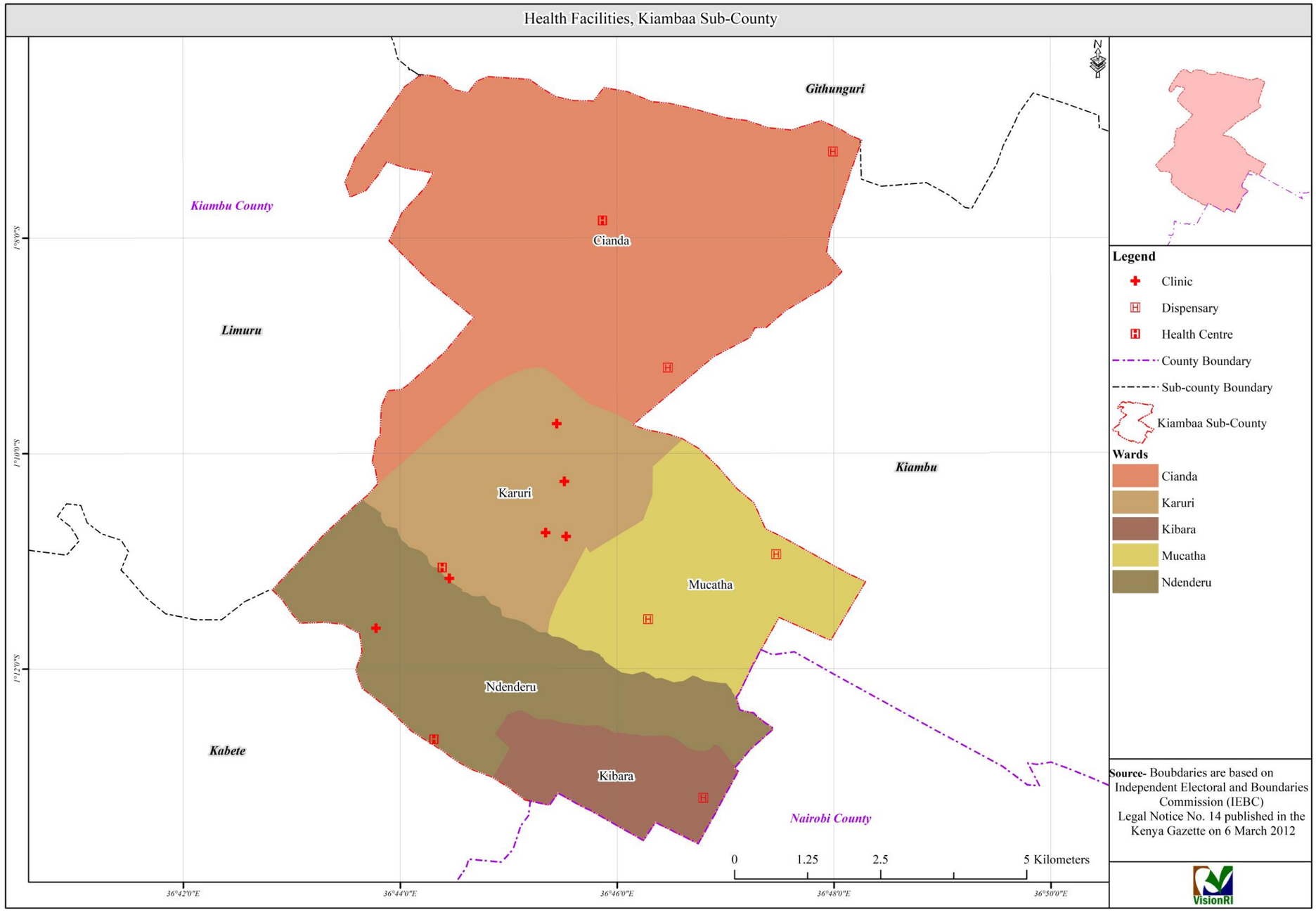
9.3 Health Facilities

9.3.1 Available facilities

The Fourth Schedule, Part 2 of the Constitution, mandates the County Government to provide health care services. The facilities include management of public hospitals, ambulance services, and promotion of primary health care, licensing and control of undertakings that sell food to the public, veterinary services (which excludes regulation of the profession), cemeteries, funeral parlours and crematoria. These services are well provided for in Kiambaa Sub-County, through the County Department of Health Services.

Health care facilities within the Sub-County comprises of dispensaries, private clinics, health centres and nursing homes. Kihara Level 4 and Karuri Level 4 Hospitals are the major health care facilities managed by the County Government.

Kiambaa Sub-County has eight medical clinics, four dispensaries, three health centres, one level 4 (sub-district) hospital), and seven medical centres. This brings the total number of health facilities in the Sub-County to 23. These facilities are staffed with nurses, clinical officers, pharmaceutical technologists, drivers, public health officers, medical technologists, and nutritionists amongst others. The Health Services Department ensures that services are of quality and accessible to every resident. However, there is a need to rehabilitate and upgrade most of the public health care facilities in the Sub-County.



Map 9-4: Health facilities in Kiambaa Sub-County

Source: VisionRI

The Sub-County is within commuting distance to Nairobi and thus most people from there make use of health facilities in Nairobi, especially those who work in the city. Nonetheless, there is a resident population, which needs services within the Sub-County.

9.3.2 Hierarchy of Health Facilities

Kiambaa Sub-County has Levels 2, 3 and 4 facilities and is thus compliant to the Kenya Health Policy 2014-2030 which requires this hierarchy in order to facilitate referrals within a district or Sub-County. The same policy requires that residents travel no more than 5 kilometres to reach a health facility.

Table 9-2: Summary of Health Facilities in Kiambaa Sub-County

S. No.	Facility	Level
1.	Cianda Dispensary	II (Public)
2.	Kasphat Dispensary	II (Public)
3.	Muchatha Dispensary	II (Public)
4.	Ndenderu Dispensary	II (Public)
5.	Gathanga Health Centre	III (Public)
6.	Karuri level 4 Hospital	IV (Public)
7.	Kihara level 4 Hospital	IV (Public)
8.	AAR Ruaka	Private
9.	Adonai Medical Services	Private
10.	Aga Khan Ruaka	Private
11.	Banana Hill Medical Centre	Private
12.	Catmag Medical Centre	Private
13.	Faith Medical Centre	Private
14.	Gachie Medical Centre	Private
15.	Garden Park Medical Centre	Private
16.	Getrude Hospital	Private
17.	Guardian Healthcare Dental Clinic	Private
18.	Kariki Medical Clinic	Private
19.	Ruaka Medical Clinic	Private
20.	St. Francis Health Clinic	Private
21.	St. Peters Medical Clinic	Private
22.	Sun View Maternity & Nursing Home	Private
23.	White Pine Medical Clinic	Private

Source: Kiambu County Department of Health

9.3.3 Doctor: Patient Ratio

The World Health Organization (WHO) recommends one doctor to 1,000 patients. According to Kiambu County CIDP 2013-2017, this ratio stands at one doctor to 17,000 patients for Kiambu County. The planning area has no documented doctor to patient ratio but going by the ones for Kiambu County, there is a need for Kiambaa Sub-County to invest in more doctors.

9.3.4 Projections and Needs

There are inadequate health facilities in Kiambaa Sub-County. According to the Physical Planning Handbook (2007), one hospital should serve at most 5,000 people. Depending on the level of health service, it is necessary to reserve adequate land for future expansion as well as for public cemeteries. The health facilities should be within the reach of people to reduce the number of deaths during emergencies.

Table 9-3: Projection of Number of Health Facilities

Year	Existing no.	2019	2024	2030
Population		234,600	318,899	416,534
Number of hospitals	23	47	63	91
Facility deficit		24	40	68
Land needed in hectares		47.8	80.6	135.3
	Recommended standards include: • 5000 People = 1 Hospital • Sub-Health Centre to Have Minimum 2 Hectares			

Source: VisionRI

9.4 Social Facilities & Amenities

9.4.1 Urban Safety - Police Stations/Posts/Bases, Courts, Prisons, and Chiefs Camps

The police play a major role in our society as they help in maintaining public order and safety by enforcing law and order.

Kiambaa Sub-County hosts the Karuri police station supported by six other patrol bases, all under the National Police Service. The introduction of Neighbourhood Watch Community Policing (Nyumba Kumi Initiative) has strengthened the police and residents' partnership, hence curbing crime in the urban area. Moreover, private security firms provide an additional response to security emergencies with companies like BM Security Firm, G4S, and KK Security Services outsourced by private companies and residents.

In order to improve the level of security in the Sub-County, Kiambu County CIDP 2013-2017 proposes the employment of more police personnel to increase the police-to-citizen ratio, construction of child protection units in every police station, and establishment of rehabilitation centres in all sub-counties within the County.

Table 9-4: Kiambaa Sub-County Security Priority Projects

Project	Ward	No.	Purpose	Description	Cost
Police post and police residence	Muchatha	1	Enhance security	Construction of police post and residence	50,000,000
Surveillance motorcycles for police	Muchatha	1	Ease Surveillance	Purchase of 8 surveillance motorcycles for police	400,000

Project	Ward	No.	Purpose	Description	Cost
Police patrol cars	Kiambaa Sub County	1	Ease Surveillance	Purchase of 5 surveillance vehicles	1000,0000
Cianda police station	Cianda	1	Enhance security	Construction of police station	10,000,000

Source: County Government of Kiambu

The Physical Planning Handbook (2007), stipulates that a police post should cover a minimum of 0.1 ha and three ha, for a police station in a township. There should be a police-to-citizen ratio of 1:450 as per the United Nations (Africa Check, 2017). Similarly, the United Nations provides for one police post for a population of 4,500 people. The Sub-County has one police station and six police posts. Currently, there is a deficit of 43 police posts, which is projected to increase over time as shown in the security facility projection table below.

Table 9-5: Security Facility Projections

Year	Existing no.	2019	2024	2030
Population		234,600	318,899	416,534
Number of police stations	1	No standards		
Facility deficit				
Number of police posts	6	52	70	101
Facility deficit		46	64	95
Land needed for the police station in ha				
Land needed for a police post in ha		4.6	6.4	9.5
	Recommended standards include: • 1 Police Post: 4500 people; • 1 Police post: 0.1 ha; • 1 Police Station: 3 ha; and • 1 Police Officer: 450 citizens.			

Source: VisionRI

9.4.2 Community Amenities

Sports and recreation facilities are critical in urban areas, especially because people have limited spaces in their compounds and require space to walk and jog away from congested homes. There is no major stadium in the Sub-County.

Kiambaa Sub-County has conference facilities provided by hotels such as Mayweather Suites, Limuru Road Express Hotel, and Sahara West Park, amongst others. The Sub-County's residents enjoy proximity to Two-Rivers Mall and Village Market for fun and leisure.

Muchatha Stadium provides a venue for sporting activities such as football, athletics, tournaments, cycling and martial arts for the residents and schools' sports activities.

There are no public parks in any of the urban centres in the Sub-County. There are, however, playgrounds that are accommodated within the public schools. In the projection of the land used for recreational facilities, standards from the United Nations state that 1.5 hectares of open space

are required for every 5,000 people. This presents a need for more public recreation facilities within the Sub-County.

Figure 9-1: Karuri Primary in Banana

Source: Field Survey

9.4.3 Religious Facilities

Kiambaa Sub-County has a rich religious foundation evidenced by the presence of religious centres such as churches and mosques. The Sub-County is predominantly Christian with numerous religious centres including the Central Kenya Headquarters of the Seventh-day Adventist Church at Karura, the Catholic Church Complex at Nazareth near Banana Hill, and several Presbyterian and Anglican establishments. According to the Physical Planning Handbook(2007), a minimum of 0.1 hectares is proposed for religious purposes. The existing situation has shown that most religious facilities within the planning area do not meet this standard.

9.4.4 Fire Stations

Fourth schedule, Part 2 of the Constitution stipulates that the County Government should provide firefighting and disaster management services to its residents. In December 2013, the County Emergency Fund Act was enacted. The purpose of the fund is to enable payments to be made in respect of urgent and unforeseen disasters for which there is no specific legislative authority and it is for the public interest. This payment may be necessary to alleviate the damage, loss, hardship, or suffering, which may be directly caused by an unforeseen event.

There is one fire station located in the Sub-County. This station is well staffed with ten employees.

The Kiambu County Directorate of Public Works and Utilities has put in place measures for emergency fires and accidents in the fire and rescue section. There are also plans underway to build capacity within the County to ensure timely fire response. The KUSP has proposed the construction and equipping of the Karuri fire station and procurement of a 5,000 litres capacity fire engine.

The Physical Planning Handbook (2007) provides that there is a need for accessibility to a major road network for high-risk areas. The Handbook specifies a minimum land requirement of 0.4 hectares to include a fire station, staff accommodation, and drilling area. A small fire station would require one fire engine and at least 30 staff members to cover a population of between 50,000 to 100,000 people depending on the degree of fire risk. The Sub-County has a deficit of one fire station which is projected to increase over time as shown in the projections in the table below.

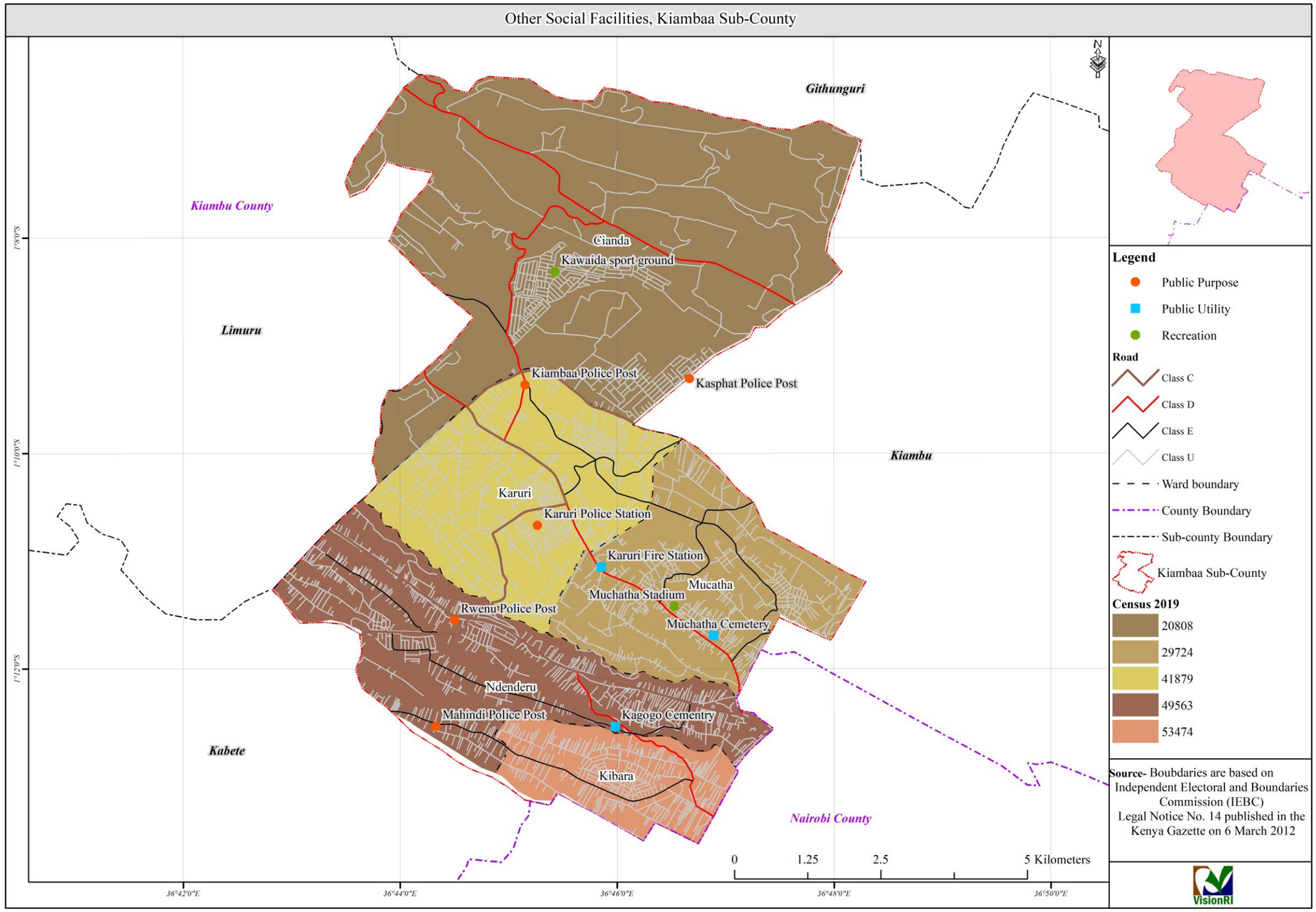
Table 9-6: Projections and needs of firefighting stations

Year	Existing no.	2019	2024	2030
Population		234,600	318,899	416,534
Number of fire stations	1	2	3	5
Facility deficit		1	2	4
Land needed in hectares		0.4	0.8	1.6
	Recommended standards include:			
	• 50000-100000 people :1 Fire station			
	• 1 Fire station: 1 fire engine, 30 staff members			

Source: VisionRI

9.4.5 Cemetery and Crematoriums

As urbanisation increases, so does the need for cemeteries and common burial grounds. The Kiambu County Department of Health Services indicated that there are eight cemeteries and burial grounds in Kiambaa Sub-County. Several churches have also set aside spaces in their compounds for the burial of their faithful. However, most people bury their dead in their ancestral lands in or outside the Sub-County.



Map 9-5: Other Social Facilities in Kiambaa Sub-County

Source: VisionRI

9.5 Key Planning Issues

The key planning issues with regard to social infrastructure are given in the table below.

Table 9-7: Key planning issues on social infrastructure

Sector	Key Highlights	Opportunities
Education	• The private sector is a major player in education in the Sub-County; and • The Sub-County has only two vocational centres and no university.	The County needs to encourage more private investment in the sector.
Health	Kiambaa Sub-County has several health facilities.	Due to the good road connectivity, the residents also enjoy health care services from neighbouring sub-counties in Kiambu County and Nairobi.
Other facilities	• Other areas do not have social facilities; and • Land that had in the past been set aside for public land has been encroached by private developers.	Use community and NLC to identify public lands that have been illegally occupied.

Source: VisionRI

10. ECONOMIC ANALYSIS

10.1 Overview

As per 2019 census, the working population stood at 106,360. Out of this, only 5,000 were in the formal sector while the rest were in the informal sector. This makes the informal sector, the backbone of the economy of Kiambaa Sub-County. Key informal sector activities include farming and services as well as transportation, manufacturing, and construction sectors.

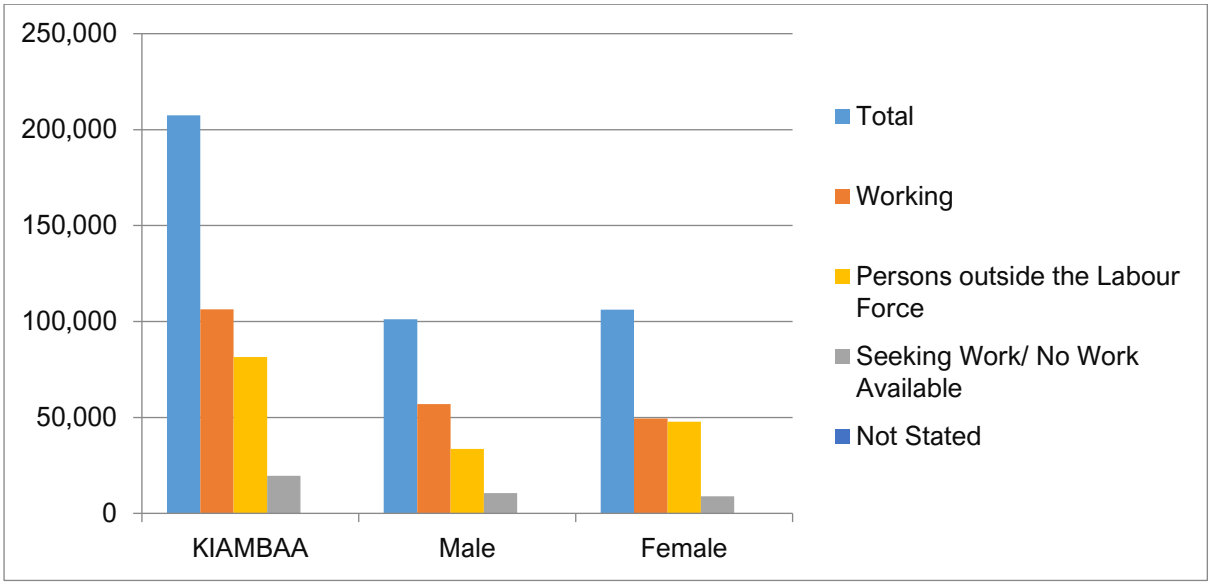


Figure 10-1: Persons in the Labour Force

Source: 2019 Kenya Population and Housing Census

10.2 Agriculture

10.2.1 Types of Agricultural Activities

Agriculture is an important economic activity due to the availability of fertile land, the occurrence of frequent rains and the presence of boreholes. Out of a total of 80,332 households, only 32,907 practice different forms of agriculture ranging from crop production, livestock production, and fishing. The total land under agriculture is 5,813 hectares. The figure below shows the distribution of these.

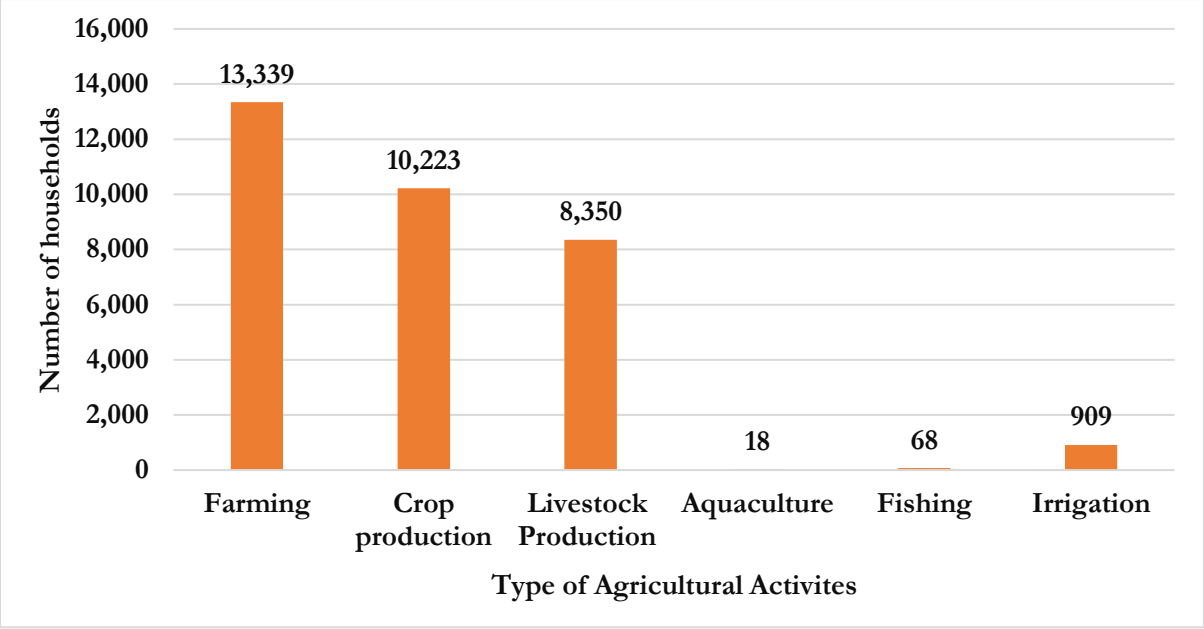


Figure 10-2: Number of Households Practicing Agriculture

Source: Kenya Population and Housing Census 2019

The major crops grown are maize, potatoes, beans, bananas, cabbages, and tomatoes. Other crops are cassava, sweet potatoes, onions, sugarcane, and kales. They are mainly grown for commercial purposes and subsistence use.

In addition, there are large-scale coffee and tea farms which forms almost 50% of the Sub-County's land area. These farms are mostly found in Cianda ward.

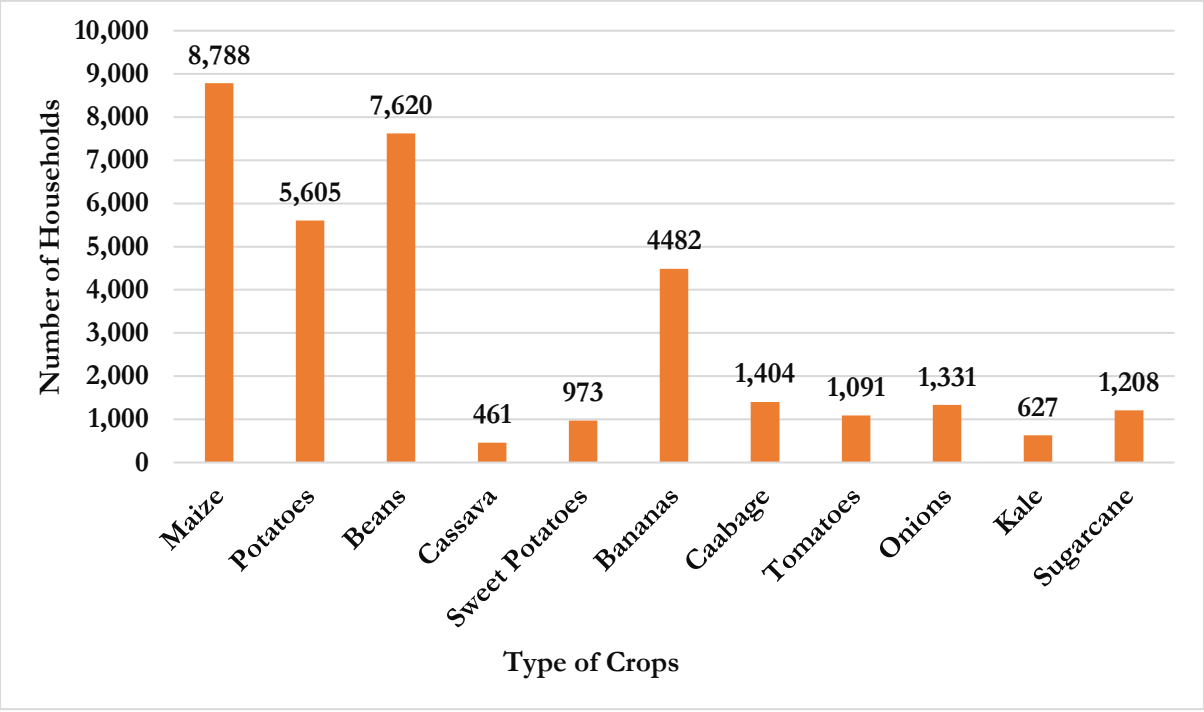


Figure 10-3: Number of Households Practicing Crop Farming

Source: Kenya Housing Population Census 2019

On the other hand, major livestock activities include the rearing of dairy cattle, pigs, dairy goats, rabbits, and poultry farming.

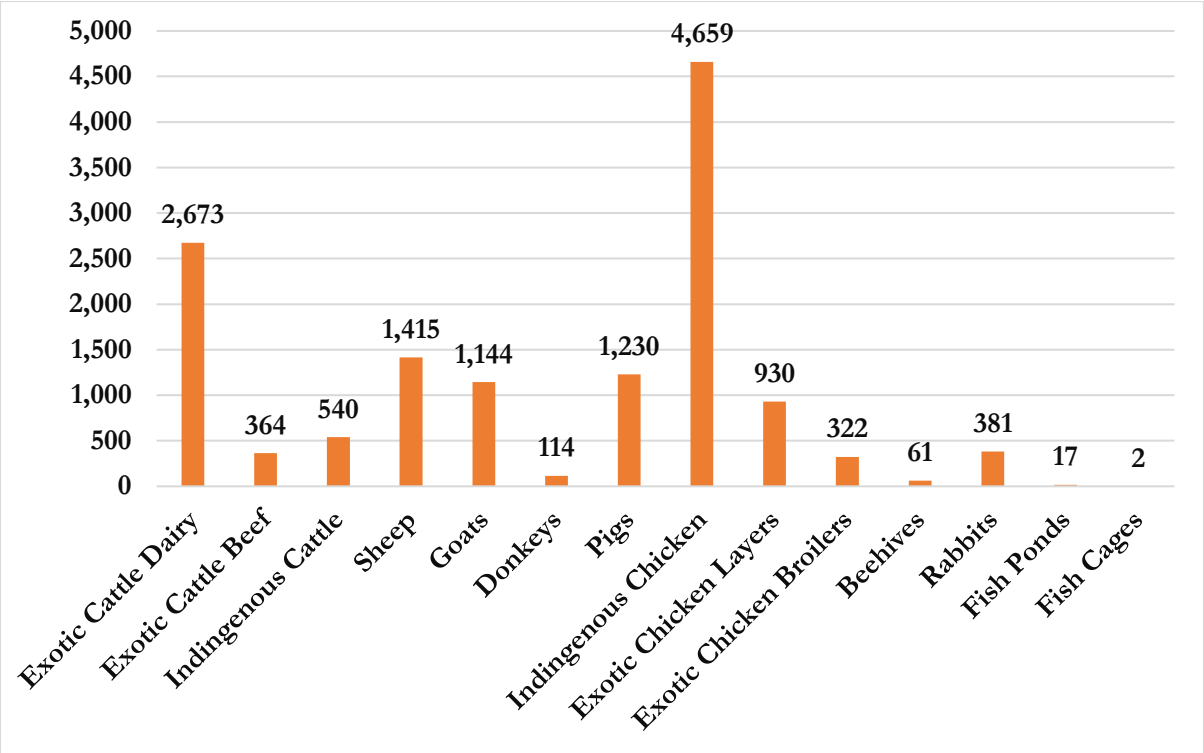


Figure 10-4: Types of Livestock Reared

Source: Kenya Housing Population Census 2019

10.2.2 Food security

In low and middle-income countries such as Kenya, the demand for food is driven by rapid population growth and high-income elasticity. The NMR's demand for staple and non-staple foods is expected to rise in the coming decades due to the huge influx of people, businesses, and services from the rest of the country and abroad. In addition, the demand for processed, packaged and value-added food may also rise as incomes in the metropolitan region increase. Kiambaa Sub-County can exploit this opportunity to cover a substantial portion of this market for food with strategic growth in its production of agricultural products.

10.3 Commerce

Commerce has taken different forms in Kiambaa Sub-County ranging from banking to small and medium enterprises such as cereal products, clothes, and barbershops. The retail business in the form of supermarkets is also prominent in the Sub-County. All these activities, directly and indirectly, provide sources of livelihood to many residents in and outside the Sub-County.

10.3.1 Financial Institutions

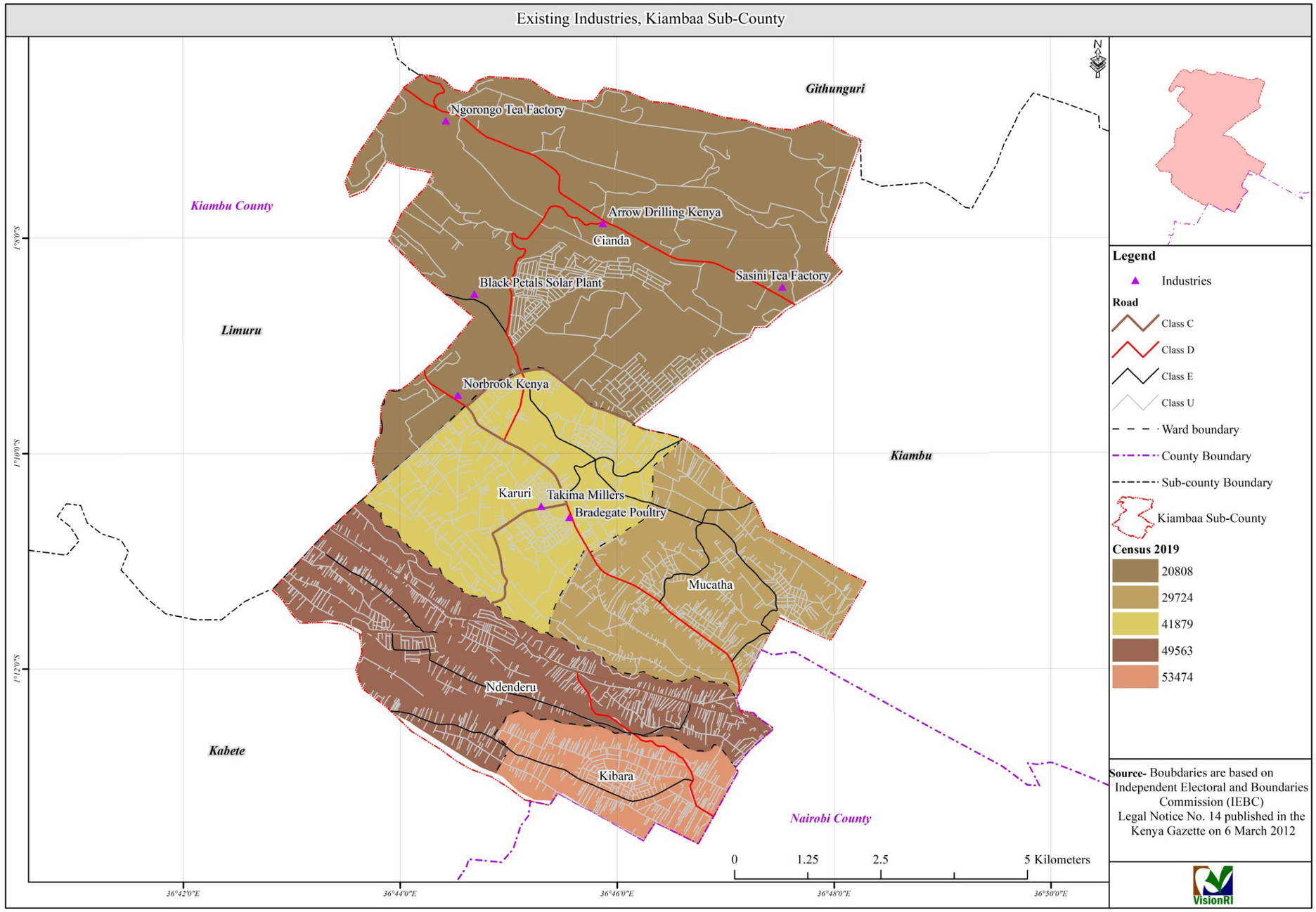
Kiambaa Sub-County boasts of a good network of commercial banks and SACCOs, making it a financial hub. These banks include Equity Bank, Co-operative Bank, KCB, Family Bank, Kenya Women Finance Trust, and a network of Non-Banking Financial Institutions (NBFIS). The banks facilitate economic development and the creation of jobs through the provision of reliable and affordable credit. SACCOs, albeit at a smaller scale, offer credit at below market-rates thereby

increasing credit flows to support local businesses, especially small- and medium-sized enterprises (SMEs).

10.4 Industry

The industries in Kiambaa Sub-County only occupy 0.24% of the total land area. Most of these industries are agro-based. The conventional light industries include coffee milling factories, tea processing factories, milk processing plants and flower collection plants. Other non-conventional light factories include furniture and shoemaking, electronics, clothes making, home appliances repairing, *jua kali* and flour milling, amongst others.

There are no heavy industries in Kiambaa Sub-County. The map below shows the existing industries in the planning area.



Map 10-1: Location of Industries in Kiambaa

Source: VisionRI

10.5 Tourism and Hospitality

Kiambaa Sub-County is part of the Kiambu Highlands and is the closest high-quality environmental/landscape zone to the capital city. This fact can be leveraged upon by the Sub-County to develop itself as an eco-tourism and leisure hub, apart from the focus on agricultural activities. The following factors and comparative advantages currently enjoyed by Kiambaa Sub-County could support its development into an eco-tourism hub:

- **Natural beauty**: Kiambaa Sub-County is scenic, thus can encourage tourists to visit for leisure purposes;
- **Current situation**: Kiambaa Sub-County already has a tourism industry in place, currently in its infant stage. There are some hotels and lodges as well as a country club, which would be supportive in the Sub-County's growth as a hub for leisure;
- Kiambaa Sub-County is only about 20 km from the capital city. This proximity would be another contributing factor in the development of the tourism and hospitability sector;
- **Large plantations**: The presence of large coffee and tea plantations can be leveraged upon. Tourists often wish to visit such areas for leisure, and these can be developed into weekend getaways, attracting the residents of the NMR as well as other parts of the country; and
- **Waterfalls**: Kiambaa Sub-County boasts of two waterfalls namely Cianda and Kihururu waterfalls.

In terms of art and culture, the town has Banana Hill and Red Hill art Galleries which are major attractions to art lovers.

10.6 Other Economic Activities

- **Real Estate**: Kiambaa Sub-County is a major residential hub in the NMR. With improved transport, many people working in Nairobi have opted to live in the Sub-County. Having enough land/space for the expansion of residential apartments, real estate is expected to boom in the coming years, creating an opportunity for the Sub-County to position itself as a preferred residential hub in the NMR.
- **Transportation**: The Sub-County has a thriving transport sector that significantly contributes to job creation. There are several matatu SACCOs operating within the Sub-County. On the other hand, paratransit transport has tremendously increased. This is evidenced by the more than 1,000 registered motorbikes which are used in the transportation of people and small goods from one part of the Sub-County to another. The taxi business has also increased as a result of cab-hailing applications like Uber, Taxify, and Little Cabs, amongst others. Lorries, in turn, are hired for transportation of heavy commodities.

10.7 Key Planning Issues

The key planning issues in the economic sector are given in the table below.

Table 10-1: Key planning issues in the economic sector

Sector	Key Highlights	Opportunities
Agriculture	• Agriculture continues to face the threat of urbanisation as more conversion of land is undertaken; and • Prices of cash crops are no longer competitive thus discouraging farming.	• Rich soils that are good for agriculture; • Hot and wet weather; and • Ready market for farm produce in the NMR.
Commerce	• Commerce has taken different forms but mostly involve services.	• Proximity to Nairobi and NMR; and • Developments in the ICT sector.
Industry	• There are no heavy industries; and • The few industries that are present are mainly agro-based.	• Good road connectivity to neighbouring towns like Limuru, Nairobi, and Kiambu.

Source: VisionRI

11. GOVERNANCE AND STAKEHOLDERS PARTICIPATION

11.1 Governance

The County Government's administrative structure comprises of the County Assembly and County Executive Committee, headed by the Governor and Deputy Governor. The respective County Service Boards together with their administrations, spearhead development projects at the Sub-County, ward, and village levels. Kiambaa Sub-County consists of five wards, namely, Cianda, Ndenderu, Muchatha, Kihara and Karuri.

11.2 Institutional Framework/Administrative structure

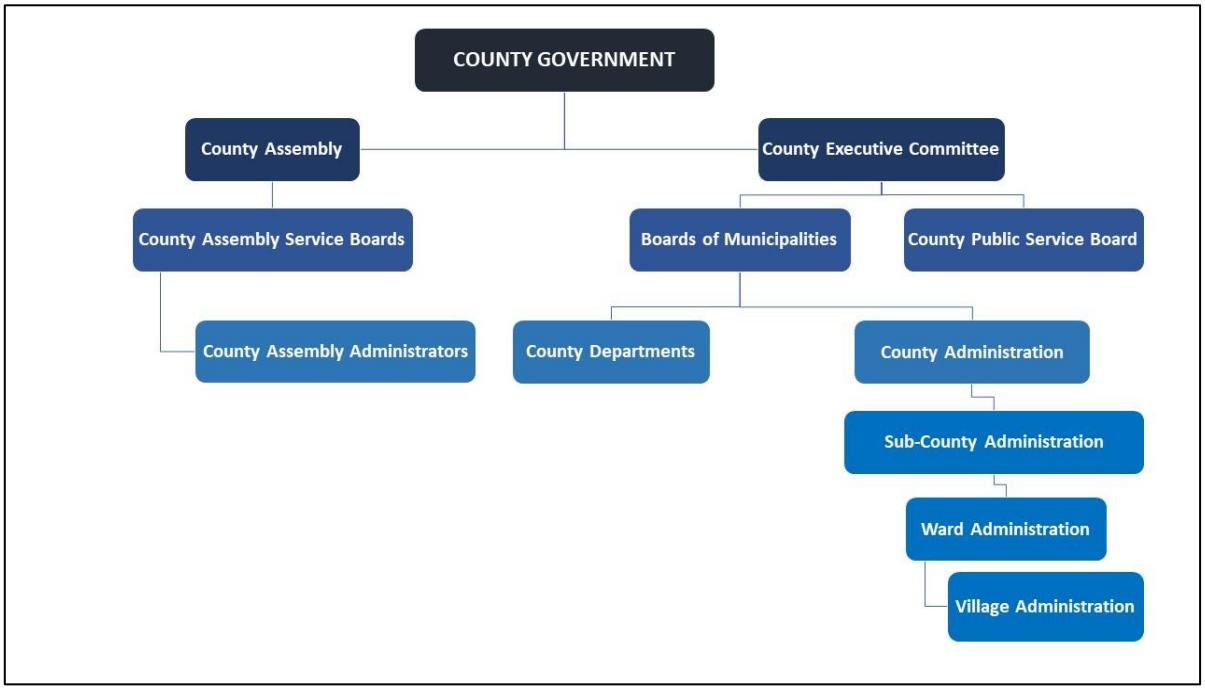


Figure 11-1: County Government Administrative Structure

Source: VisionRI

The Sub-County's development projects are deliberated and agreed upon by all stakeholders-government, organisations and residents-before implementation, ensuring that all urban issues are addressed. Stakeholder participation in county development ensures inclusivity, transparency, and accountability.

The Kiambaa Sub-County Public Service Board comprises of various departments, namely:

- Health services;
- Finance, economic planning, and ICT;
- Agriculture, crop production, irrigation, and marketing;
- Education, youth, sports, gender, and social services;
- Livestock and fisheries;
- Trade, tourism, co-operative and enterprise development;

- Roads, transport, public works, and utilities;
- Environment energy and natural resources;
- Housing, physical planning and urban development; and
- Public service and communication.

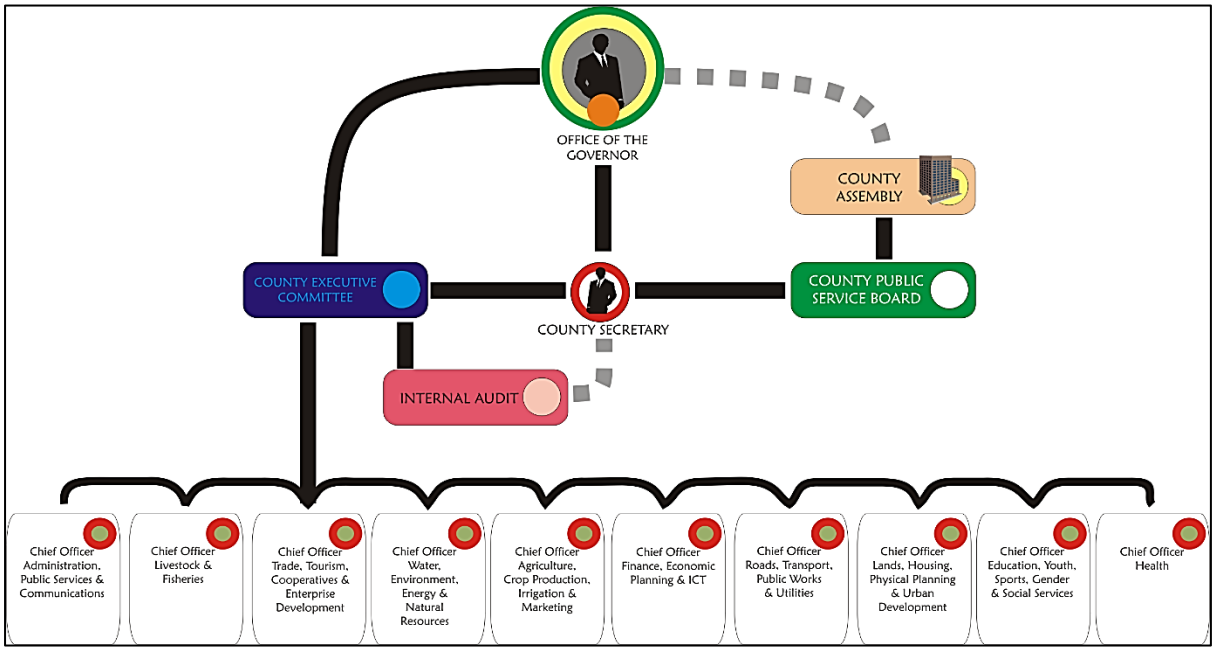


Figure 11-2: Kiambu County Government Organisation Structure

Source: Kiambu County Integrated Development Plan, 2018-2022

11.3 Legislations and Enforcement Mechanisms

The Constitution of Kenya (2010) distributes planning functions across two-tiers of government; national and county governments with provisions for coordination across the two levels. Planning roles and responsibilities at both the national and county governments are governed by the Constitution under Chapter 5: Land and Environment, particularly Article 66. The Fourth Schedule Part 1 (21) and (32) forms the foundation of national government planning mandates while Part 2 (8) of the schedule forms the foundation of county governments' planning mandates.

The County Government Act 2012 prescribes the powers, functions, and responsibilities of county governments for the delivery of services and associated purposes.

The Kiambu County Integrated Development Plan (CIDP) 2018-2022 describes the goals and objectives, implementation plan, strategies, and impacts, monitoring and evaluation procedures for the county. The CIDP in association with the County Government Act 2012, ensures that the County Government plans and implements urban development projects and programmes in the county. All projects, programmes and county budgetary cycles are affixed to the CIDP.

The Kiambu County Citizen Petition and Participation Act 2015 prescribes conditions for public participation in the administration and management of the county for its development and associated purposes.

11.4 Mechanisms of Participation

The County Government Act 2012 Section 115, prescribes the following mechanisms of public participation:

- ICT-based platforms;
- Townhall meetings;
- Budget preparation and validation fora;
- Notice boards: announcing jobs, appointments, procurement, awards, and other important announcements of public interest;
- Development project sites;
- Avenues for the participation of peoples' representatives including but not limited to members of the national assembly and senate; and
- Establishment of citizen fora at the county and decentralised units.

In respect to the above mechanisms, the County planning authority invites the public to review the plan through planning clinics within the Sub-County's wards and villages, facilitated by their representatives. The participants are given an opportunity to comment on the proposed county developments and programmes. Comments are noted and considered by the county planning authority. Development applications, for example, change of land use, are subject to notifications through print media and on-site advertisements. Anyone with objections is invited to avail their comments to the County planning authority.

There are also meetings with Sub-county associations in the following categories:

- Neighbourhood;
- Professional health, built and urban environments, economic and finance, etc.;
- Sectoral-industries, business communities, agriculture, health, hospitality, etc.;
- Education and research institutions;
- Non-governmental organisations (NGO) and community-based organisations (CBO), and-religious centres; and
- Use of communication technology through the county websites, television and radio channels, social media, and daily newspapers.

11.5 Resource Capacity (Human and Technical)

The Kiambu County staff complement is given in the following table.

Table 11-1: Human Resource at Kiambu County

Office/department	In post
Office of the Governor	33
Office of the County Secretary	6
County Public Service Board	18
County Assembly	313
Department of Administration and Public Service	279
Department of Agriculture, Livestock and Fisheries	605
Department of Roads, Transport, Public Works, and Utilities	133

Office/department	In post
Department of Water, Energy, Environment and Natural Resources	198
Department of Finance and Economic Planning	541
Department of Youth Affairs, Sports, Gender and Communication	12
Department of Education, ICT, Culture and Social Services	1358
Department of Housing, Lands and Physical Planning	31
Department of Trade, Tourism, Industrialization and Cooperative Development	47
Department of Health	1794
Total	5368

Source: County Government of Kiambu Joint Assessment and Rationalisation Report 2015

11.6 Stakeholders Profiling

The following table presents the Sub-County's key stakeholders in relation to this ISUDP.

Table 11-2: Key stakeholders

National Government	Public health and environment
County Government	Utility Service providers
Government Agencies/Parastatals	Informal businesses
Area Member of Parliament	Residential Associations
Sub-County Administrator	Non-Governmental Organisations
Ward Administrator	Community- Based Organisations
MCAs	Religious Institutions
Area Chiefs	Transport Sector
Deputy County Commissioner	Farmers
Sub-County departments	Traditional & cultural centres
Local Community	Minority and marginalised groups
Professionals from the private sector	Youth
Business community	Women

Source: VisionRI

11.3.1 Stakeholder Concerns

Comments raised by the public in the planning clinics, land development applications and through associations in the Sub-County, are noted and reviewed by the County planning authorities with the County Executive Committee.

11.3.2 Inclusivity (Gender and Minorities, PWLDs)

The County Government Act 2012 Section 97 prescribes mechanisms to protect the marginalised and minorities within counties pursuant to Article 197 of the Constitution.

- Protection of marginalised and minority groups from discrimination and treatment of distinction of any kind, including language, religion, culture, national or social origin, sex, caste, birth, descent, or another status;
- Non-discrimination and equality of treatment in all areas of the economic, educational, social, religious, political, and cultural life of the marginalised and minority groups;
- Special protection to vulnerable persons who may be subject to threats or acts of discrimination, hostility, violence, and abuse as a result of their ethnic, cultural, linguistic, religious, or other identities;
- Special measures of affirmative action for marginalised and minority groups to ensure their enjoyment of equal rights with the rest of the population;
- Respect and promotion of the identity and characteristics of minorities;
- Promotion of diversity and intercultural education; and
- Promotion of effective participation of marginalised and minority groups in public and political life.

11.7 Key Planning Issues

The Key planning issues on Governance and Stakeholders Participation are given in the table below.

Table 11-3: Key planning issues on Governance and Stakeholders Participation

Sector	Key Highlights	Opportunities
County Government	The municipal boards have been established but their effect is yet to be felt.	Strengthen the municipal board.
	Presence of County departments in the Sub-County.	Integrate planning and development processes.
National Government	Presence of government agencies in the Sub-County.	Leverage support in the implementation of projects.
Private sector and non-state actors	Vibrant private sector in commerce, agriculture, transport, education, and health sectors.	Leverage and integrate their programmes in plan implementation.

Source: VisionRI

12. SYNTHESIS OF EMERGING ISSUES

12.1 Overview

This chapter provides an initial identification of the key challenges facing the Sub-County that should be addressed by the ISUDP as well as its potentials that could serve as platforms of growth. These challenges and potentials are then synthesised to identify the Sub-County's cross-cutting strengths and opportunities that may be capitalised upon to sustain its development over the planning period. The Sub-County's weaknesses and possible threats to its sustainable development are likewise identified.

12.1.1 Planning context

- **Location:** Kiambaa Sub-County is strategically located within Kiambu County and the NMR. The Sub-County is traversed by such as Limuru and Kiambu roads and the Northern and North-Western Bypasses. By these, the Sub-County is an ideal location for investments due to ease in movement and connectivity with key urban centres.
- **Legal Framework**: There is also a pool of existing legal and policy framework to enable the implementation of this Plan. These laws also allow institutional growth, good governance, and citizen participation.

12.1.2 Physiographic characteristics

- **Topography and soils**: Kiambaa Sub-County is characterised by an undulating topography which minimises the risk of flooding. The Sub-County has a network of rivers which increases the potential of water reliant activities like agriculture. The deep and fertile soils coupled with the favourable climate is an advantage to the agriculture sector, but they need to be protected from human settlements.

12.1.3 Environment

Encroachment of rivers and their riparian reserves are amongst the major environmental challenges that the Sub-County faces. Other environmental threats include pollution of rivers and wetlands due to increasing human activities coupled with inadequate conservation and pollution control measures.

12.1.4 Population

- **Population growth, structure, and demography**: Kiambaa Sub-County is experiencing high population growth due to its location within NMR and proximity to Nairobi. The 2019 population has grown by 55.6% from the 2009 population leading to a population density of 2,819 persons per square kilometre.

  The population structure indicates that the youth far outnumbers the elderly indicating a need for an increase in facilities that the youths directly rely on like schools, playgrounds, hospitals, and adequate housing. There is also a need to create employment opportunities. The youthful population can easily be absorbed into the workforce as the Sub-County enjoys high literacy levels. In addition, the youth will provide a ready market for goods and services.

12.1.5 Land Use Analysis

The Sub-County continues to witness high rates of conversion of agricultural lands to urban developments such as residential and commercial uses. Most of these developments may be observed in the ribbon pattern of urban developments along Ruaka-Limuru road, Banana-Raini road and Kihara-Gachie-Karura road. This may be attributed to the increased demand for housing. This has led to an increase in land prices which is, in turn, encouraging the subdivision and conversion of land without due consideration to planning and development standards. The subdivision of land into narrow strip parcels and small plots presents an economic threat to land use. There are also few public spaces for recreation and other services, hence the need to enforce planning standards when subdivisions are being carried out.

12.1.6 Human settlements and Housing

Human settlements in the Sub-County are mainly along major road corridors and clustered settlements within specific nodes namely, Karuri, Ruaka, Muchatha, Ndenderu, Gachie and Kawaida. The urban limits for these nodes are not well defined due to urban sprawl into peri-urban areas. To control these, the urban edges need to be defined through appropriate planning and development control.

About 70% of the population in the Sub-County live in rented housing. The housing sector is private led with private individuals contributing 99% of the housing stock in the area. The relevant authorities can encourage this by creating a conducive environment for more and continued investments in this sector.

12.1.7 Physical infrastructure

In terms of regional connectivity, the Sub-County is well connected with good roads making it attractive for investments in real estate. However, the feeder roads in the Sub-County's interior areas are in fair to poor condition hence encouraging development to concentrate along transportation corridors.

About half of the households in the Sub-County do not have piped water and are forced to rely on other sources such as shallow wells that may not be safe due to contamination by pit latrines. In addition, waste collection is still low at 35%. Residents are forced to rely on unsafe methods of waste disposal.

The Sub-County enjoys almost 90% connection to the national grid in terms of energy. There is still low adoption of green sources of energy like solar and biomass. Major ICT companies provide their services in the Sub-County thus increasing opportunities for businesses and innovations.

12.1.8 Social infrastructure

The Sub-County is endowed with good coverage of education facilities for both primary and secondary. Private sector investment stands at 60% of both ECDEs and primary schools. Notably, these are market-driven and may not be accessible to all segments of the population, especially the poor households. Thus, there is a need to provide and improve public facilities within the Sub-County. It is important to note that the Sub-County has only two vocational institutions forcing students to seek training in the neighbouring sub-counties or counties. The Sub-County has only one stadium in Muchatha hence the need to provide more recreational facilities.

12.1.9 Economic analysis

The agriculture sector continues to face threats from urbanisation as more conversion of land is undertaken to respond to the demands of a thriving real estate sector. Coupled with uncompetitive prices for farm produce, more farmers are being discouraged from investing in the sector. This is despite the area having fertile soils and a favourable climate.

Other key emerging economic sectors include trade and commerce, transport, light industries mainly in *'jua kali'* sub-sector. The area has few agro-based industries in the tea and dairy sector.

12.1.10 Governance

The Kiambu County Government has a well-defined governance structure with ten departments responsible for implementing its functions. Lands, housing, physical planning, municipal administration, and urban development is in charge of planning functions in the County. Planning functions at Sub-County are carried out by a Sub-County Planner.

There is a Municipal Board which will play a critical role in the implementation of this Plan.

However, there is a need to enhance public participation to create more awareness on planning and development matters. This will ensure this ISUDP will be owned by the beneficiaries who are the residents of the area.

12.2 Strengths, Weaknesses, Opportunities and Threats Analysis

The synthesis of the plan was also informed by Strengths-Weaknesses-Opportunities-Threats (SWOT) analysis that engaged different stakeholders as presented below.

12.2.1 Problem Tree Analysis

Land use planning is an essential tool for the regulation of land activities in both urban and rural areas. Land use planning regulations are earmarked to, amongst others, reducing emissions from transportation systems, lesser average commuting time, cultural flowering in new public spaces, and lesser crime in urban areas. It also leads to increased agricultural production in rural areas leading to an improved rural economy. Kiambaa Sub-County is faced with ineffective land use planning due to poor stakeholder involvement and participation, inadequate resources, and low prioritization of land use planning by the relevant stakeholders.

Poor stakeholder involvement is indicated by poor citizen participation, the inadequate flow of information regarding development and planning together with weak planning institutions and policies with the end result of service delivery to the residents. Poor service delivery in Kiambaa Sub-County is manifested by the high unemployment rate, increased crime levels in neighbourhoods of Gachie, Muchatha, Karuri/Banana and Kawaida; delayed public development projects and lack of political and community goodwill for the sustained development process.

Ineffective land use planning in Kiambaa Sub-County may-be attributed to lack of adequate resources manifested in lack of adequate funds, inadequate qualified physical planners, and limited application of modern technology in undertaking planning and development control processes. The result of this can be translated as the weak implementation of existing policies and strategies, which further manifest into uncontrolled development and reduced agricultural land in Ruaka, Kihara and Gachie as they accommodate high population densities; and loss of natural cover and encroachment on riparian areas and contamination of water sources such as Riara and Ruaka rivers.

There is low prioritisation of physical planning and development control in the Sub-County if compared to other sectors and development initiatives. The indicator is the inadequate budgetary allocation by the County Government to the Department of Planning, lack of proper planning regulations and laws, and the existence and use of outdated planning mechanisms, tools, and technology.

The result is irregular; and unsustainable development pattern in both rural and urban areas of the Sub-County demonstrated through urban sprawl and increasing unregulated land subdivisions with plot sizes being as small as 40 m by 80 m in the development hotspots of Ruaka, Karuri, Ndenderu, Gachie and Kihara. There is evident pressure on existing social and physical infrastructural facilities in Kawaida and Kiambaa, and land-use conflicts where incompatible land uses like clubs and bars are located adjacent to residential land uses.

On the other hand, tangled decisions on public spaces have sometimes caused dissatisfaction amongst residents such as in the case of land meant for a shopping centre in Kawaida that was converted into a playground. The problem tree in the figure below is a summary of the above analysis of land use planning in Kiambaa Sub-County.

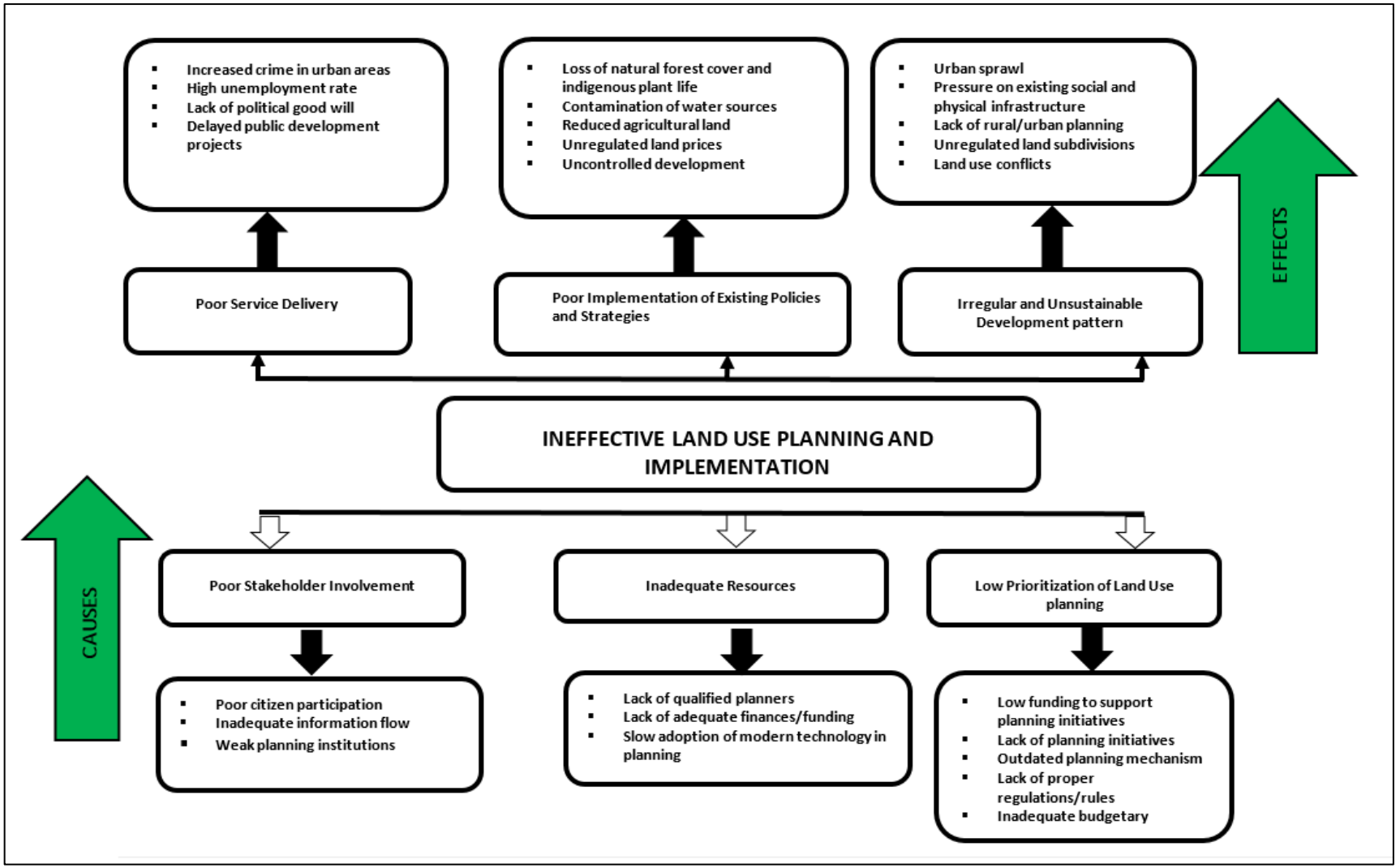


Figure 12-1: A problem tree analysis of land use planning in Kiambaa Sub-County

Source: VisionRI

12.3 Opportunities

Kiambaa Sub-County is endowed with both natural and man-made resources that can be used to enhance its potential and thereby improve the quality of life of its residents. This is apparent from the vibrant agro-industrial base of the Sub-County in the form of small and medium enterprises. Availability of paces for expansion, transportation services, established services such as the banking industry, major nearby investments such as the Two Rivers mall, proposed infrastructural development plans (e.g. the bypass connecting Gachie and Waiyaki Way), proximity to the City of Nairobi as a market for agro-products, eco-tourism potential, are key elements that should be harnessed for this purpose.

The existing private land tenure system provides a huge potential for the development of the towns and urban centres such as Ruaka, Karuri, Gachie, Ndenderu and Muchatha since private tenure is flexible in providing access through the market and/or public acquisition. This implies that future development of public utilities will largely be undertaken on land acquired from private individuals and institutions. The County Government will need to develop effective mechanisms for the acquisition of land for the future development of public utilities.

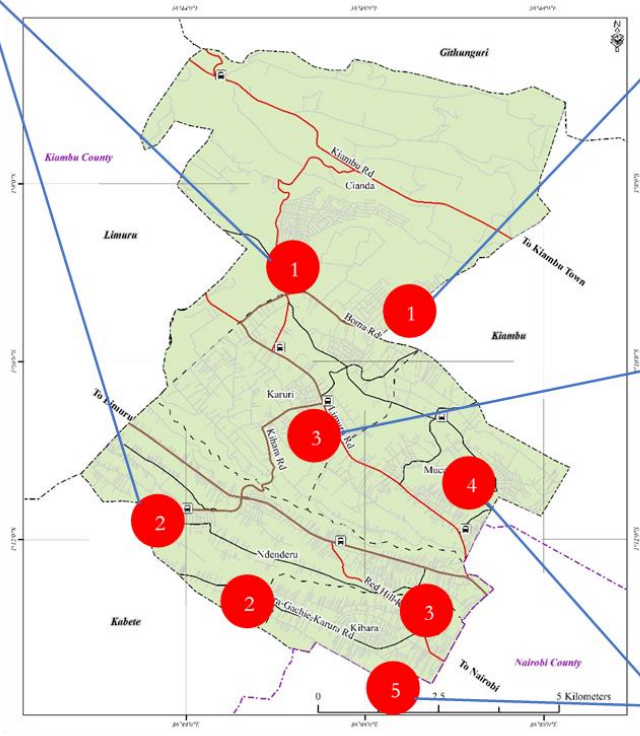
In terms of transportation, Kiambaa Sub-County is generally is well-connected by roads to Nairobi, Naivasha, Nakuru, Ruiru and Thika and there are many public transport operators, including motorcyclists. Dedicated budgets for the provision and maintenance of transport facilities by the County Government of Kiambu is a boost and a potential to improve the transport system. Close proximity to Nairobi and other towns and location at the crossroads ensures better connectivity to economic opportunities within the Sub-County. The comprehensive nearly circumferential and radial road network can be used to distribute traffic off the four main roads and improve traffic circulation. Existing of by-laws to make off-street parking a condition for development approval to relieve congestion on streets also ensures that law and order is enhanced in the Sub-County.

Land and Natural Resources

- Presence of agriculture and open areas in Cianda and Kawaida.
- Presence of Riara River and other tributaries.

Demography

- Presence of an educated youthful population in the sub-country.
- Ethnically diversified population- Kikuyus, Luhyas, Luos.



Economy

- Existing small and medium enterprises can be tapped into to improve employment opportunities.
- Presence of tea and coffee firm.
- Presence of industries: Sasini, Black Petals, Wimsy Yoghurt etc.

Transportation

- Good connectivity by road to Nairobi, Kiambu town, Linuru, Ruiru, Thika, Naivasha, and Nakuru.
- Existence of several Matatu SACCOs plying Ndenderu, Muchata, Ruaka, Karuri, and Gachie.

Social services and community facilities

- Presence of already existing existence of good education facilities e.g. Kanunga and Senior Koinange.
- Health facilities such e.g. Kihara Level 4 and Kiambaa Level 4 Hospitals.

Figure 12-2: Opportunities Map

Source: VisionRI

12.4 Challenges/Gaps

The economy of the planning area is primarily driven by agriculture. Despite the high agricultural productivity of the area, farmers still get low returns from their products due to the increased number of middlemen who offer low prices against prevailing market prices. The result is poverty and poor living conditions in the Sub-County. Poor agricultural practices in such as farming along sloping terrain pose a challenge on proper management of soils and have a long-term effect on the planning area. Un-regulated developments on sloping lands pose risks of soil erosion, landslides, and downslope flooding.

Bureaucratic issues in accessing construction permits and approval within the Sub-County is a major constraint to development. The process is very long and time-consuming. Further, the approval fee for the construction of apartments is considered high by the stakeholders. Many forms of crime and violence are reported in Karuri/Banana area. Crimes associated with vehicle stealing are common. Besides flaws in the administrative and police system, this is also linked to inadequate streetlights and floodlights in the towns.

Inadequate physical and social facilities are evident in the high-density areas of the Sub-County, particularly in the urban centres of Karuri, Gachie, Ruaka, Muchatha and Ndenderu. Inadequate water supply, narrow roads, absence of wayleaves and insufficient parking spaces, inadequate bus parks and lack of NMT facilities especially within the Karuri CBD, have accelerated the transport challenges in the planning area. Public transport operators lack space to park their vehicles within the CBD since the existing bus park has a small capacity of only 25 vehicles.

Roadside parking has resulted in congestion of the roads and road user conflict between motorists and pedestrians. Poor utilisation of wayleaves, meant for in placing of public utility lines such as water line, electric poles and communication facilities have led to poor access to these facilities. All these factors are likely to reduce the investment potential of the Sub-County thus leading to its slow growth and development. The increase in the number of urban residents without approved planning schemes has significantly resulted in increased sub-division of land and incongruous developments in urban centres within Kiambaa Sub-County.

In addition, the increased siting of major residential estates and industrial plants in the Sub-County has led to challenges of unrepressed land ownership transfers occasioning the unprecedented land demand and therefore upsetting land values. High land values affect not only individual land investors but invariably the cost of acquisition of land for the development of public utilities. Thus, other than developing appropriate mechanisms for land acquisition, the County Government may need to develop appropriate models for keeping land reserves for the future development of urban infrastructural facilities.

The figure below shows a constraints map for Kiambaa Sub-County.

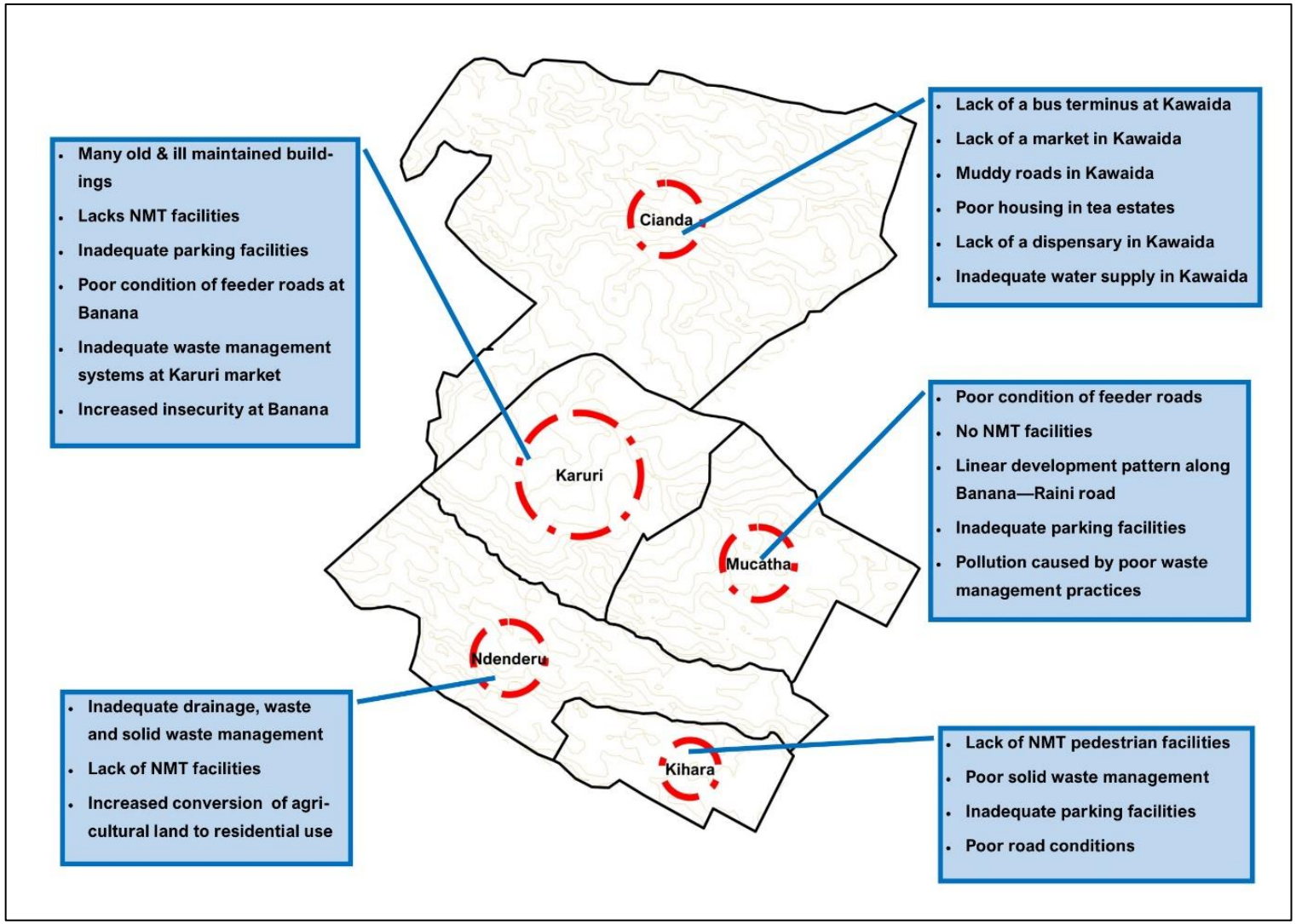


Figure 12-3: Constraint Map of Kiambaa Sub-County

Source: VisionRI

PART III: PLAN FORMULATION

13. SCENARIO BUILDING AND CONCEPTUAL FRAMEWORK

13.1 Overview

This chapter presents the physical development model that responds to the development vision and goals for the Sub-County. This model takes cognisance of the prevailing development character and trends in the Sub-County as well as its structuring elements. The preferred development model was selected out of three alternatives through stakeholders' workshop and discussions.

13.2 Strategic Development Directions

Strategic development in the context of the planning area refers to management activities that are used in Kiambaa Sub-County to set priorities, focus energy and resources, strengthen operations, and ensure that all stakeholders are working toward common goals.

13.2.1 Significance of Kiambaa Sub-County in Metropolitan Region

Kiambaa Sub-County plays hosts to Ruaka which is an upcoming economic and residential hub. This hub has witnessed tremendous growth which can be traced to its proximity to Nairobi, UN headquarters and the domino effects of Two Rivers Mall; currently the largest mall in East Africa and just a stone's throw away from the town. These factors have attracted many investors and residents to this township growing its population tenfold. This has, without doubt, contributed to Kiambaa Sub-County's function and reputation as an all-important dormitory zone for the Metropolitan region meaning people can live here albeit working elsewhere.

On the other hand, the role of the Sub-County as a food basket cannot be ignored. However, this important aspect continues to be endangered by the thriving real estate sector and declining agricultural returns.

13.2.2 Urban Growth nodes

Nodes are zones of intensified human activities with significant levels and tangible trends of development. According to Regulation 1315/2013 of the EU, an urban node is an area where transport infrastructure such as ports including passenger terminals, airports, railway stations, logistic platforms and freight terminals located in and around an urban area, is connected with other parts of that infrastructure and with the infrastructure for regional and local traffic. Growth nodes have great potential as the main hub for connecting the regions to the core/principal towns and they determine the direction of growth of a region.

In Kiambaa Sub-County, the major growth nodes are Ruaka, Gachie, Ndenderu, and Karuri/Banana due to their strategic locations, centrality and economic capacity and potential. In terms of land-use, these nodes are mainly residential in nature with central zones being commercial. Banana, also known as Karuri, is the largest commercial and administrative node within the area hosting Kiambaa Sub-County headquarter offices. It has major public facilities and infrastructure offering services to the residents.

Other mixed-use and commercial zones include Ruaka, Gachie, Muchatha and Ndenderu, which are predominantly residential. Considering that they are centres of attraction to people, the nodes should be properly planned to enhance the quality of life amongst the residents of the Sub-County.

13.2.3 Protect Environmentally Sensitive Areas

Environmentally sensitive areas are designated areas, which needs special protection because of their landscape, wildlife, or historical value. They include rivers, forests, and rocks. In Kiambaa Sub-County, rivers are the main environmentally fragile areas and are prone to encroachment and pollution. This ISUDP, therefore, ensures that all rivers are buffered according to existing legal provisions to enable their conservation.

13.2.4 Enhance the Comparative Advantage of Ecological Zones

Ecological zones are defined as large bio-geographical units of land and water that are characterised by their distinct species and communities. The major eco-zones in Kiambaa Sub-County may be divided into smaller eco-regions, which share similar natural communities, climate, meteorological factors, topography, elevation, soil types, edaphic factors, and/or other physical characteristics. For example, high lying areas of Cianda support tea plantation while the beautiful greenery and scenery promote ecological tourism. These areas should be protected and valued through enriched use of the land and promotion of tourism activities on the beautiful sceneries.

13.2.5 Transit-Oriented Development (TOD)

Ndenderu town, located at the junction of Limuru Kikuyu/Gitaru road, and Banana/Karuri town situated at the junction of Banana-Raini and Kanunga-Karuri roads are appropriate cases for applying TOD in the Sub-County. Development within these intersections should be intensified to improve accessibility and convenience of the users. The TOD model will lead to guided densification and development control around key mass transit stations such as Ndenderu, Karuri/Banana, Gachie, Ruaka and Muchatha thus enhancing the economic and social viability of businesses and commercial activities in the Sub-County.

13.2.6 Decentralized Planning

Decentralised planning is a type of planning based on devolution of functions and resources to the lower levels of society and at the same time ensure that the decision-making process is distributed to grass-root levels to facilitate easier access to public goods and services. Decentralised planning in Kiambaa Sub-County would mean devolution of more resources ranging from human, financial and technical resources to enhance administration, implementation, and improved planning to the ward/village levels. Zoning plans, action plans, resource area plans, renewal/redevelopment plans and infrastructure plans are types of plans relevant to interpret, articulate and guide this process. According to the Constitution of Kenya (2010), devolution of services is a right to all citizens and refer to distribution of services from the national government to counties, wards, and villages. This strategy is, therefore, consistent with the Constitution and should be the hallmark for all development initiatives in Kiambaa Sub-County.

13.2.7 Compatible mixed-use

Mixed-use development is characterised as pedestrian-friendly development that blends two or more land uses such as residential, commercial, cultural, institutional, and/or industrial uses. Compatibility ensures development is orderly and harmonious. Mixed-use is one of the ten principles of Smart Growth, a planning strategy that seeks to foster community design and

development that serves the economy, community, public health, and environment. Kiambaa Sub-County should embrace a compatible mixed-use development strategy that facilitates design and development that will guarantee enhanced economy, community well-being, public health, and a dignified physical environment.

13.2.8 Control of urban sprawl

Urban sprawl or suburban growth describes the expansion of human populations away from central urban areas into low-density, mono-functional, and usually car-dependent communities, in a process called sub-urbanisation. Controlled urban sprawl ensures that development, particularly along major roads, and highways are orderly and regulated. Kiambaa Sub-County currently is witnessing ribbon development along its major roads. Future un-controlled development can ruin the ambience of the Sub-County. In order to curb such development, the proposal is that a peripheral green belt is maintained wherever possible unless land conversion is warranted under special circumstances.

13.2.8 Conservation of agricultural land

According to Food and Agricultural Organization (FAO), conservation of agricultural land is a concept for resource-saving agricultural production that strives to achieve acceptable profits together with high and sustained production levels while concurrently conserving the environment (FAO 2007). Agriculture is the main economic activity within Kiambaa Sub-County, and this means that development is closely linked to the agricultural sector. It is, therefore, important for the existing tea and coffee farms in Kiambaa Sub-County to be preserved and conserved to boost more sustained development, while at the same time supporting subsistence/small scale agricultural activities.

13.2.9 Quality Living

Quality living is the general well-being of individuals and societies, outlining negative and positive features of life. It observes life satisfaction, including aspects such as physical health, family, education, employment, wealth, safety, and security to freedom, religious beliefs, and the environment. The planning of Kiambaa Sub-County will take into account not only the physical layout and architecture of housing blocks but also how schools, shops, medical facilities, parks, places of worship, and offices are within easy access. Designated residential areas will be well-served by proposed public transport and road networks. There will be more ground level open spaces and parks, and community spaces at intermediate levels to facilitate community bonding.

13.3 Alternative Development Models

13.3.1 Nil Scenario: Maintaining the Status Quo

This scenario looks at what will happen in the next 10 years if planning intervention is not carried out based on the projections. It projects the situation of the Sub-County by maintaining the status quo, that is, without proposing new planning interventions. In this case, no appropriate action is taken to address the current development challenges and those which could predictably take place in the future. It is a strategic planning tool for mapping situations currently and projecting them into the future. Therefore, without intervention the various scenarios in Kiambaa Sub-County will include:

- **Intensive subdivision of land:** One of the main problems facing development planning in Kiambaa Sub-County is uncontrolled intensive subdivision and

conversion of land from agriculture to urban uses. Unreserved land transfers have resulted in a reduction in the size of land owned by the households. Without intervention, this will not only lead to the disinheritance of landowners but also reduced agricultural land and, therefore, to low productivity. Additionally, this will lead to increased food insecurity, poverty, and crime.

- **Encroachment of the riparian reserves:** The interfaces between land and the rivers in Kiambaa Sub-County have been encroached by farmlands in rural areas and buildings within urban centres. The continued un-befitting practices will result to pollution and contamination of the rivers which if unchecked, will result to excessive erosion of the river banks which reduces the potential of the cultivated land nearby; risk to the public safety as property and settlers around are susceptible to flood damages; reduction of open spaces and aesthetics, therefore, loss of the scenic functions; as erosion occurs, toxic substances are carried into the rivers thus reducing the water quality; and increase in infiltration resulting to reduction in water quantity.
- **Dispersed human settlement patterns:** Dispersed form of human settlements is evident within the rural zones of Kiambaa Sub-County where residents erect housing without adherence to planning guidelines. This practice and resultant human settlement patterns have limited the socio-economic development of the area as follows:
    - Limited access to key infrastructural services as majority of the residents have to walk long distances to access the markets, children walking over 1 km to access both primary and secondary schools and inconvenience especially to the elderly and sick while accessing medical care;
    - Increased household costs as they spend more on transporting their agricultural goods to the markets and on accessing other services;
    - Local businesses and enterprises increased costs of purchasing and transporting products which limit economic growth;
    - Depletion of natural resources;
    - Increased manifestation of poor waste management and environmental pollution; and
    - Unequitable distribution of social amenities.

The social amenities in Kiambaa Sub-County are unequally distributed where the main urban centres of Karuri/Banana, Ruaka, Gachie, and Ndenderu are well served. The 26 public primary and 16 public secondary schools in the Sub-County are unevenly distributed. Most of these are located in Ruaka and Karuri towns, which limits accessibility by the pupils from other areas as they have to walk for more than a kilometre. There is only one police station located in Karuri and six patrol bases distributed in other areas. Kihara and Karuri hospitals are the only Level IV hospitals in the Sub-County.

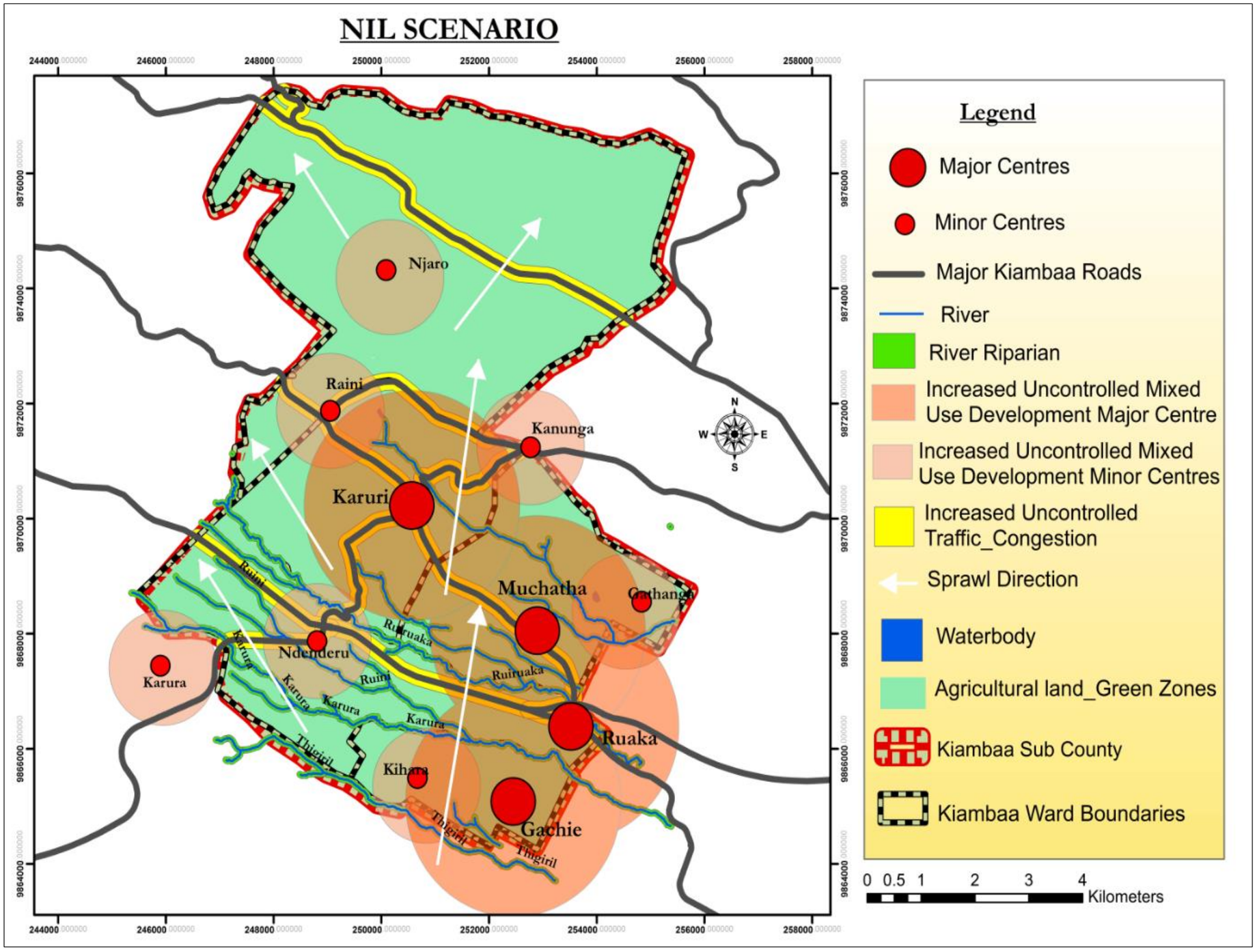


Figure 13-1: Nil Scenario in Kiambaa

Source: VisionRI

Advantages of Nil Scenario:

- The Nil Scenario is of great advantage to developers as it saves on both cost and resources since no action is taken to change the existing situation. As a result, no resources are needed in relocation, compensation, and development;
- It is an easy model to come up with as it involves no critical action but a representation of what exists without any adjustment;
- The actual site can be easily mapped out using the design as it involves the representation of features that exists with no alteration; and
- These designs can be of benefit to rural areas by reinforcing the policy of maintaining the local rural character that is included in many comprehensive land use plans.

Disadvantages of Nil Scenario

- Un-supervised subdivision and conversion of agricultural land for residential purposes will continue to intensify;
- Coffee and tea plantations are already threatened though the coffee areas are under more threat than tea affecting the volume of foreign exchange;
- Encroachment of Riara and Ruaka rivers and their tributaries may intensify;
- Traffic congestion and increase of pollution due to the increasing number of vehicles including parting in undesignated zones;
- Un-equitable distribution of infrastructure and social amenities thus affecting the people's quality of life; and
- In the event that the existing challenges are left un-attended, overtime their negative impacts on the surrounding environment will intensify and lead to further deterioration of the situation which mainly affects the area and community.

13.3.2 Alternative 1: Compact Linear Model

This model attempts to concentrate development along major development corridors in a linear manner such as transport corridor, river system of mountainous/coastal features. The model emphasises the main transportation route as the backbone of the proposed urban layout. All other functions are arranged along that axis with defined width and indefinite length, intersected at certain intervals by secondary perpendicular streets.

The layout consists of large blocks with residential buildings surrounded by vegetation with commercial and public structures situated at intersections. In respect to Kiambaa Sub-County, this form of development is proposed along the major transport routes (Ruaka to Karuri to Raini, Ruaka to Ndenderu, Raini to Kanunga, Karuri to Kanunga). However, there is a need to restrict intensive land uses in areas close/next to the riparian reserves in order to conserve/preserve these natural features. Other areas to restrict development include Cianda ward to be reserved for agriculture.

The rationale for this is justified by the following considerations:

- Concentrated mixed land use development (borrowed from TOD model developed by Don Arturo and applied by George Collins in Madrid);
- Designation of green belt buffer along rivers;
- Designation of entry and exit points;
- Back access to developments;
- Zone of commercial activities, park and social facilities and services; and
- Conservation of agricultural zone within Cianda ward.

Advantages:

- Provision of an effective transport system;
- Protection of agricultural land;
- Protection of water catchment areas, plant, and animal life;
- Easier access to social services; and
- Economical and easier to implement.

Disadvantages:

- Likely to lead to congestion along the transport corridor; and
- Potential for pollution and safety concerns.

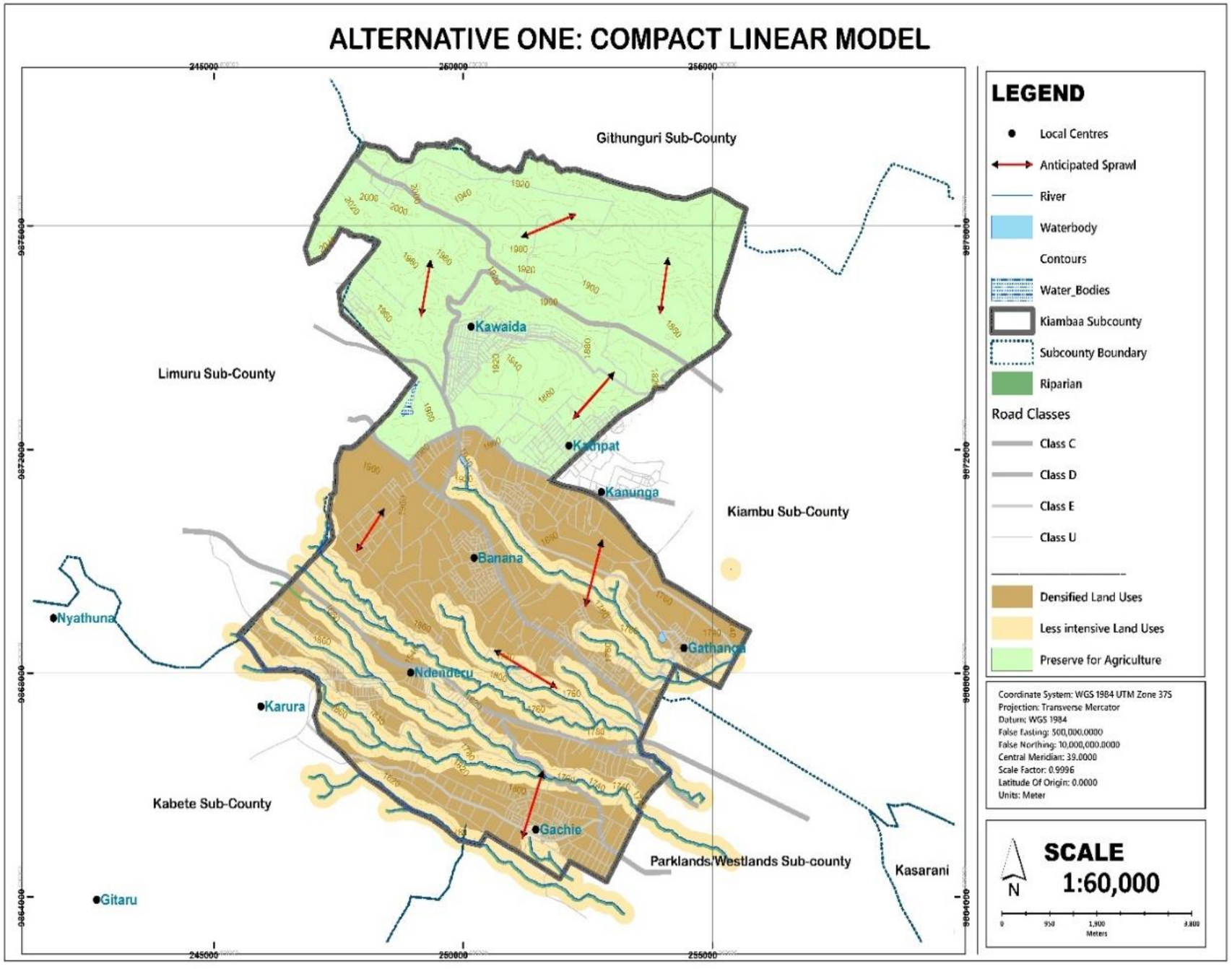


Figure 13-2: Compact Linear Model

Source: VisionRI

13.3.3 Alternative 2: Multi-Nodal Transit-Oriented Development (TOD)

This model attempts to intensify development in centres linked by the multiplicity of transport routes. It maximises the amount of residential, business and leisure space within walking distance of public transport. It aims at increasing public transport ridership, reducing the use of private cars, and promoting sustainable urban development. It is structured based on the following components:

- Intensified land use within a radius of 400 m to 800 m around transit node;
- Improving connectivity through upgrading existing roads (incorporating NMT);
- Develop and enforce guidelines to control development;
- Designates hierarchy of nodes based on the allocation of functions (Karuri-commercial and administrative); and
- Promotes mixed-use development.

Advantages:

- Ensure more compact developments, and encourage people to live and work in such zones;
- Reduces urban sprawl;
- Preserve precious open spaces since development takes place within the 800-metre distance;
- Preserve environmentally sensitive areas but reserve for recreation and greenery;
- Preserve agricultural land and reduces development pressure on them;
- Reduced costs of infrastructure provision; and
- Reduces traffic congestion since most movements are non-motorised due to easy access to services.

Disadvantages:

- Potential urban sprawl due to increased land values within the transit-oriented nodes;
- Promotes primacy hence reducing benefits of decentralisation;
- Perceived inflated prices of land and housing; and
- Potential for pollution and safety concerns.

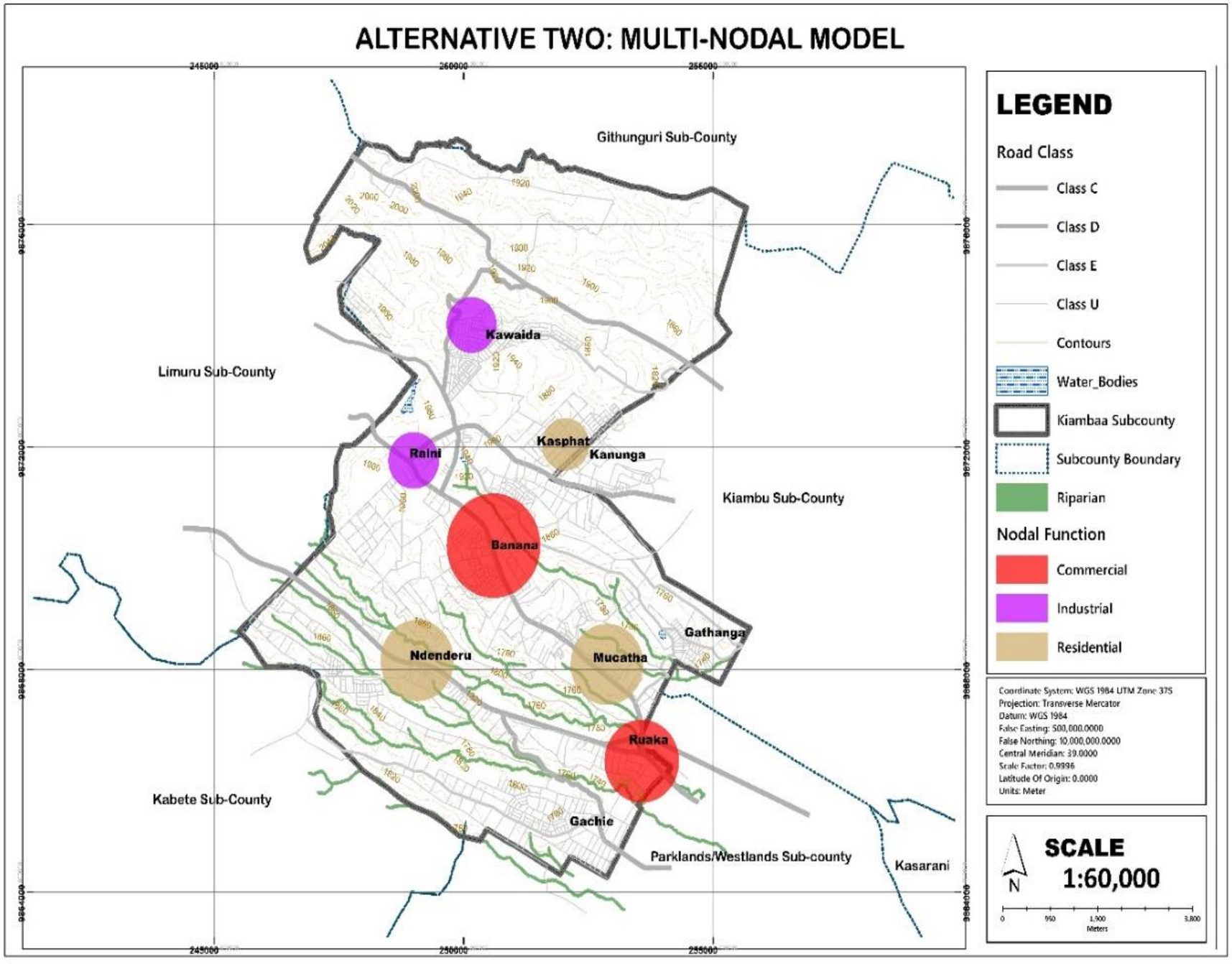


Figure 13-3: Multi-Nodal TOD Model

Source: VisionRI and ULS

13.3.4 Evaluation of Alternative Models

The proposed models were evaluated through stakeholder's participation in order to get the preferred model of development for Kiambaa Sub-County. The evaluation of the models was done through the Goals Achievement Matrix Method. The two models that were evaluated in the development of Kiambaa ISUDP are the Compact Linear Model and Multi-Nodal Transport Oriented Model. Based on the development vision of this ISUDP, the following goals were used in the evaluation of the proposed models:

- To promote the local economy through the provision of environmentally sustainable infrastructure for the promotion of investment and entrepreneurship;
- To provide, efficient and reliable connectivity to all areas through a better road system;
- To ensure delivery of quality, sustainable, accessible, and affordable social services, and infrastructure;
- To put in place a sound environmental management system for sustainable development; and
- To promote public participation to ensure proper policy implementation and zero tolerance to corruption.

The table below shows the rating scale applied in the evaluation of the models.

Table 13-1: Alternative model Rating Scale

No	Scale	Points
1	Alternative contributes greatly to the fulfilment of the goal	3
2	Alternative contributes moderately to the fulfilment of the goal	2
3	Alternative contributes slightly to the fulfilment of the goal	1
4	Alternative does not contribute to the fulfilment of the goal	0
5	Alternative slightly inconsistent with the goal	-1
6	Alternative moderately inconsistent with the goal	-2
7	Alternative greatly contradicts the goal	-3

Source: VisionRI

The Goals Achievement Matrix below indicates the goals evaluated against the models and results and rank of the evaluation.

Table 13-2: Goals Achievement Matrix

S. No.	Goals	Assigned weight	Models			
			Compact Linear	Sub-Total	Multi-nodal TOD	Sub-Total
1	To put in place a sound environmental management system for sustainable development.	0.20	1	0.2	2.6	0.52
2	To ensure delivery of quality, sustainable, accessible, and affordable social services, and infrastructure.	0.20	1.6	0.32	1.2	0.24

S. No.	Goals	Assigned weight	Models			
			Compact Linear	Sub-Total	Multi-nodal TOD	Sub-Total
3	To promote the local economy through the provision of environmentally sustainable infrastructure for the promotion of investment and entrepreneurship.	0.20	0.8	0.16	3	0.6
4	To provide, efficient & reliable connectivity to all areas through a better road system.	0.20	1.2	0.24	2.8	0.56
5	To promote public participation to ensure proper policy implementation and zero tolerance to corruption.	0.20	0.2	0.04	0.4	0.08
	Total Score	1.00		0.96		2
	Rank			2		1

Based on this evaluation, the above Multi-Nodal Transport Development is the stakeholders' preferred model of development for Kiambaa Sub-County. This model has used in the formulation of the land use plan and development strategies in this Plan.

14. PHYSICAL DEVELOPMENT PLAN

14.1 Land Use Plan

The land is a fundamental factor of consideration in the practice of urban and regional planning. This is because social and economic activities are located in space. Kiambaa Sub-County is experiencing high growth to accommodate the people, their activities and related infrastructure. This Plan, therefore, has made efforts to ensure equitable distribution of facilities within land without interference with the ecological balance. The principal considerations for determining the spatial structure of an area are to meet the demand of the future needs in terms of efficient transportation networks, social and infrastructural services, housing, commerce, green character, and protection of environmentally sensitive areas.

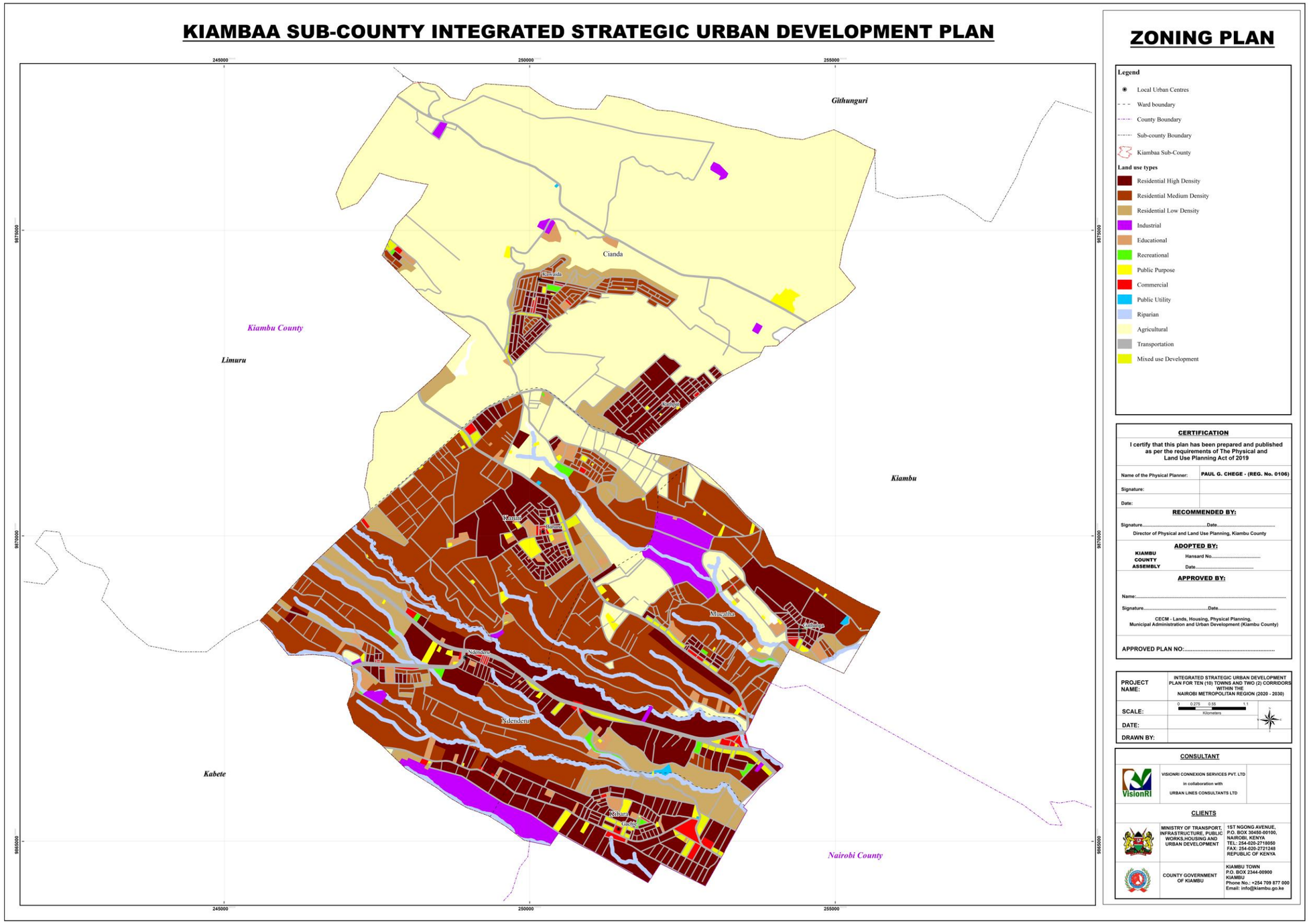
The proposed land use structure is expected to provide a balance in the physical, social, and economic character of the towns in Kiambaa Sub-County by enhancing it to attract more people in developed high-density areas. This will act as counter magnets for pulling away the undesirable growth zones from the agricultural areas under coffee and tea plantations; the environmentally fragile areas such as watersheds and rivers as well as reduction of land subdivision amongst the poor and economically underprivileged in such of high gains of land transfers.

The spatial structure of the Sub-County is intended to achieve harmony with the coherent interrelationship between various activities under the proposed uses. The land use structure is tied up intrinsically to an efficient transport system, which is also proposed to be improved to cope with the future demands of development. With the fast, efficient, and multimodal transportation network, it has been considered most suitable to adopt Multi-Nodal TOD activities in the planning area instead of compact linear development in respect of growth nodes to minimise the number of trips and trip length.

The following sections present a long-term development framework for Kiambaa Sub-County by indicating a broad land-use plan and classifications, land-use policies, land use budget and development control regulations.

14.1.1 Integrated Land Use Plan

Based on the proposals of different sectors of the study, the table below shows the existing and proposed land uses. It also illustrates that there is no change in the Sub-County's boundary limits. The table provides a land-use budget which is a land optimizing model that is used to determine future land requirements of a given population and their activities. It involves the determination of how much is required to accommodate anticipated future change and allocating land to particular uses. Land budgeting is a crucial link between population projections, land use projections and the amount of land designated for future development. Map 14-1 below show the detailed proposed land use plan for 2020-2030 and Table 14-1 shows the existing and proposed land uses with the planning period. The major anticipated land use changes include residential from 25.43 % to 40%. Other major land changes are witnessed in the reclamation of riparian reserves. Agriculture on the other hand drops from 64% to 40%.



Map 14-1: Proposed Land Use Plan for Kiambaa Sub-County

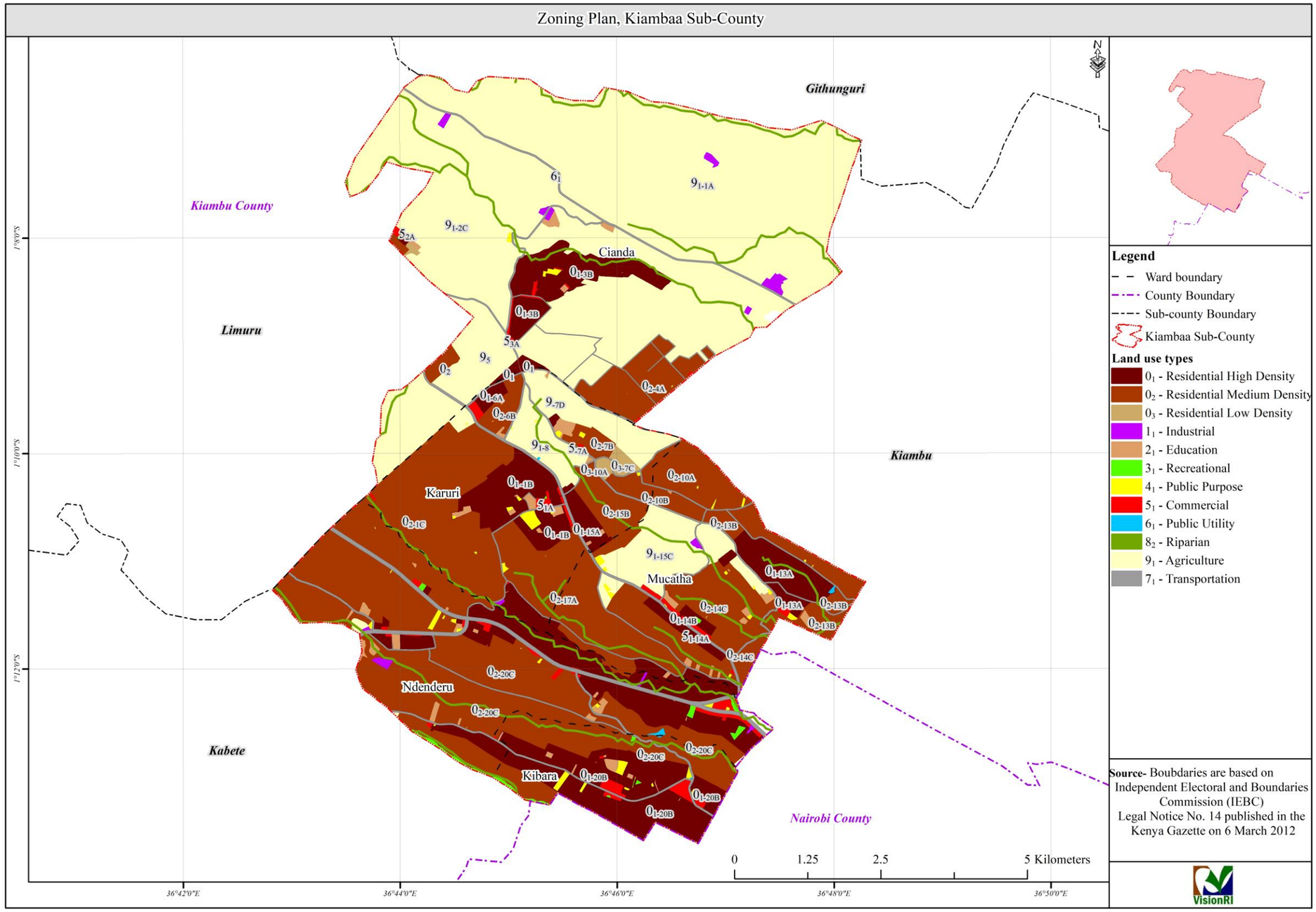
Source: VisionRI

Table 14-1: Existing and Proposed Land Use (2020-2030)

Kiambaa Land Use Distribution					
		Existing		Proposed	
Code	User	Area in Hectares (Ha)	Percentages (%)	Area in Hectares (Ha)	Percentages (%)
0	Residential				
	Residential - High	550.5	6.62%	1,042.56	12.53%
	Residential - Medium	459.19	5.52%	1,985.62	22.62%
	Residential - Low	1106.29	13.29%	403.58	4.85%
	Total	2,115.98	25.43%	3,431.76	40.00%
1	Industrial	19.1	0.23%	27.63	2.22%
2	Educational	91.94	1.10%	110.6	1.34%
3	Recreational	4.8	0.06%	29.2	0.24%
4	Public Purpose	60.96	0.73%	61.4	0.74%
5	Commercial	245.96	2.96%	91.1	1.50%
6	Public Utility	4.73	0.06%	10.9	0.06%
7	Transportation	391.69	4.45%	751.4	8.31%
8	Conservation Areas				
	Riparian	0	0.00%	344.62	4.14%
	Water bodies	9.22	0.11%	9.22	0.11%
	Total	9.22	0.11%	353.84	4.25%
9	Agriculture	5,380.00	64.65%	3,453.3	40.97%
	Total	8,321.47	100%	8,321.47	100%

14.2 Land Use Zoning

The basic purpose and function of zoning is to delineate residential, commercial, industrial, recreational, agricultural; transport, public purpose, and public utility land uses in the Sub-County. Zoning is done to control the physical development of the land and the types of uses that each individual space shall be put to use and thereby ensuring proper planning of Kiambaa Sub-County to achieve the desired built urban environment.



Map 14-2: Proposed Zoning Plan

Source: VisionRI

Table 14-2: Kiambaa Sub-County Zoning Guidelines

Zones	Area name	Sub-zone	Land use	Minimum land size	Ground coverage	Plot ratio	Remarks /notes
1.	Banana CBD	A	Commercial Industries (Non-offensive e.g. warehouses, food processing)	0.05 ha	75%	2.0	18 metre road reserve
	Banana	B	High-Density Residential	0.1 ha	75%	2.0	15 metre road reserve Flats, apartments
		C	Medium Density Residential	0.1 ha	40%	1.0	12 metre road reserve
		D	Low-Density Residential	0.1 ha	25%	1.0	12 metre road reserve Single dwelling
2.	Cianda		Agricultural	0.2 ha	-	-	15m road reserve
3.	Gachie	A	Commercial	0.05 ha	80%	2.0	15 metre road reserve
		B	High-Density Residential	0.1 ha	75%	2.0	15 metre road reserve Flats, apartments
		C	Medium Density Residential	0.1 ha	40%	1.0	12 metre road reserve
		D	Low-Density Residential	0.1 ha	25%	1.0	12 metre road reserve Single dwelling
4.	Gathanga	A	Commercial	0.045 ha	80%	2.0	15 metre road reserve
		B	High-Density Residential	0.1 ha	75%	2.0	15 metre road reserve Flats, apartments
		C	Medium Density Residential	0.05 ha	50%	1.0	12 metre road reserve
		D	Low-Density Residential	0.1 ha	25%	1.0	12 metre road reserve

Zones	Area name	Sub-zone	Land use	Minimum land size	Ground coverage	Plot ratio	Remarks /notes
							Single dwelling
5.	Kasphat	A	High-Density Residential	0.1 ha	75%	2.0	15 metre road reserve Flats, apartments
		B	Medium Density Residential	0.1 ha	40%	1.0	12 metre road reserve
		C	Low-Density Residential	0.1 ha	25%	1.0	12 metre road reserve
6.	Kawaida	A	Commercial	0.05 ha	80%	2.0	15 metre road reserve
		B	High-Density Residential	0.1 ha	75%	2.0	12 metre road reserve
		C	Medium Density Residential	0.1 ha	40%	1.0	12 metre road reserve
7.	Muchatha	A	Commercial	0.05 ha	80%	2.0	15 metre road reserve
		B	High-Density Residential	0.1 ha	75%	2.0	15 metre road reserve Flats, apartments
		C	Medium Density Residential	0.1 ha	40%	1.0	12 metre road reserve
		D	Low-Density Residential	0.1 ha	25%	1.0	12 metre road reserve
8.	Ndenderu	A	Commercial	0.05 ha	80%	2.0	18 metre road reserve
		B	High-Density Residential	0.1 ha	75%	2.0	15 metre road reserve Flats, apartments
		C	Medium Density Residential	0.1 ha	40%	1.0	12 metre road reserve
		D	Low-Density Residential	0.1 ha	25%	1.0	12 metre road reserve
9.	Raini	A	Medium Density Residential	0.1 ha	50%	1.0	12 metre road reserve
		B	Mixed-Use	0.1 ha	60%	2.0	15 metre road reserve
10.	Ruaka	A	Commercial	0.05 ha	80%	2.5	18 metre road reserve

Zones	Area name	Sub-zone	Land use	Minimum land size	Ground coverage	Plot ratio	Remarks /notes
		B	High-Density Residential	0.1 ha	75%	2.0	15 metre road reserve Flats, apartments
		C	Medium Density Residential	0.1 ha	40%	1.0	12 metre road reserve
		D	Low Density	0.1 ha	25%	1.0	12 metre road reserve

Source: VisionRI

14.2.1 Development Control Ordinances

In essence, zoning is the creation of zones within which permitted and specialized uses are then established and clearly defined. Basically, it seeks to control the physical development of land by defining the intended character of an area by creating harmonic zones knitted up by compatible land uses. The planning authority may from time to time amend/revise these by considering overall land use.

To efficiently carry out this mandate, the approving authority herein being the County's Planning Department shall consult the relevant agency or department, where and if it appears that the development is likely to: adversely affect any land in the area; create or attract traffic which may result in a material increase in the volume of traffic entering or leaving the main road or using a level crossing over a river; adversely affect adjacent riparian areas; adversely affect the environment and adversely affect adjacent water resources.

As a rule, the key planning zones are residential, commercial, industrial, educational, open space, recreational areas, transportation, agricultural, heritage conservation, and public uses.

a) **Residential Use Zone:** The residential use zone can be subdivided into either low, medium, or high density. The activities allowed in residential zones include:

- Residences – bungalows, multi-family dwellings (multi-storey flats/apartments), row housing, detached, semi-detached, residential-cum-work;
- Hostels, rental houses, old age homes, community halls, police posts, guesthouses (not exceeding 200 square metres in floor area);
- Daycare centres and kindergartens;
- Corner shops, small shopping centres, health facilities (dispensaries, nursing home, etc.); and
- Educational buildings, religious premises, library, gymnasium, park, technical training centres, exhibition and art galleries, clubs, banks/automated teller machines, matatu stops/boda-boda stands (not exceeding 100 sq. M in floor area), post offices, hostels of non-commercial nature.

The activities prohibited in the residential zone include:

- Heavy, large, and extensive industries: noxious and hazardous industries;
- Warehousing, storage go-downs of perishables, hazardous and inflammable goods;
- Workshops for motor vehicles- matatu/boda-boda/buses, amongst others;

- Slaughterhouses, hospitals treating contagious diseases (e.g. tuberculosis);
- Wholesale market, sewage treatment plant/disposal works, and water treatment plant;
- Solid waste dump, outdoor games stadium, indoor games hall, and shooting range;
- Courts, sports training centre, reformatory (prisons) and garrisons (barracks); and
- Commercial use zone: commercial use zone includes (retail shopping zone), general business and commercial, sub-CBDs, wholesale shops, ware-housing and regulated markets.

b) Commercial Zone: The activities allowed in commercial zones include:

- Assembly halls, colleges, reading rooms, higher educational technology and research institutions, petrol filling stations, automobile showrooms, service stations and automobile workshops with permission of parking vehicles occupying a site area not exceeding 200 sq.m.;
- Commercial and business uses including all shops, stores, markets and uses connected with the display and sale of merchandise, either wholesale or retail excluding explosive obnoxious products and other materials likely to cause health hazards not exceeding an area of 1000 sq.m.;
- Business offices, banks and other commercial and financial institutions occupying a floor area not exceeding 1000 sq.;
- Warehouses, repositories, and other uses connecting with storage or wholesale trade occupying a floor area not exceeding 1000 Sq. but excluding storage of explosive or products, which are either obnoxious or likely to cause health hazards; and
- Manufacturing and service establishments and commercial uses using electric motors not exceeding 20 h.p. And/or employing not more than 20 workers excluding those that are obnoxious or hazardous nature by reason or odour, effluent, dust smoke, gas, vibration, noise etc. Or otherwise likely to cause danger or nuisance to public health or amenity.

The uses permitted under the special sanction of the Sub-County/restricted uses include:

- All commercial and business uses including all shops, stores, storages, markets, shopping centres and uses connected with the display and sale of merchandise, either wholesale or retail but excluding explosives, obnoxious products and other materials likely to cause health hazards without limitation of floor area;
- Government offices, business offices and other financial institutions without limitations of floor area;
- Warehouses and other uses connected with storage or wholesale trade, but excluding storage of products which are either obnoxious or likely to cause health hazards;
- Commercial and entertainment centres, sports stadium, recreation complexes, research experimental or testing laboratories not involving danger of fire explosive or health hazards;
- Organized parking lots, multi-storey parking, bus terminal and depot, transport terminals, motor garage and workshops, educational, technical and research institutions;

- Garment industries irrespective of the number of persons employed where authority is satisfied with its non-objectionable nature based on its performance characteristics;
- Hotels, lodges, cold storage, food courts, informal market, and informal retail shopping;
- Weekly markets on identified locations, service, and repair centres, building materials markets, old and new car showrooms; and
- Convention centres, trade centres, market centre, travel agencies, and agro-tourist centres.

All uses not specifically mentioned above are prohibited in this zone.

c) Industrial Zone: The activities allowed in the industrial zone include:

- All uses permissible in the commercial use zone with the special sanction of the authority except residential uses;
- Residential buildings for security and other essential staff required to be maintained in the premises; and
- All industries using electrical power utilizing machinery not exceeding 100 horsepower (hp) or with employees not exceeding 100 number but excluding all industries of obnoxious and hazardous nature by reasons or odour, effluent, dust, smoke, gas, vibration, etc. or otherwise likely to cause danger or nuisance to public health or amenity.

The uses permitted under the special sanction of the Sub-County/restricted uses include:

- Storage of petroleum, timber, explosive, and inflammable and dangerous materials; and
- All industries up to 200 hp. Where sufficient precautions have been taken to the satisfaction of the authority to eliminate noxious or dangerous effluents.

All uses not specifically permitted as mentioned above shall be prohibited.

d) Open Space and Recreational Zone: The activities allowed in open space and recreational zone include:

- All public and semi-public, parks and open spaces, parks and playgrounds, zoological and botanical gardens, nurseries, waterfront development, museums, and memorials; and
- Installation of electric motors not exceeding 5 hp May be permitted for pumping water for gardening purposes.

The activities/uses permitted under special sanction by the authority:

- Transportation terminals, restaurants, motels, auditoriums and open-air theatres, exhibition, circus, fairs and festival ground, public utilities;
- Incidental residential uses for essential staff required to be maintained in the area;
- All activities incidental to recreational use as may be decided by the authority;
- Installations that may be necessary for the uses mentioned above;
- All agricultural uses outside the municipal area;
- Burial and/or burning grounds or crematorium;

- Gymnasium, police post, water sports training centre and swimming pool; and
- Spot zoning for a specific activity and high commercial corridor development along the major transportation routes.

The activities/uses prohibited:

- All uses not specifically permitted as mentioned above shall be prohibited;
- For the buildings/structure ancillary to the above uses can be permitted not more than the 2 % of the total area; and
- Transportation zone: the activities/uses allowed in transportation zone include - roads, goods shed terminals, bus stops, bus depot, bus terminals, truck terminals, airport, airstrip, helipad, port and shipping, ferry stations, jetties, fishing port, cruise landing port, yards, warehouses, storage, container freight stations, petrol filling and service station.

The activities permitted under special sanction by the authority include:

- All related uses incidental to the development of the roads and other transport modes including essential housing; and
- Hotels, exhibition ground, convention centre inter alia.

All uses not specifically permitted as mentioned above shall be prohibited.

e) Agricultural Zone: The activities allowed in the agricultural zone include:

- All agriculture uses;
- Farmhouse and building for agricultural activities;
- Diary and cattle farms, and fish farms;
- Poultry farms and stud farms;
- Forestry;
- Storing and drying of fertilisers incidental to the agricultural activities; and
- Petrol pumps.

The uses permitted under the special sanction of the Sub-County/restricted uses include:

- Parks and playground, camping sites and other recreational uses;
- Sewage farms and garbage dumps, burial grounds; and
- Utility services may be permitted without spoiling the natural features.

All uses not specifically permitted as mentioned above shall be prohibited.

14.3 Action Plans

These are area-specific interventions that provide focused proposals based on prioritised problem areas and objectives. These have been accompanied by urban design interventions for illustrative purposes and are prepared within the overall framework of the Structure Plan. The list of action area plan is presented in the table below.

Table 14-3: Proposed Sites for Action Area Plan

Subject	Action area plan
CBD	Karuri/Banana town
By-pass corridor	Northern By-Pass

Source: VisionRI

14.3.1 Action Area 1: Karuri CBD

Action Area Plans are area-specific interventions that provide focused proposals based on prioritised problem areas and objectives. The objectives of the Karuri/Banana Town CBD include: -

- To provide a sustainable densification strategy;
- To provide adequate motorised and non-motorised facilities;
- To provide strategies for crime reduction;
- To improve storm and sewer road drainage systems;
- To provides quality a fire and rescue services; and
- To improve waste management.

Proposed Interventions: The following measures shall be implemented to address the planning issues in Karuri/Banana Town CBD:

- Provide vehicle parking facilities and bus/matatu bus parks;
- Establishment of another police station and transfer of more police officers;
- Rehabilitation of the road network system in terms of quality and size. Banana Raini Road, Ndenderu Karuri/Banana Link and Banana Posta Road;
- Presence of wayleaves, pedestrian sidewalks, and pavements;
- Revitalisation of storm and sewer drainage systems; and
- Garbage collection and strategic location of the solid waste disposal system.

KARURI CBD CORE ACTION AREA

Map 14-3: Karuri CBD plan

Source: VisionRI

14.3.2 Action Area 2: By-pass Corridor

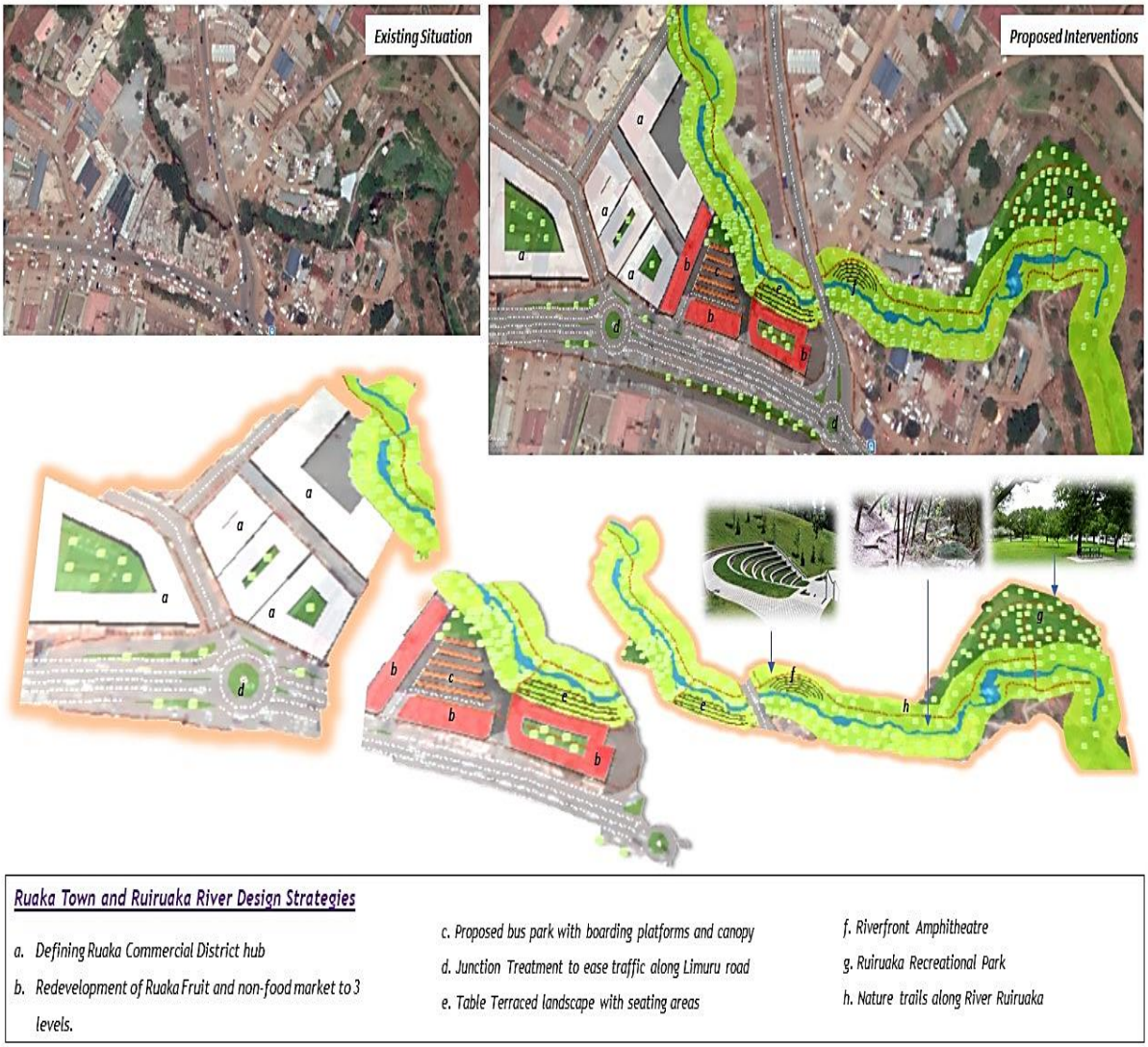
The 5 km long segment of the Northern By-Pass within Kiambaa Sub-County connects to Limuru Road at Ruaka. Ruaka forms the helm for a fast urbanising linear growth that resembles a triangle with the presence of the Northern-By-Pass, Limuru Road and Banana-Raini Road. The objectives of the Action Plan include:

- To provide a strategy to prevent encroachment of the Northern By-Pass by informal traders and hawkers; and
- To provide a strategy for revitalization of the Northern By-Pass.

Proposed Interventions

- Implementation of a buffer policy to control growth and development; and
- Upgrading of supporting facilities such as signboards, streetlights, pedestrian raised crossings, pedestrian bridge, and pedestrian walkway pavements thus revitalisation.

Map 14-4: By-Pass Corridor Plan



Source: VisionRI

14.3.3 Detailed Land Use Zoning

i. **Residential Land Use:** Residential land was adopted as the basic unit for projecting and budgeting future land requirement. The proposed residential land use covers approximately 3,431.76 ha representing approximately 40% of the entire proposed developable area in Kiambaa Sub-County. This takes into consideration, the current residential land use of 2,115.98 ha and an additional 1,315.78 ha to cater for the future housing demands. The plan earmarks areas for different: high, medium, and low-density housing areas in responding to various housing needs of diverse socio-economic groups. The housing distribution by income shall thus be 15% for economically weak; 40% for low income; 35% for middle income; 10% for high income. The existing and proposed residential densities are described as below:

- **High-Density Residential:**
  - **Existing areas:** Kihara, Gachie, Ruaka, Ndenderu and Wangunyu. The population of these areas is generally high; and
  - **Proposed areas:** The proposed high-density residential areas are Kihara and Gachie in Kihara, Ruaka and Wangunyu in Ndenderu ward. The existing population density of Kihara ward is 13,658 persons per square kilometre.
- **Medium Density Residential:**
  - **Existing areas:** Cianda, Kawaida, Njiku, Karuri/Banana, and Karura; and
  - **Proposed areas:** The existing medium-density areas with medium density areas in new residential areas are Ndenderu, Muchatha and Karuri/Banana.
- **Low-Density Residential:**
  - **Existing areas:** Some of the existing low-density areas are Cianda, Njiku, Karuri/Banana and Karura; and
  - **Proposed areas:** No new areas are proposed for low-density housing.

ii. **Industrial Land Use:** Current industrial area in Kiambaa Sub-County is 0.23% of the total developed area. This plan proposes to increase the total percentage to 0.33%, which should primarily agro-based industries. The three types of industries namely, light, medium and heavy industries are proposed in the Sub-County.

- **Light industry:** These are industries such as furniture and shoemaking, electronics, clothes making, home appliances repairing, *jua kali* and flour milling, amongst others. Light industries have been proposed in Muchatha, Karuri/Banana, Ndenderu and Kawaida areas. The ISUDP also proposes some light industrial activities such as wood and metal workshops, dry cleaners, and printing, amongst others, within residential areas. The minimum plot-size proposed under light industries is 0.05ha.
- **Medium-sized industry:** A few medium-sized industries exist within the Sub-County. These are coffee milling factories, tea processing factories, milk processing plants and flower collection plants. The proposed medium industries include biogas processing, animal feeds manufacturing plants, dairy cooling plants and leather processing. The minimum plot-size proposed for the medium-size industry is 2 ha.

- **Heavy industries:** Kiambaa Sub-County lacks heavy industries. The minimum plot size for heavy industry is 10 ha.

iii. **Commercial Land Use:** The existing commercial area is 2.96% of the total suitable areas within the County. In order to control and contain the sprawl, commercial land use has been allocated 1.09%. The commercial centres will also be densified in order to fully utilize the allocated land. Commercial land use will take the form of corner shops, cluster level shopping areas, neighbourhood shopping and service centres, sub-sectoral commercial centres, CBDs, wholesale markets amongst others. These new commercial areas are distributed all over the Kiambaa as illustrated in the proposed land use plan.

iv. **Educational Land Use:** With a projected population of 416,534 by the year 2030, an addition of 187 education facilities will be required. These new facilities include 58 ECDE centres, 32 primary schools, 36 secondary schools, 3 youth polytechnics and 2 special schools required by 2030. Currently, education occupies a land area of 91.94 hectares. An additional 20 ha has been set aside for more educational facilities to accommodate the projected population. To fully meet the demand, the existing schools will also be densified to be able to accommodate more students. The location of existing and proposed educational facilities is shown in the proposed land use plan.

v. **Public Purpose Land Use:** Public purpose facilities include facilities for healthcare, security, religious institutions, libraries, post offices, cemeteries/burial grounds, and government offices. The current suitable land public purpose is 1.4% and is expected to rise to 1.5% by the year 2030. Development of land for public purposes is generally expected to be intertwined within the residential and commercial developments. The location of the existing and proposed area under public purposes is illustrated in the proposed land use plan.

vi. **Public Utility/Amenity Use:** Land under public utilities will slightly increase from 0.06% to 0.13% due to newly proposed facilities such as sewer treatment plants (1) and fire stations (3). This increase provides adequate land for infrastructure and services for the current and future generations of Kiambaa Sub-County. The location of existing and proposed public utility facilities in the proposed land use plan.

vii. **Transportation Use:** The major mode of transport within Kiambaa is road transport. According to this plan, new roads require to open up new roads in order to access the locations in the interior and expansion of existing roads to accommodate the rapid growth. There is a need to provide alternative means of transport such as commuter rail within the planning area. This plan also provides for new parking areas, bus and Matatu terminals, and commuter rail stations amongst others. The total area occupied by transportation will thus increase from the current 4.45% to 9.03% by the year 2030.

viii. **Recreational Land Use:** Recreational areas are a tangible reflection of the quality of life in an area. They provide an identity for residents and are a major factor in the perception of the quality of life in a given urban area. Recreation spaces determine how liveability of an area. Recreational facilities account for 0.06% of the planning area. For sufficient provision of recreational facilities by the year 2030, this plan has provided 25 more hectares for this bringing the total percentage to 0.35%. Some of the facilities proposed include playgrounds, greens/parks, sports facilities like stadiums and amusement parks amongst others as shown in the proposed land use plan.

ix. **Agriculture Use Plan:** Agriculture plays a very critical role in the economy of rural Kiambaa Sub-County. Urban agriculture acts as a supplementary source of livelihood of food and fuel for many households in an urban area. The agricultural potential that exists within the Sub-County should be exploited to the benefits of the residents. This plan, therefore, reserves 41.50% for agricultural areas.

15. STRATEGIES AND MEASURES

15.1 Detailed Residential Development Strategy

In order to trigger growth in the residential development sector, the following strategies need to be put in place.

i. Provision of infrastructural facilities to support residential development. This can be achieved through by providing pedestrian-friendly infrastructure in residential and commercial districts.
ii. Provision of affordable housing schemes:
    - Through offering incentives to developers; and
    - Encouraging mixed-use developments in residential areas.

15.2 Detailed Transportation Strategies

The goal is to provide, efficient, and reliable connectivity to all areas through a better road and supporting facilities.

The strategies are therefore,

- Provision of transit-oriented development centred on important transit hubs like bus terminals by creating compact, walkable, pedestrian-oriented, mixed-use communities;
- Increasing the productivity and efficiency of existing transportation facilities through transportation system management practices;
- Promoting and increasing access to multimodal transportation modes within the planning area, active transport (NMT; dedicated walking and bike lanes), and Mass transit;
- Establishing road reserves complete with NMT, pedestrian pathways and appropriate storm water drains;
- Establishing transit stations like Traffic and Transit Management Centres (TTMC) along with parking facilities for private vehicles for Park and ride along the bus routes and concentrate housing near these stations to maximise accessibility, convenience, and employment opportunities;
- Provision of Boda-Boda sheds at strategic locations within the nodes/centres;
- Revive commuter rail transport and modernize the station at Kiambaa;
- Establishing dedicated bus routes;
- Prevent encroachment on road reserves through regular inventory survey, beaconing, engineering and enforcement;
- Reduction of conflict points through design strategies such as channelized intersections, roundabout, signalised intersections, grade separation and protected lanes;
- All season maintenance of roads;
- Improving signage on all roads;
- Providing way finding information at convenient points in the urban areas;
- Promoting sustainable land uses along transport corridors;
- Discourage direct access of plots onto main Arterial, Sub-arterial and collector roads;

- Developing a Comprehensive transportation mobility plan for the entire municipality;
- Construct missing link roads in Kiambaa especially across the ridges;
- Enforcement of traffic management guidelines through retraining road users and enforce set traffic laws and regulations;
- Construction of parking bays and spaces for both on street and off-street parking;
- Expand to 9 meters all roads below through reclaiming encroached roads and negotiating setbacks;
- Enforcement of development control (Physical Planning) guidelines on all roads to reduce encroachment and to ensure subdivisions are providing adequate road reserves, permitting nothing below 9 meters;
- Upgrading roads in Kiambaa to bitumen and gravel standards placing priority on roads that lead to important facilities e.g. hospitals, fire stations, industries, education facilities and into residential areas in case of emergencies;
- Upgrading and maintenance of feeder roads; and
- Streetlighting key Sub-County roads and in all urban centres.

Functional Classification of Roads

Functional classification groups streets according to the character of the service they are intended to provide. Higher function highways place more emphasis on mobility for through traffic, and lower function highways and roads place more emphasis on land access. Roads are functionally classified into:

i. International trunk roads (A & S); typically, highways and expressways
ii. National trunk roads (B); Secondary Highways
iii. Primary Highways (C); Arterials. Class H urban
iv. Major Roads (typically arterials but may include). Class D, J-urban; principal bus routes
v. Minor Roads (typically collectors but may include some arterials) Classes E, F, G, K, L, M
vi. Special Purpose Roads
vii. Local Roads (typically Access roads for residential areas/farmland) Class N, and P.

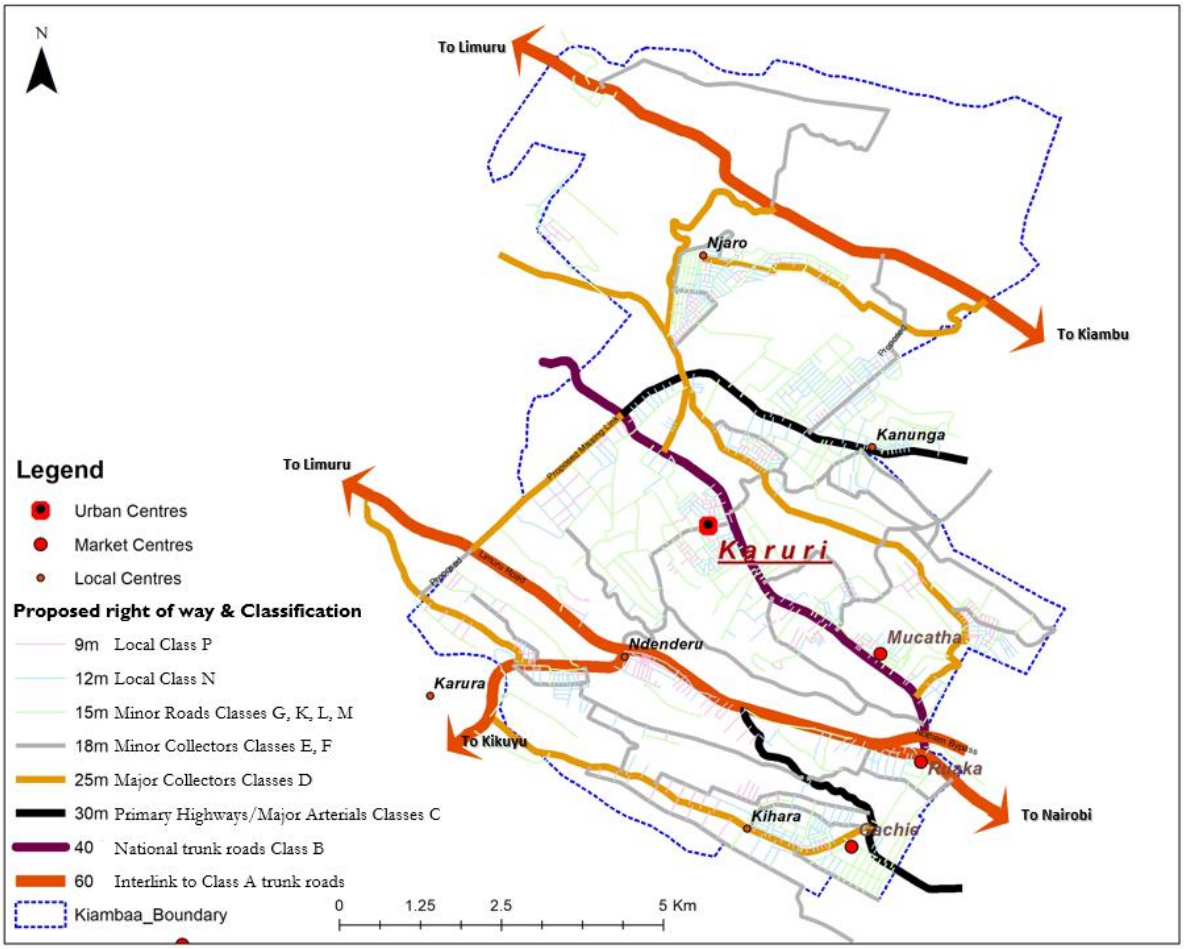
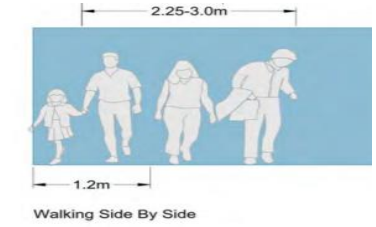
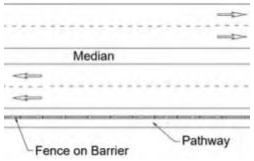


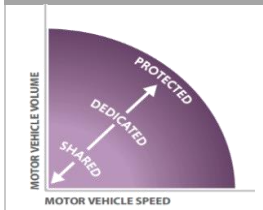
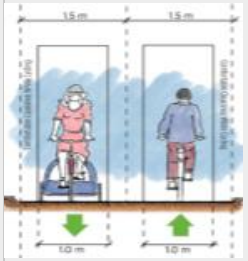
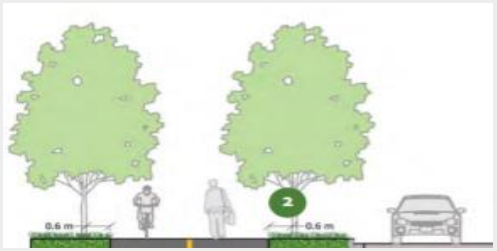
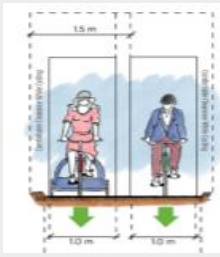
Figure 15-1: Proposed right of way and classification

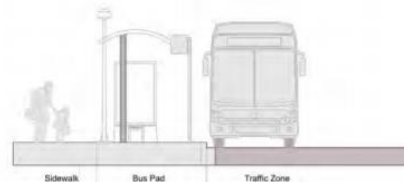
Source: VisionRI

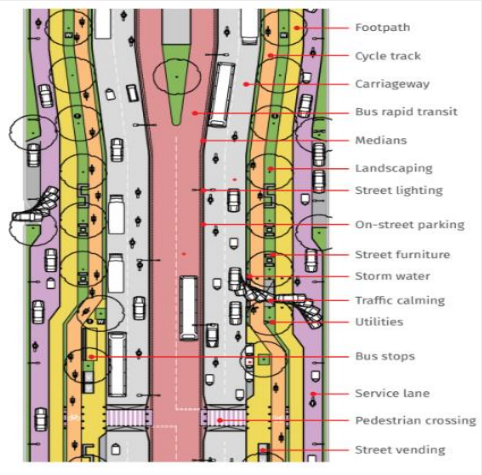
Table 15-1: Transport Implementation Guidelines: Designing safe and accessible roads for everyone

Parameter	Primary/Highway/ Arterial Roads (Classes A, S, B, C)	Major/Secondary/Collector Roads (Classes C, D, E, J)	Tertiary/Minor Roads Classes E, F, G, K, L, M)	Local/Access Roads (Class N, and P)
Design Speed	60-110kph	60-80kph	≤ 50kph	<30kph
Width of Traffic Lane	3.75m	3.5m	3.25m	3m
Shoulder Width	2.5m -3m	1.5m-2.5m	1m	0.5m
Width of Parking Lane	none	2.5m	2.5m	-
Streetlight requirements and spacing	Base on applicable road/street Luminaires and spacing guidelines;			
Road Gradient	Minimum slope: 0.5% to facilitate drainage. Maximum slope: 10% for long stretches and 15% for stretches not exceeding 100 meters. Cross slopes: 1 in 100 for paved roads and 1 in 50 for unpaved roads.			
Visibility at Junctions: Splay Angle and distance	30 degrees; >5m Truncation standards to be observed	30 degrees; >4m Truncation standards to be observed	45 degrees; >3m Truncation standards to be observed	45 degrees: >2m Truncation standards to be observed
Traffic Calming Strategies	Where applicable with consultations: Speed humps/bumps; table-top crossings, raised crosswalks; median islands and bulb-outs/curb extensions, traffic circles, speed limits (designated areas e.g.: community areas, school zones, certain public facilities).			
Pedestrian walkways Sidewalk placement and crossings	Off-Street Pathway or Enhanced Separated Sidewalk; overpass crossings.	Separated Sidewalk or Enhanced Separated Sidewalk; table-top crossings, raised crosswalks.	Separated or Non-Separated Sidewalk: table-top crossings, raised crosswalks.	Shared space; marked crossings.
Pedestrian walkways widths (Area of high pedestrian activity >2.4m)	1.8m	2.4m	>2.1m	1.8m

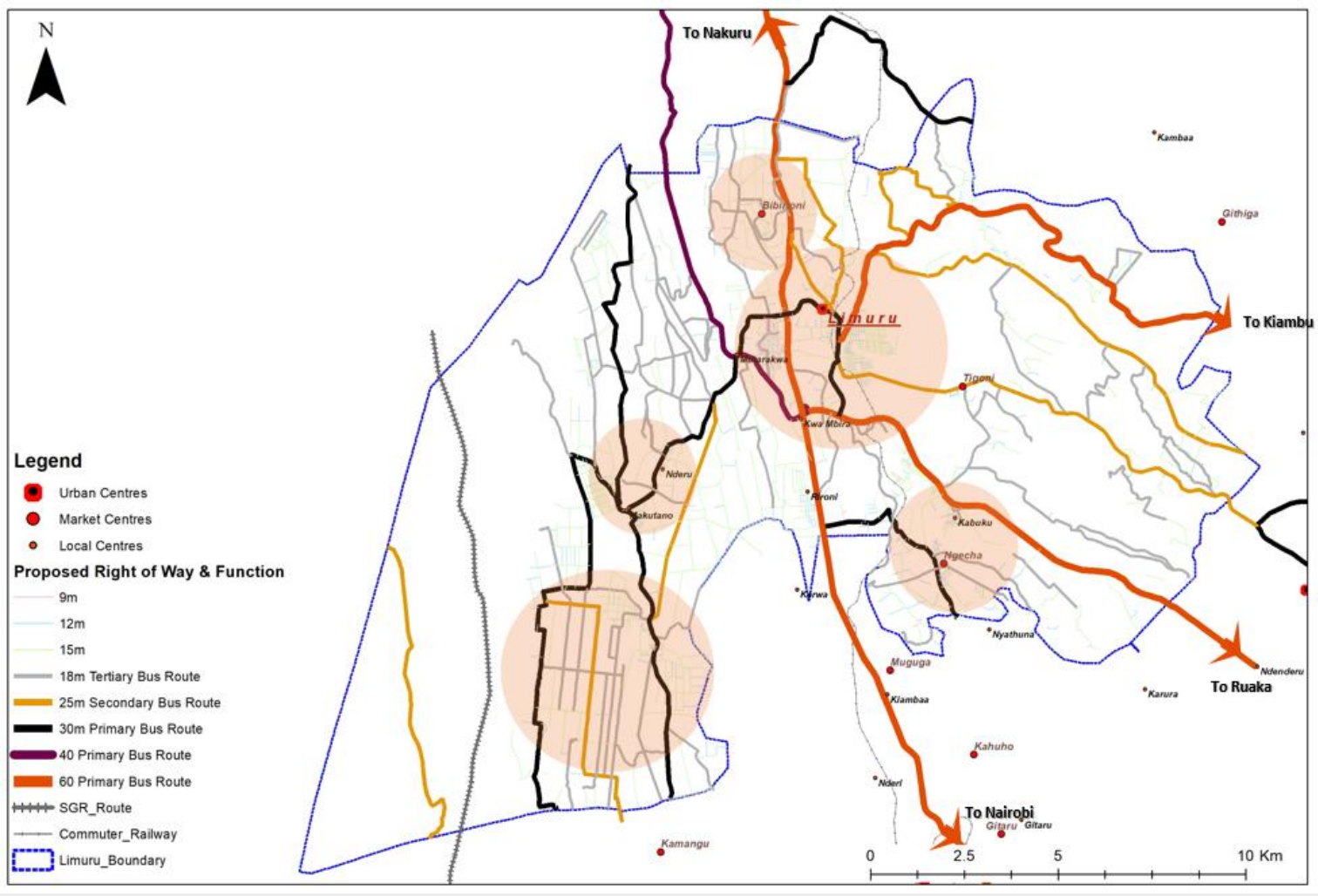
<table>
<tr><th>Parameter</th><th>Primary/Highway/ Arterial Roads (Classes A, S, B, C)</th><th>Major/Secondary/Collector Roads (Classes C, D, E, J)</th><th>Tertiary/Minor Roads Classes E, F, G, K, L, M)</th><th>Local/Access Roads (Class N, and P)</th></tr>
<tr><td>Maximum Longitudinal Grade</td><td colspan="4">Preferably les <5.0% else, > 5.0% to 8.3% Landings should be provided every 9.0 meters, > 8.3% Alternative accommodations recommended (Railings, Rest Areas, Adding Switchbacks, Accessible Ramps, Circulating Shuttle, Ladder Sidewalks, Stairways, Escalators etc.</td></tr>
<tr><td>Pedestrian walkways Surface Materials
 
</td><td colspan="4">Asphalt (long stretch, rural areas, and parks); Brick (high pedestrian volumes; brick may not be a comfortable surface for people using mobility devices); Decorative paving materials (cobblestone, unit pavers, exposed aggregates, exposed glass) Decorative paving materials may be used to enhance the visual aesthetic; Permeable pavement (Permeable pavement can include permeable concrete or porous unit pavers). The pavement should be raised 150mm from the road.
Note: The municipality shall formulate a strategic approach to managing footpath obstructions; i.e. by hawking activities, parking, advertising, improperly placed street furniture, dumping and surface degradation.
Crossings: ensure clearly marked crossing and placement of curb ramps.</td></tr>
<tr><td rowspan="2">Furnishing Zone
 </td><td colspan="2">0.9 meters is the absolute minimum required for streetlights and utility poles, street trees 1.2 meters minimum, Roads with transit stops require a desired width of 3.0 meters for passenger landing pads, benches, and bus shelters.</td><td colspan="2">Basic (0.6m to 2.0m)
Enhanced (3.0m to 5.0m)</td></tr>
<tr><td colspan="4">Road Hardware: Road lighting, Traffic signals, Pedestrian and cycling push buttons, Traffic signage, Utilities, Fire hydrants, Parking meters, and/or Bollards, fences, or other barriers.
Pedestrian Amenity: Coloured and/or textured surface materials, benches, tables, and chairs, other seating amenities, waste receptacles, mailboxes and newspaper corrals, drinking fountains, Bicycle parking, Transit stops and shelters, wayfinding signage, public art (sculptures, murals, fountains, clocks, and other decorative features), Road banners, flags, and other graphics, Public washrooms/restrooms,</td></tr>
<tr><td>Cycling Facilities</td><td>Protected Bicycle Lanes
Bicycle pathways/highways
 
</td><td>Protected Bicycle Lanes
Painted and Buffered Bicycle Lanes
Advisory Bicycle Lanes</td><td>Protected Bicycle Lanes
Painted and Buffered Bicycle Lanes
Advisory Bicycle Lanes</td><td>Bicycle Accessible Shoulders
Shared Street</td></tr>
</table>

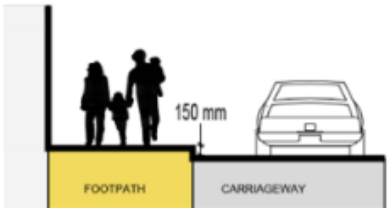
Parameter	Primary/Highway/ Arterial Roads (Classes A, S, B, C)	Major/Secondary/Collector Roads (Classes C, D, E, J)	Tertiary/Minor Roads Classes E, F, G, K, L, M)	Local/Access Roads (Class N, and P)
			• Bicycle Accessible Shoulders • Shared Street	
Dedicated cycling lane width 	2.5m Uni-directional 	3m Bi-directional 	Multi-use pathway (cyclist and pedestrians= 3 to 4m) 	
Bicycle and Pedestrian Accessible Shoulders for rural areas	2.0m- 3.0m	2.0m - 3.0m	1.5m - 2.0m	1.5m - 2.0m
Bicycle and Pedestrian Accessible Shoulders for Urban areas	-	-	1.5 - 1.8m	1.5 - 1.8m
Cycling lane desired paving material	The preferred material for a bicycle pathway is asphalt; may add oxides to differentiate with traffic lanes. Rough surfaces are uncomfortable, smooth surfaces are comfortable.			
Cycle parking racks 	Offer short- and long-term bicycle parking areas/racks in urban areas; shopping centres, malls, markets, and other public spaces and facilities which must be convenient, accessible, safe/secure, functional, and supportive.			
Drainage	Drainage and maintenance should be considered up front in the design process to ensure that issues can be avoided. Gradient should not be less than 0.5%. This is to facilitate drainage in flat terrains.			

Parameter	Primary/Highway/ Arterial Roads (Classes A, S, B, C)	Major/Secondary/Collector Roads (Classes C, D, E, J)	Tertiary/Minor Roads Classes E, F, G, K, L, M)	Local/Access Roads (Class N, and P)
Lighting	Roads and ways should be well lit at night especially at crossings, urban centres, institutions, bridges, major conflict spots, alleys, tunnels and underpasses, and intersections.			
Signage and Wayfinding	A seamless, predictable, consistent, and easy-to-understand system of wayfinding, signage, and trip planning tools for vehicles, walking and cycling is important as well as to consider that many residents and visitors may not be familiar with certain locations. This should include but not limited to centres, local neighbourhoods, major attractions, local destinations, road names, traffic signs, information booths, fingerposts, monoliths, etc			
Other Guidelines				
Other Road Systems	Cul de Sacs: - When a cul-de-sac is used in residential development it should be provided with a curved turning circle of sufficient width to facilitate easy access and the turning of not only cars but trucks and other heavy vehicles. The recommended minimum radius is 12 meters. The cul de sac should serve no more than 20 dwelling units and a maximum length of 120m.			
Parking Management Strategy	Parking standards; (See building code), parking restrictions, parking Pricing and parking supply and demand position.			
Building Setbacks from Roads	See development control guidelines; ensure a building-street relationship though urban design.			
Corridor Development	Strip development, or development that contributes to the growth of a linear of plots, must not be permitted to front on or directly connect to a highway or major arterials; road classes (A, S, B and C). An exception may be considered on a highway route if development adjacent to the route has already occurred to the extent that this policy document can no longer be fully applied.			
Public Mass Transport 	• Public transport should be guided with the following principles: Stronger integration of transportation and land use, Integrating fares and service, reliable, frequent service, Protection from Mixed Traffic, Safe, comfortable stations with Passenger Information and development of an Intelligent Transportation System for the municipality. • Bus routes will be located not more than a 1km from an urban area and 2.5km from a Rural area.			

Parameter	Primary/Highway/ Arterial Roads (Classes A, S, B, C)	Major/Secondary/Collector Roads (Classes C, D, E, J)	Tertiary/Minor Roads Classes E, F, G, K, L, M)	Local/Access Roads (Class N, and P)
		• In establishing bus schedules, the objective is to arrange for buses to arrive at known intervals, but they need to be consistent and regular.		
Efficiency of public transport routes 		Dedicated busways and priority; improves efficiency. Bus stops will be permanent whenever practical, allowing the public to become familiar with stop locations. • Consider all modes; Walking, Cycling, Trams, LRT, BRT, MRT • Coordinate station access design with land development. • Address existing and future needs. • Integrate community design into station development. • Consider station access in route alignments. • Universal design and universal access • Roads must be at least 18 meters wide. • Provide a location for change of bus direction with no backing. • Have adequate shoulders to allow the bus to pull off the roadway. • Be kept clear of any obstructions that would prevent safe movement of buses.		

Parameter	Primary/Highway/ Arterial Roads (Classes A, S, B, C)	Major/Secondary/Collector Roads (Classes C, D, E, J)	Tertiary/Minor Roads Classes E, F, G, K, L, M)	Local/Access Roads (Class N, and P)



Parameter	Primary/Highway/ Arterial Roads (Classes A, S, B, C)	Major/Secondary/Collector Roads (Classes C, D, E, J)	Tertiary/Minor Roads Classes E, F, G, K, L, M)	Local/Access Roads (Class N, and P)
Travel Demand Strategy	Increasing public transport modal shares, additional demand management interventions need to be implemented i.e.: • Congestion Pricing - mobility management strategy to reduce traffic congestion. • Restricted parking supply or imposing restriction of vehicles			
Pollution reduction and mitigation	• Improving transport options (walking, cycling, ridesharing, public transit, carsharing, etc.), more fuel-efficient vehicles tend to reduce energy consumption, pollution emissions and fuel cost. • Streets to be lined with trees to enhance sequestration of pollutants			
Pedestrian facilities, people walking and using mobility devices  	General Design Guidance - Preferred 2m-3m - Physical separation from other road users - Firm, smooth, and even surfaces - The Pedestrian Through Zone should be straight and unobstructed - Enough pedestrian crossing opportunities - Short distances between destinations - Continuous and direct routes between destinations that reflect pedestrian desire lines - Buildings that are oriented towards the road, creating an engaging environment - Diverse land uses that create a varied and interesting walking experience - Way finding that makes it easy to navigate between destinations - Street trees and other vegetation - Weather protection elements to provide refuge from rain - Adequate lighting for safety, security, and visibility - Enough benches and rest areas - Pedestrian amenities including landscaping, water fountains, washrooms, garbage and recycling receptacles, public art, and street furniture - Well-maintained pedestrian facilities in all seasons		
Maintenance	- Follows the road classification guidelines and related legislations			

Parameter	Primary/Highway/ Arterial Roads (Classes A, S, B, C)	Major/Secondary/Collector Roads (Classes C, D, E, J)	Tertiary/Minor Roads Classes E, F, G, K, L, M)	Local/Access Roads (Class N, and P)
		- Maintenance of private driveway access within the public right-of-way shall be the responsibility of the property owner and well as adjoining drainage improvements		
Providing Loading and unloading zones		- Loading zones shall be provided within the urban centres on main streets and back streets. - Loading bays along roads may be provided in rural areas		

Recommendations:

i. **Provide Non-motorised transport;** Enhance and expand active transportation, aided mobility, walking, and cycling.

Based on both the current and projected modal split, majority of the Kiambaa residents will be walking. Since the infrastructure provision need does not match need. There is need for making walking and cycling safe and attractive for all users including the elderly, children, and persons with disabilities. NMT provides basic mobility, affordable transport, access to public transport, as well as health and recreation benefits.

In order to achieve a walkable urban area in Kiambaa, complete street designs need to be articulated. Complete street designs ensures that all streets have dedicated spaces for non-motorized transport modes, designated cycle parking facilities, traffic calming with at-grade crossing facilities for pedestrians ,well maintained NMT facilities with smooth surface conditions and with ramps at grade changes to enhance universal accessibility, provision of shade, street furniture and landscaping to enhance attractiveness and comfort of pedestrians and cyclists. Facility may also be provided by creating space for street vendors so that they may not lose their lively hood. All intersection needs to provide at grade pedestrian crossings to enhance comfort and convenient of pedestrians especially the elderly and children. Where space allows, street furniture such as benches, trees, flowers/landscaping should be provided. The county government need to put strict measures to ensure that parking is prohibited in pedestrian facilities as well as street vending.

ii. **Public transport;** Build a comprehensive regional rapid transit/bus network.

Being the second most common mode of transport in Kiambaa, public transport needs major improvement in order to meet the need of the current commuters as well the projected growth. Karuri bus terminal needs to be expanded in order to accommodate the volume of matatus. In other urban areas within the municipality such as Ruaka, Gachie, Kawaida, land need to be acquired to build terminal facilities in order to reduce the current menace of operating along the road shoulders and other undesignated areas. Some of the key facilities that need to be incorporated in the new terminuses includes toilets encompassing those of the persons with disabilities and baby changing stations, ample passengers sitting area with shelter, luggage storage facilities, customer information on the route and fare. Bus stops or lay-bays must have shelters more so, provided at appropriate intervals and on need basis.

iii. **Boda Boda:** Boda bodas play a key role for last mile connectivity especially in areas where public transport is not readily available. The following are ways in which Boda boda sector will need to be improved in Kiambaa: 1) It shall be a mandatory requirement for all boda boda operators to join a registered Sacco for easier regulation. 2) The municipal administration should provide dedicated stands/stops for the operators, 3) Mandate all boda boda operators to take advantage of the technologies in boda boda operators e.g. Safe Bodas, Uber boda boda etc to avoid overcrowding in urban areas center, regular training of safety and business development.

iv. **Parking management:** Effective parking management is an essential tool to facilitate the efficient use of road space and to ensure mobility of public transport, pedestrians, and cyclists. In addition, appropriate parking fees can act as lever to manage the use of personal motor vehicles and ensure that personal motor vehicle users compensate the city for the use of valuable land on which they park their vehicles. Kiambu county need to define parking areas both on street and off street in order to prevent encroachment of parking into other areas including footpaths.

For a parking system to succeed, users need clarity on where they can and cannot park. This requires physical definition of spaces for parking, protection of pedestrian spaces from encroachment through physical barriers such as bollards, signages and strict enforcement. Secondly, customer information is key in ensuring successful parking management. On-street parking, charges should vary by location, with higher fees levied in areas with high demand. This results to high turnover of parking slots as it discourages motorist from unnecessary long parking. At locations where there is demand for long term parking local Government can identify land for off street parking with parking charges on weekly or monthly basis. This increase revenue generation by the governments. Higher parking fees encourage people to use sustainable modes of transports including walking, cycling and public transport. Finally, enforcement is key in ensuring that parking rules and regulation are maintained, and offenders are penalized.

15.3 Detailed Environmental Protection Strategies

The goal is to promote sustainable development to protect the environment.

Due to increased human activity, the environment has continued to degrade with the sensitive areas like wetlands, rivers and forests being severely affected. This has led to a decline in biodiversity with some flora and fauna facing depletion. Therefore, there is a need to promote conservation measures that will protect the environment in Kiambaa Sub-county.

This plan proposes the following strategic measures:

- Carry out an environmental impact assessment (EIA) and social and environmental assessment (SEA) for any major development that may have an impact on the environment;
- Mapping and gazetting of all riparian reserves, historical sites, and wildlife areas;
- Promote environmental conservation through promoting agroforestry, and greening in urban areas;
- Discourage conversion of tea and coffee plantations into residential areas;
- Protect water catchment areas from human encroachment and pollution; and
- Promote eco-tourism to promote conservation and livelihoods.

15.4 Detailed Social Facilities Strategies

Delivery of quality, sustainable, accessible, and affordable social services, and infrastructure:

- Redesigning and upgrading of recreational areas and open spaces to improve aesthetic appeal in the light of social interaction and engagement;
- Enforcement of surrender/setting aside areas for social facilities during sub-division of land in accordance with the planning standards;

- Promote densification in the development of social infrastructure like in schools;
- Encourage the role of the private sector in the provision of education, health, recreational facilities to supplement the public sector;
- Reclaim grabbed/encroached land that had been set aside for public facilities in collaboration with NLC;
- Allocation of security infrastructure, i.e., police stations for law and order and mitigate crime-prone areas and increase the involvement of law enforcement agencies in the fight against crime;
- Promoting education by availing educational infrastructure that will assist in technical capacity and knowledge development. In addition, raise the literacy levels;
- Mapping of existing health facilities and orphanages in order to know the shortages and provide more of the same to ensure good health, wellbeing, and reduced inequalities; and
- Provision of other social services i.e. cemeteries since urbanisation increases so do the need for cemeteries and common burial grounds.

15.5 Detailed Physical Infrastructure Strategies

The main goal is to guarantee delivery of quality, sustainable, accessible, and affordable physical infrastructure with the following activities:

- Expand infrastructure for clean water supply;
- Provision of pedestrian-friendly walkways;
- Create awareness on safe water use;
- Double water production to meet demand;
- Increase coverage of waste collection and create awareness on safe waste disposal methods;
- Establish waste transfer stations;
- Rehabilitation of the existing drainage channels, water pipes and electricity infrastructure; and
- Enhance waste collection and disposal mechanism.

15.6 Detailed Economic and investment Strategies

i. Create an investment policy to cater to both internal and external investments. This can be achieved through:
    - Giving of business incentives i.e. tax abatements, labour support and granting subsidies to ensure motivation in increased economic productivity; and
    - Adopt and improve sectoral policies and employment capacity at the evolving structure of the trade policy.

ii. Attract investments and develop a network of commercial, transport and other services:
    - Reduce economic disparities that cause social and political discontent and political instability;
    - Increasing economic growth by promoting exports from the agro-industries and market; and
    - Establishing an entry-level guideline for small and medium economic enterprises.

iii. Organising existing informal markets in a planned manner and integrating them with housing, commercial, institutional, and industrial areas; and
iv. Improving economic efficiency through the provision of technology, better management, and capital.

15.7 Detailed Revenue Enhancement Strategy

This ISUDP proposes several strategic measures to enhance and stabilize revenue collection at both the County and Sub-County level. These measures will help the County run sustainably. Below are measures the County can implement to increase the revenue collection internally:

- **Automation:** This means making it possible for the public to honour their financial obligations to the county via electronic means and online platforms. Examples include mobile applications, web-based applications, and unstructured supplementary service data (USSD[6]). Currently, Kiambu County has rolled out USSD code *419# for parking, quarrying, markets, livestock and cess. The County has also made it possible to pay for building development application through the bank or their respective agents. The physical planning department has also embraced automation through the introduction of electronic development application through Kiambu-e dam. This has resulted in an increase in the number of development application done within the county. However, there is a need to expand this to other departments, for example, health. This will increase efficiency and minimize losses.
- **Incentives:** Incentives are measures that governments can undertake to encourage members of the public to do in order to stimulate greater output. one area that Kiambu county has not fully exploited is the payment of land and property rates. The county can offer incentives to the public to encourage them to comply. Some of the incentives the county can affect include; waiver on penalties imposed on land rate defaulters to encourage them to pay up and discounts to those who comply before a specified period.
- **Enforcement:** The County can enhance revenue collection by ensuring compliance. according to Kiambu County budget review and outlook paper, 2018 lack of compliance in building plan approval and land rate payments was identified as a major reason for underperformance in revenue generation. To remedy this, the county can do the following: conducting regular and random checks; impose penalties on defaulters; increase the human and capital capacity for enforcement; outsource to the private sector to undertake the enforcement.
- **Create awareness to the public:** A good number of the members of the public are not properly sensitized on matters of revenue within the county. Some are not aware of their financial obligations to the counties. There is need to create awareness on the need to honour their financial obligations regularly and in time to the counties. Some of the ways the county can achieve this are by adopting an electronic system e.g. SMS to notify people on impending charges; advertise on media, public forums and

[6] USSD is a real time mobile phone communication protocol that makes it possible for users to communicate with the mobile network computer/server.

churches on the existing revenue streams and financial obligations; hold regular public forums/barazas to notify people of their fiscal obligations.

- **Royalty payments:** These are monies that counties get whenever the national government, or a permitted party exploits natural resources found within the respective county. Normally these are percentages of the net revenues collected upon sale of these resources
- **Better fiscal management:** This calls for prudent measures to manage the funds that have been collected. These measures can be rolled out at the point of collection, accounting, auditing, and allocation to various expenditures. Some of these measures include: analysing budgets and expenditure to check on affordability; ensure value for money for goods and services rendered; monitor spending habits by only spending allocated funds for intended and priority purposes; ensuring transparency and tight spending controls; avoiding unnecessary wastage on expenditure; regular and consistent auditing of financial records; reduce the handling of money by officers by encouraging online payment; encourage compliance by those living or working in the counties to fulfil their financial obligations regularly and in time.
- **Introduction of development levy:** These are fees, which can be imposed on those intending to put up developments. The charges may vary depending on the size, location, and type of development. The funds collected can then be channelled to servicing upcoming developments and upgrading of the existing physical infrastructure including roads, sewer trunks, drainage channels and extension of water services.
- **Other sources:** Other sources include introducing charges on the use of public cemeteries, county parks, and tourist sites. the funds collected can then be channelled to maintaining these facilities.

15.8 Proposed Disaster Management Strategies

The following are some of the strategies that can be put in place to manage disasters in Kiambaa Sub-County.

i. **To mitigate floods around Banana Hill and along Limuru road the following strategies need to be implemented:**

   - Regular maintenance of drains;
   - Construction of storm drainage systems of the quality standard; and
   - Development control within the urban carriageway to ensure that storm drains are not obstructed causing undue losses and destruction.

ii. **To curb fires the following strategies are proposed:**

   - Carry out a Sub-County disaster analysis survey;
   - Formation of a disaster risk reduction (DRR) plan;
   - Establishment of firefighting departments/unit in the Sub-County;
   - Setting up a fund to procure more fire-fighting equipment; and
   - Every manufacturing and public institutions to have first aid and fire extinguishers services.

iii. **To mitigate collapsing of buildings, the following proposals are put forward by this ISUDP:**

- Ensuring adherence to the building code;
- Regular inspection of buildings under construction and those that have lasted longer than 50 years;
- Build capacity on building technology and materials across the sector stakeholders; and
- Public awareness of building and construction.

iv. **Landslides albeit rare in the planning area often up with disastrous results hence the need to mitigate them. To achieve this, the County and other relevant actors need to:**

- Develop an inventory of the stability conditions of each slope in order to develop customized management systems;
- Identification of high-risk landslide locations or landslide-prone areas, which need special attention especially during excavations, and at quarries;
- Establish and use early warning systems for detecting landslides owing to heavy precipitation;
- Use of technology to help observe precipitation thresholds in order to identify common symptoms of landslide initiation;
- Development of slope stabilization measures, culvert improvements and landslide mitigation measures; and
- Impart technical capacity in officials in order to improve road construction and landscaping methods.

v. **To mitigate road accidents in the planning area, the following need to be put in place:**

- Enforce traffic rules and regulations;
- Construction of footbridges where necessary;
- Repair and maintenance of poor roads/potholes;
- Put up bumps to avoid more accidents; and
- Install traffic signs on the road especially 'blackspots.

PART IV: IMPLEMENTATION, MONITORING, EVALUATION AND REPORTING

16. PLAN IMPLEMENTATION FRAMEWORK

16.1 Introduction

This chapter presents the plan implementation framework as defined within the County Government Act 2012. The planning approach under devolved governance provides counties with the statutory duty with a considerably widened scope running through both plan-making and implementation. It establishes structures and networks that influence implementation and investment strategies. The section presents the role of the County Planning Unit, implementation framework, institutional and human capacity. Part II of the chapter presents the implementation matrix which includes the capital investment plan both quick-win projects and priority sectoral projects.

16.1.1 Role of the County Planning Unit (CPU)

The County Planning Unit (CPU) as provided in the County Government Act, 2012, Clause 105 has the strategic role and duty of integrating and coordinating all County sectors and provide a degree of certainty and consistency across the entire planning and implementation cycles. However, this unit is rarely functional in most Counties. For the successful implementation of this ISUDP, this unit needs to be strengthened to play this useful role.

The CPU is headed by the County Director of Physical and Land Use Planning. This is to enable all sectors to be informed by the spatial framework as reflected in the ISUDP.

The role of the CPU will include coordinating the implementation and monitoring of the ISUDP. The CPU shall likewise link ISUDP implementation with the policies, programmes and projects espoused in the County Spatial Plan and related County sectorial plans.

In carrying out their role, the CPU will use the Results-Based Management (RBM) system, in order to ensure the timely delivery of the programmes and projects.

The CPU will ensure that the proposed programme and project execution cycles are broken into 5-year County Integrated Development Plans (CIDPs) and further cascaded into Annual Action Plans, that feed into individual performance targets and deliverables.

16.1.2 Plan Implementation at the Decentralised Units

Under Part VI Section 48 of the County Government Act, 2012 on Decentralized units. No.13 of 2011, each County Government shall be decentralised to the urban areas and cities (City or Sub-County) within the County established in accordance with the Urban Areas and Cities Act, 2011; sub-counties equivalent to the Constituencies and Wards within the county established under Article 89 of the Constitution of Kenya and Section 26; as well as villages as outlined in this Act. The objective of this is to transfer sovereign authority for decision-making, resource allocation and management to quasi-autonomous units.

The Executive and Legislative arms of the County Government have complementary roles in executing the recommendations in the County Plans. Some functions handled by the National Government are translated into the County planning and implementation framework through the County Inter-Governmental Forum provided for in Section 54 of the County Government Act, that is chaired by the County Governor.

As the head of the County Government, the Governor occupies the pivotal role of executive authority through the County Executive Committee and as the symbol of political sovereignty in the County Assembly for the execution of County functions and oversight, respectively. Both arms of the government must operate within established processes and deploy the tools of performance appraisal. The implementation mechanisms should be sufficiently flexible to adapt to rapid change without adverse impacts.

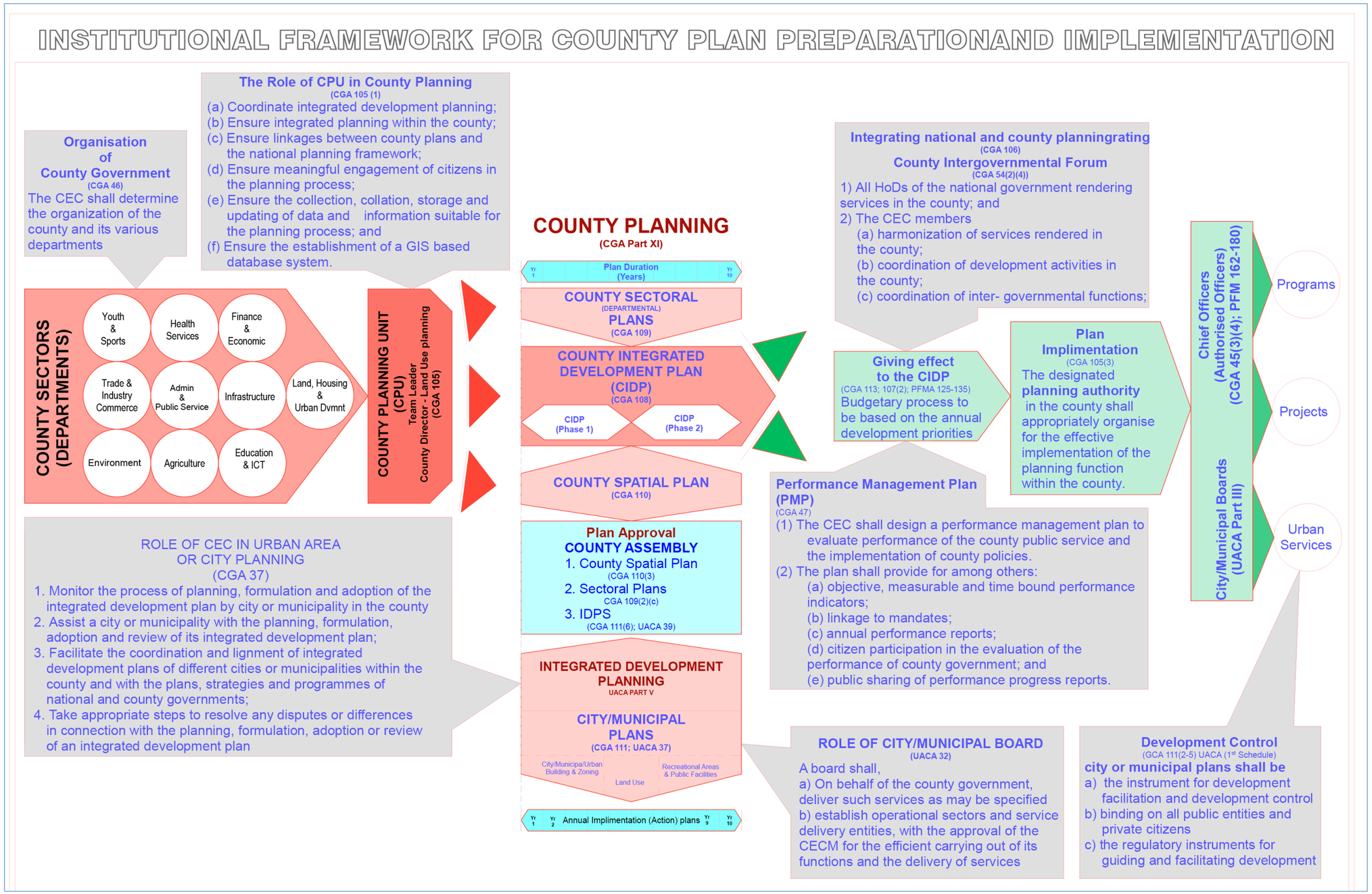


Figure 16-1: Framework for Plan Preparation and Implementation

Source: VisionRI

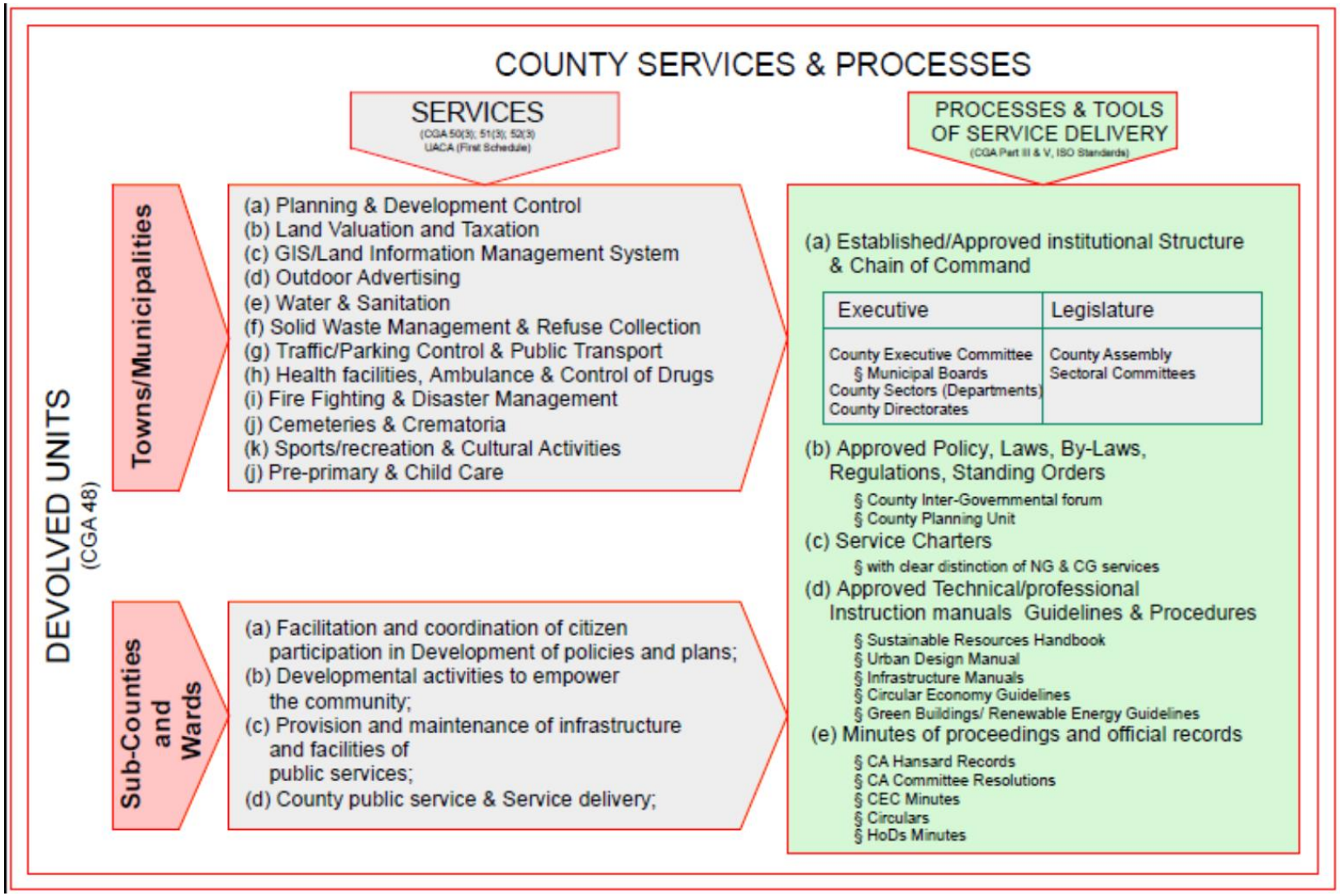


Figure 16-2: County Services & Processes

Source: VisionRI

16.1.3 Core Pillars of Framework

The County Government Act 105(1) to the designated implementing planning authority 105(2) the CPU should set into motion the translation of the 'abstract concepts' to 'real development' through an implementation plan with clear outcomes, provisions for monitoring and evaluation and clear reporting mechanisms. The figure below illustrates the core pillar and the three branches that make up this fundamental plan implementation framework:

- The core pillar is the internal governance mechanism through capacity building that ensures better inter- and intra-sector engagement so that public, private and third sector service providers can work together for optimum solutions;
- Premised to the core pillar are three branches defining the aligned programmes that address the different needs of different people and places informed by the plan; and
- Each branch has specific projects and services that ensure public investment is made at the revenant places and services where most needed.

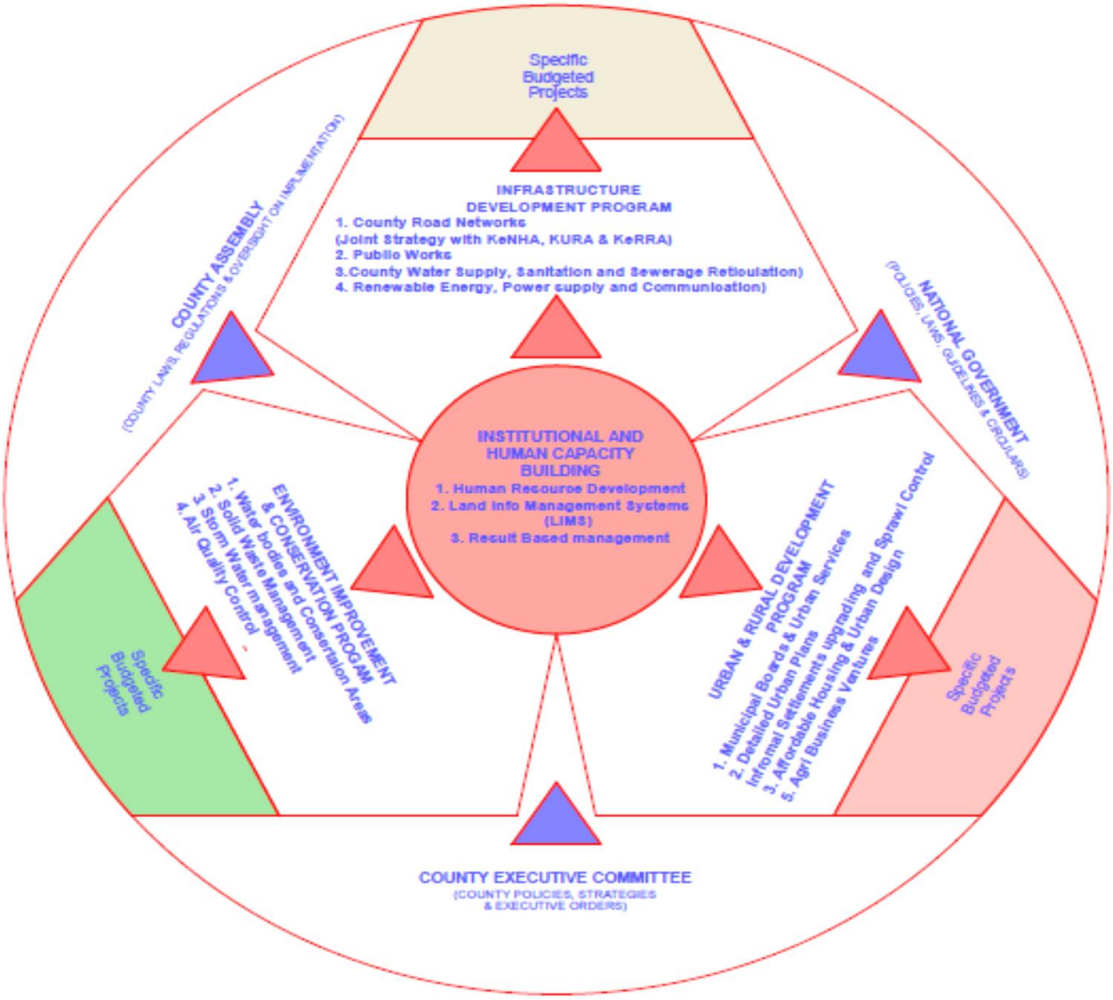


Figure 16-3: Priority Programs & Projects Framework

Source: Study Team

16.1.4 Institutional and Human Resource Capacity Building

This will require the structuring under the Result Based Management guidelines, recruiting, training and retaining professionals in all technical and managerial skills capable of setting up and running ICT systems, including a land information management system, exercise a clear chain of command and reporting methods and active stakeholder engagement, partnerships and feedback.

16.2 Capital Investment plan

This section presents the quick win projects and the sectoral projects as summarised below.

16.2.1 Quick Win Projects

Table 16-1: Upgrading Karuri CBD

Components	Cost (kshs)	Lead agency
1. Expansion and reorganization of the Banana town bus park	20,000,000	CGK
2. Pedestrianization of selected streets in the town	15,000,000	CGK
3. Installation of waste receptacles in Karuri	3,000,000	CGK
4. Establishment of NMT facilities including pedestrian walks and bike lanes.	50,000,000	CGK
5. Redesign and construct selected streets as one-way streets	60,000,000	CGK

Source: VisionRI

Table 16-2: Upgrading of Ruaka CBD

Component	Cost (kshs)	Lead agency
1. Mapping, rehabilitation by the greening of Ruiruaka riparian reserve	15,000,000	CGK, NEMA
2. Provision of road signage	3,000,000	CGK, KURA
3. Provision of streetlights	10,000,000	CGK
4. Provision of NMT facilities - walkways and a footbridge	50,000,000	CGK
5. Construction of a bus park	30,000,000	CGK
6. Construction of market	100,000,000	CGK

Source: VisionRI

Table 16-3: Other Selected Quick Win projects in Kawaida, Ndenderu, Muchatha, Gachie

Component	Cost (kshs)	Lead agency
1. Construct a bus park in Kawaida	20,000,000	CGK
2. Construction of market in Kawaida	10,000,000	CGK
3. Provision of NMT facilities in Gachie, Muchatha and Ndenderu etc.	50,000,000	CGK
4. Provision of solid waste transfer stations in Banana, Karuri, Ruaka, Gachie, Kawaida, Cianda, Ndenderu, Kihara	10,000,000 per station = total (80,000,000)	CGK

Source: VisionRI

16.2.2 Sectoral Projects

This section presents specific sectoral projects as presented in Table 16.4 below.

Table 16-4: Sectoral Projects

Sector/Goal(s)	Programs	Projects	Duration	Estimated Cost	Actors
Natural Resources & Environment • Sustainable use and management of natural and environmental resources. • Climate change adaption and negative environmental impacts mitigation.	Optimization of natural and artificial water sources.	Rainwater harvesting in schools, homes, and dispensaries (water tanks).	1-2 years	20,000,000	CGK Community, Private sector NGOs, CBOs
	Promotion of renewable energy.	Biogas, solar etc.	1-2 years	50,000,000	CGK Households Private sector
	Education awareness on waste management.	Workshops, radio, and print media.	1 year	10,000,000	CGK NGOs, CBOs, Community,
	Conservation program development of natural features.	Establishment of tree nurseries and tree planting in Kiambaa Sub-County Wards.	1-2 years	5,000,000	CGK Community, CBOs, NGOs
	Preservation of open spaces, agricultural areas, and landscaped recreational areas.	Designation of agricultural land buffer in Cianda tea and coffee plantations. Designation of riparian buffer on River Ruini, RuiRuaka, Karura and Thigiril.	1-2 years	10,000,000	CGK National Government, NEMA, Farmers,
Social Infrastructure • Accessible and affordable social services and infrastructure. • Foster cultural relations and	Establishment of social halls and furnishing the halls.	Construct and equip No. 3 social halls in the Sub-County.	Year 3	30,000,000	CGK Community, Development Partners
	Rehabilitation of sports ground.	Rehabilitate the stadium in Muchatha. Upgrading of Kawaida playground to become a public stadium.	Year 3	30,000,000	CGK, Community, CBOs, NGOs,

Sector/Goal(s)	Programs	Projects	Duration	Estimated Cost	Actors
• conducive social environment	Construction of police station and police residence.	Police station and police residence in Muchatha and Police station and police residence in Muchatha and Cianda.	Year 2	50,000,000	NG CGK, Financial Institutions
	Installation of streetlights.	Installation of street lights in Kawaida, Ruaka Ndenderu road, Ndutas, Gatono, Nazareth and Cianda junction, Muchatha primary, Karuri Bishop road, Muchatha trading centre, Gathanga trading centre, Power Kiuna road, Mugacha, Jakai, Kihara Hospital, Kawaida Milimani, Kawaida Njoro, Kirihinya Kaspat and Kaspat main road.	Continuous	100,000,000	CGK Kenya Power and Lighting Company (KPLC)
	Construction of village polytechnics and equipping the polytechnics.	3 vocational training centres.	2-3	300,000,000	NG, CGK Development Partners,
	Construction of a library.	1 library (Karuri Community Library).	3	50,000,000	CGK Development Partners
	Construction of children's home.	Children's home establishment in Kiambaa.	2	20,000,000	CGK CBOs, NGOs,
	Densification of schools.	Increase the number of classrooms in the existing schools.	2,3,4 and 5	100,000,000	CGK NG-CDF
	Construction of a fire station and a disaster rescue centre.	Fire station and disaster rescue centre in Karuri.	1	30,000,000	CGK.

Sector/Goal(s)	Programs	Projects	Duration	Estimated Cost	Actors
	Upgrading and expansion of health facilities.	• Provision of a dispensary in Kawaida, equipping the existing health facilities; • Construct and fully equip labs; and • Constructing a modern maternity wing in Karuri, Ruaka, Raini, Ndenderu and Muchatha.	2, 3	250,000,000	CGK
	Construction of ICT facility.	Establishment and equipping of an ICT centre in Karuri, Cianda, Kihara, Muchatha, Ndenderu Wards.	3-4	50,000,000	CGK
	Water accessibility.	Installation of piped water connection in households in all Kiambaa Wards.	5	300,000,000	KAWSCO, CGK Athi Water
	Provision of cemeteries as burial grounds.	Addition of two cemeteries. One in Kihara Ward and the other in Cianda Ward.	3	20,000,000	CGK
Local Economy • Promote the local economy through the provision of environmentally	Provision of new industrial and commercial areas.	Allocate land for new agro-industrial areas in Raini and Kawaida. Allocate land for new commercial areas in Kiambaa.	3	200,000,000	CGK, NLC Private sector

Sector/Goal(s)	Programs	Projects	Duration	Estimated Cost	Actors
sustainable infrastructure. • Attract investment from other parts of the counties and abroad. • Reduce economic disparities.	Initiation of an Investment Strategy.	• Create a conducive environment for trade and investment; • Develop the Business Information Centre; • Youth Enterprise Development Fund; • Provide entrepreneurial training to youth; and • Encourage mixed development. Give incentives to investors in Export Processing Zone & Special Economic Zone. Tax-free incentives to SMEs.	2-3	30,000,000	NG CGK
	Investment in attraction sites and rehabilitation of Mau Mau Caves.	• Provision of the paved footpath to the waterfall; • Construction of a viewing pavilion at Kihururu waterfall attraction site in Gathanga in Cianda; and • Pave foot path to Mau Mau caves in Cianda.	4-5	10,000,000	CGK
	Fishponds construction and construction of a modern fish market.	• Construct ponds and train residence on how to rear fish in Muchatha; and • Fish market in Muchatha equipped with adequate cooling facilities.	5		CGK
	Jua Kali sheds construction.	• Construction of *Jua Kali* sheds in Kawaida and Karuri; and	5	10,000,000	CGK,

Sector/Goal(s)	Programs	Projects	Duration	Estimated Cost	Actors
	Increment in dairy processing branches and construction of cooling plants.	• Establishment of a milk cooling and processing plant in Cianda and Kawaida wards.	2-5	500,000,000	CGK NG Private sector
Urban and Rural Development • Promote urban and rural land development in the local economy. • To promote coordinated institutional approaches to rural and urban development.	Provision of water for irrigation and use.	• Purchase hydro pump for Njiku for local Members; • Water Reticulation for Irrigation in Karuri Ward; and • Water harvesting by use of gutters in all households.	3-5	50,000,000	KAWSCO, CGK NGOs, CBOs
	Establishment of agro-tourism sites.	Establish tourist visits in coffee and tea plantation sites.	3-5	15,000,000	CGK Kenya Tourism Board,
	Upgrade of the road for connectivity in coffee and tea sites and trading centres.	Tarmac roads in Kawaida and Cianda, the ring road around the trading centre, Ndenderu trading centre Ring Road.	3-5	30,000,000	CGK
	Establishment of SMEs.	Establish tailored training Institutes for SMEs and SMEs oriented financial institutions in all Kiambaa Wards.	2-4	30,000,000	CGK, NG CBOs, NGOs
Urban Design • Provide an urban design and management context that will	Design of gateway in combination with raised pedestrian crossings.	Design of gateway in combination with raised pedestrian crossings on arrival and departure along Limuru Road and Banana- Raini Road.	3	50,000,0000	CGK NG KURA KeRRA KeNHA

Sector/Goal(s)	Programs	Projects	Duration	Estimated Cost	Actors
cater for Kiambaa's growth and development. • Contribute towards creating an urban environment that entices people to want to live, work, play, visit and invest here.	Beautification program	Greening along the streetscape on major roads Limuru Road, Banana-Raini Road, Karuri-Kiambaa-Kanunga Road, Kiambu Road and Banana- Kanunga Road, Karuri-Ndenderu Road and in existing the landscapes with the inclusion of riparian reserves.	2-3	30,000,000	CGK KURA KeRRA KeNHA
	Lane narrowing	• Minimize vehicle travel lane width to prioritize pedestrians; and • Provide sidewalk on both sides of the street on major roads in Kiambaa: Limuru, Banana-Raini, Karuri-Ndenderu Road Banana- Kanunga and Kiambu Road.	2-3	60,000,000	CGK KURA KeRRA KeNHA
	Advertisement	Integrating advertisement billboards and signboards in Kiambaa strategically in line with the urban form and landscape for blending and aesthetic appeal.	Continuous	-	CGK
	Built urban environment regeneration	Renovation of buildings with paintings and providing appropriate width for buildings and land use function within Kiambaa Wards.	Continuous	-	CGK

Sector/Goal(s)	Programs	Projects	Duration	Estimated Cost	Actors
	Open spaces regeneration.	Proving street furniture such as public benches and beautifying existing recreational spaces with trees and flowers within Kiambaa Wards.	1-5	50,000,000	CGK
Multi-Modal Transportation Strategies • Develop sustainable urban environments • Provide, efficient & reliable connectivity to all areas • Practice and encourage joint planning in transportation planning	Construction of Boda-Boda sheds.	Boda-Boda sheds in Kawaida, Ruaka, Karura, Kihara, Ndenderu and Muchatha thus increasing the number of operators.	2	20,000,000	CGK
	Development of various activities like housing, schools, commercial and public places around the nodes.	Intensified land use within a radius of 400m to 800m around transit nodes of Ruaka, Karuri, Gachie, Raini, Kanunga and Muchatha.	2-5	500,000,000	CGK Government of Kenya (GOK) MTIHUD
	Introduction of buffer to prevent encroachment of open space, agricultural land, and riparian reserve.	About 1500-1800m Ruaka, Karuri, Gachie, Raini, Kanunga and Muchatha extent. Minimum of 6m and a maximum of 30 m on rivers as buffers for growth and development.	2-5		CGK GOK NEMA
Housing • Guarantee delivery of quality, sustainable, accessible, and	Mixed re-densification of housing.	Replacement of detached and semi-detached permanent and temporary houses in Karuri, Gachie, Muchatha, Kawaida, Kanunga and Ndenderu.	1-5	-	CGK NG

Sector/Goal(s)	Programs	Projects	Duration	Estimated Cost	Actors
affordable housing, and • Ensure shelter for all people in Kiambaa Sub-County.	Upgrading of houses and increase of supporting social amenities.	Housing re-development and increase in excess of roads, health, education, storm and sewer drainage and security services in Karuri, Gachie, Muchatha, Kawaida, Kanunga and Ndenderu.	1-5	-	CGK
	Production of housing for high and medium densities.	Creation of adequate housing stock in Karuri, Gachie, Muchatha, Kawaida, Kihara and Ndenderu.	Continuous	-	CGK
	Provision of affordable social services for housing.	Electricity supply, water supply, street lighting and better road connectors to households in all Kiambaa Wards.	Continuous	500,000,000	CGK KPLC KAWSCO Athi Water Services Board
	Maintenance of boreholes, construction of boreholes and construction of water tanks.	Household water connection in the planning area.	1-5	100,000,000	CGK KAWSCO Athi Water
	Provision stormwater drainage system.	Construction of concrete stormwater drains in Karuri, Gachie, Muchatha, Kihara, Kanunga, Ndenderu and Kawaida.	Continuous	100,000,000	CGK KURA
	Construction of sewerage plant and sewer lines.	Sewerage system in Kihara, Cianda, Karuri, Muchatha and Ndenderu Wards.	3-8	1 billion	CGK Athi Water Services Board

Source: VisionRI

17. MONITORING, EVALUATION AND REPORTING

The purpose of monitoring and evaluation is to assess the effectiveness of the implementation of the plan. A fully functional M&E system is important for the implementation and review of the plan to ensure it delivers the intended results.

An effective M&E requires an inter-agency/departmental coordination to ensure inclusiveness, which reflects the multispectral framework of the plan. This means that all the departments and agencies need to be engaged.

The Constitution of Kenya (CoK) 2010 requires all County governments to plan and budget for the delivery of goods and services under their mandate. The Constitution requires counties to prepare the following plans to guide expenditure and investment programmes within their areas. These include:

- County Integrated Development Plan (CIDP)
- County Sectoral Plans;
- County Performance Management Plans;
- County Spatial Plan; and
- Cities and urban area plans.

Annual budgets are based on the approved plans by the respective County assemblies. Related guidelines are mainly directed to the monitoring and implementation of programmes and projects outline the CIDP, Constituency Development Fund (CDF) and other devolved funds as well as priority government and private sector priority investment programmes being undertaken within the County[7].

It verifies whether the activities of each County's priority project or programme are happening according to planning timelines and targets presented in the County Integrated Development Plan (CIDP); and whether resources are being used correctly and efficiently.

On the matters of physical and land use planning, the CoK (2010) requires the Department of Physical Planning and the National Land Commission (NLC) are expected to work in concert on matters of physical and land use planning. The National Spatial Plan has spelt out the need to develop performance indicators to facilitate the monitoring of the plan.[8]

NLC has developed the Urban Land Use Planning Monitoring and Oversight Guidelines to "provide a lawful basis for engagement between the County Governments as planning authorities responsible for preparing, approving, implementing and reviewing Urban Land Use Plans and the National Land Commission as a monitoring and oversight agency over land-use planning."[9]

The guidelines provide for:

- Systematic, purposeful, and regular checking of the plans;

[7] Kenya's County Integrated Monitoring and Evaluation System (CIMES 2016)
[8] Government of Kenya, 2016:254
[9] Republic of Kenya (2016), Urban Land Use Planning: Monitoring and Oversight Guidelines - National Land Commission

- Documenting and providing feedback on land use planning activities undertaken by planning authorities;
- Ensure the quality of the planning outputs and outcomes;
- Adherence to the constitution, relevant policies, legislation, planning standards and guidelines;
- Take remedial actions to mitigate inappropriate practices;
- Hold the planning authorities accountable for their actions so as to enhance performance; and
- Guide and systematise the practise of preparing, implementing, and reviewing urban land use plans in the country.

17.1 Existing M&E Situation

The M&E system in the Urban Land Use Planning recognizes the present veracities which include:

- Lack of an effective M&E system-currently the system is mainly used on how funds are used and not in programme/project planning;
- M&E activities at the county level are limited due to lack of capacity and backstopping role from NLC, national physical planning department;
- Lack of clear indicators and tools to guide tracking of changes at all levels;
- Most sectoral (infrastructure, social and economic) plans are not synchronised with the physical development plans;
- Most of the planning activities are on development control with little emphasis on plan preparation and reviews, leading to development happening in unplanned areas;
- Low appreciation of physical and land use planning by policymakers; and
- Inadequate resources availed for land use planning at the county level.

17.2 Suggested M&E Proposals

The following table presents the physical planning indicators and their means of verification.

Table 17-1: Physical Planning Indicators and means of verification

Physical planning indicators	Means of verification
Targets Indicators	
Legal and Policy Compliance	Compliance with ISUDP and Urban Dev. Sector with Vision 2030.
	Compliance with Urban Agenda, National Spatial Plan.
	Compliance with the relevant legislation.
	Compliance with the relevant policies.
	Compliance with the NLC guidelines.
	Compliance with other national agenda.
Physical Planning process	% of entities using the ISUDP.
	% of applications in compliance with the plan.
	% of planning areas defined as problem areas.
	No. of reviews of the ISUDP.
	No. of projects/initiatives completed per year.
	% of functional planning committees in accordance with the Act.

Physical planning indicators	Means of verification
	Integration with other plans.
Institutional framework	Effectiveness of Municipal Boards in plan implementation.
	Effectiveness of the relationship between the Municipal Board and County.
	Functionality of the physical planning liaison committee.
	Technical staff capacity of the Sub-County/Sub-County.
	Technical equipment capacity at the Sub-County/Sub-County.
	No. of committees constituted as per the legal requirements.
Community participation	Level of resident consultation on physical and land use planning issues.
	No. of neighbourhood associations engaged in planning issues.
	No. of planning clinics on awareness held per year.
	Responses on public notices on plans and planning intention adverts.
	% of participation in planning forums.
Monitoring and evaluation	No. of Departments/Units reporting well functional M&E.
	No. of annual physical planning needs assessments carried out.
	No. of staff trained and applying M&E tools.
	Availability of M&E tools.
Resource Mobilization	No. of partners/agencies supporting ISUDP implementation.
	Revenue generated by physical planning activities.

Source: VisionRI

17.3 Institutionalization of the M&E

As described in Chapter 9, the role of M&E will be anchored within the County Planning Unit whose core mandate is as stipulated in Clause 105 of the County Government Act is to integrate and coordinate all the County sectors in planning and implementation of the various plans.

The County Director of Physical/Land Use Planning who is a member of the CPU will ensure that the ideals of this ISUDP are integrated across entire County planning process to reflect the spatial, social, and economic development programmes and projects in the County.

18. RECOMMENDATIONS AND CONCLUSIONS

18.1 Improve Urban Management

Kiambaa Sub-County has undergone tremendous transition from a rural settlement to a major residential neighbourhood mainly serving the rapid growing population of Nairobi seeking accommodation outside the City. The growth of major urban areas like Ruaka, Karuri-Banana, Gachie, Ndenderu and Muchatha is attributed to the availability of affordable residential housing for people living within NMR. The Sub-County has been elevated into a municipality in accordance with the provisions of the Urban Areas and Cities Act.

The current population of Kiambaa Sub-County stands at 234,60010 as per the 2019 census. This represents a growth of 55.6% from the 2009 population of 145,053. This growth is mainly driven by rapid urbanisation and increase in human settlements in Ruaka, Gachie, Ndenderu, Karuri and Muchatha, amongst other areas.

If left unchecked, this growth may lead to the continuation of uncontrolled conversion of previous agricultural lands into urban areas. To address this challenge, there is a need to strengthen the planning functions of the Municipal Board with regard to urban growth management.

The essence of transforming urban areas into towns, municipalities and cities is important in enhancing urban management and service provision. Karuri has reached this threshold and therefore, a holistic and sustainable transitional model of developing and operationalising the planning area into an effective municipality is necessary.

This ISUDP recommends the delineation of the municipal and town boundaries in accordance with the provisions of the Urban Areas and Cities Act. This calls for the establishment of an urban hierarchy of a municipality, towns, and market centres in the Sub-County. The establishment of such hierarchy will ensure that urbanisation is guided, and urban limits of the various nodes/urban centres are clearly defined. It will also enable Kiambaa Sub-County to tackle urbanisation challenges, leverage its strategic opportunities, and strengthen effective service delivery and management.

18.2 Neighbourhood Governance for Plan Mitigation and Adaptation

In order to promote and sustain community engagement and empowerment, it is recommended that the benefits of this ISUDP be cascaded to the neighbourhood level. This may be achieved through awareness creation through identification and utilisation of effective communication systems and modes on the importance of land use planning and management at all levels. Such focus will create more resilient neighbourhood as they are enabled to deliver forms of services and resources.

This is in furtherance to the County Governments Act (Section 48, Parts VII and X,), Urban Areas and Cities Act (Section 22) and Kiambu County Community and Neighbourhood Engagement Act, 2016. The Neighbourhood Plans should be prepared on clearly delineated sub-zones derived from this ISUDP and be driven under legally constituted Neighbourhood Associations. The purpose of the Neighbourhood Plans is to re-frame the detailed neighbourhood mitigation issues

[10] 2019 Kenya Population and Housing Census – Volume 1.

and the appropriate adaptation actions that extend to this ISUDP or any other statutory governance action.

18.3 County Affordable Housing Strategy

Kiambaa Sub-County is a dormitory of Nairobi City. However. affordable housing is a complex challenge not only to those seeking accommodations in the area but also to local residents who are being displaced by the booming real estate sector which is mainly targeting the middle-income group. This calls for public policy that will ensure that land use planning and investments in physical infrastructure attract investment in affordable housing. The Kiambu County Affordable Housing Strategy has the potential to improve the efficiency and priority and equity of housing markets.

18.4 Infrastructure Master Plans

- **Wayleaves/Easement Master Plan, and Storm Water and Flood Management Strategy:** Pursuant to the provisions in the Physical and Land Use Planning Act (PLUPA) Third Schedule Section 12, there is a need to develop a master plan for wayleaves and easements for bulk infrastructure such as telecommunications, electrical power supply, water and sewerage networks, fibre optics and ICT base transmission stations. The wayleave and easement masterplan should support the expansion and continuous improvement of other infrastructure including roads, water and sanitation, sewerage expansion, energy supply, solid waste management, and ICT to support the envisaged development programmes in the Sub-County.

- **Transportation Master Plan:** Urban development in Kiambaa Sub-County is largely influenced by transportation networks with corridor development being the major feature. The construction of trunk infrastructure has influenced rapid urban growth such as along Limuru road, Nairobi-Gachie road, Northern and Western Bypasses, amongst others. The development of a comprehensive transportation master plan including a Ring Road Circuit, BRT and commuter rail transport that integrates urban, peri-urban and rural roads across the Sub-County, and incorporates traffic management systems will enable the Municipality to come up with a clear localised travel demand management.

18.5 Urban Agriculture and Food Security

No other county is best confronted by the challenge to drive the Big Four Agenda Pillar of food security and nutrition than Kiambu. The high speed growth indications in the NMR as we witness them today leave no doubt that Kiambu should plan for these developments in the food supply chain and have a firm position in answering this increasing market demand by translating the land use recommendations into a 'green port' concept of producing and processing high value crops by implementing the right logistics, storage, treatment and marketing.

The key pillars in the Kiambu Urban Agriculture Strategy include:

- The introduction of enhanced training on modern agricultural practices where traditional farmers have the choice to step in and go through a learning curve ending up with a better income;
- Strengthening food security mechanisms through research on improved seed and right fertiliser to optimise crop yields;

- Automation and value addition techniques;
- Logistics and food chain; and
- Developing logistics centres and improvement of produce and food supply chain.

The strategic location of Kiambu County within the NMR, and specially the unexploited opportunities in Kiambaa Sub-County will soon pay-off with the creation of jobs that were not there before, with local food provision in a sustainable manner. Only a portion of the County's land is needed to reap these benefits, but it should be planned and well supported to ensure this sector is able to thrive.

18.5.1 Cohesive Plan Coordination at All Levels

There is a need to have a cohesive coordination within the National, NMR and Kiambu County planning frameworks specifically the County Spatial Plan, CIDP, ISUDPs, IDePs and other sectoral plans and initiatives. This will improve matching similar development models along and across inter-county boundaries and regions.

18.5.2 Capacity Building and Institutional Coordination

At the heart of building multi-level networks is the County Planning Unit (CPU) which has to be rejuvenated and given the necessary merit and structure to ease their delivery especially on matters related to land administration and management. This will facilitate the CPUs coordination with implementing agencies/entities at all levels to ensure the effective implementation of this ISUDP. The entrenchment of the CPU's actions within the devolution mechanisms should be exercised through the County Inter-Governmental Forum under the provisions of the County Government Act (Section 54(2)) for smooth information flow and feedback across National and County Government departments and agencies.

Pursuant to the provisions of the Performance Management Plan (PMP) in the County Governments Act Section 47, it is necessary to conduct continuous monitoring, evaluation, and performance appraisal of interventions. These activities shall be done in relation to identifying and strengthening the workings of each intervention process and system. An unremitting M&E framework provides consistent forecast of failure and emerging opportunities.

18.5.3 Governing by Provision

The relationship between the County and Municipalities is through delegated authority. This will require elaborate governing provisions of delegation to strengthening of the implementing institutions at both the Sub-County and Municipality levels. This will streamline the operations and symbiosis of all strategies and deliverables within the ISUDP's timeframe. This includes integrating intra- and inter-regional learning to help in scaling best practices across all NMR municipalities for effective monitoring and evaluation.

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