GOVERNMENT
OF KENYA

COUNTY GOVERNMENT
OF KIAMBU

KIKUYU SUB-COUNTY INTEGRATED STRATEGIC URBAN DEVELOPMENT PLAN

2020-2030

VISION

A Sustainable Agro-based Industrial and Residential Hub

SEPTEMBER, 2020

FOREWORD

It is my pleasure to introduce Kikuyu Sub-County's Integrated Strategic Urban Development Plan (ISUDP), 2020 -2030. This will be Kikuyu's road map towards its growth and development into the future as an Agrocity Sub-County.

This plan is the first comprehensive spatial plan covering the entire Sub-County. It has been prepared at a time when Kiambu County is grappling with the challenges of rapid urbanisation. I am happy to note that this plan has been prepared in a participatory manner taking into account the contributions of various stakeholders whose role in the implementation of the proposals is fundamental.

Kikuyu is the second-fastest-growing town in Kiambu County and seventh-most urbanised town in Kenya. This is after Nairobi, Mombasa, Nakuru, Ruiru, Eldoret and Kisumu. Having witnessed rapid urbanisation in the last few decades with people moving in to settle, set up businesses and other development activities. According to the latest population statistics, Kikuyu's current population stands at 323,881 (2019 KPHC). This increase has been evidenced by spurring economic activities which have accelerated since the onset of Kenya's devolved governance system.

However, despite this growth, the areas outside the jurisdiction of the former Kikuyu Town have received little or no planning attention. These are areas characterised by piecemeal and disjointed land subdivisions coupled with haphazard change-of-user events that are inconsistent with sound planning principles and objectives.

This sprawling phenomenon was compounded by the absence of a comprehensive local physical development plan for Kikuyu that could have guided and managed progressive urbanisation. Thus, the Sub-County continues to suffer from 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 Government of Kiambu is committing resources to guide and manage urban growth in a more efficient manner. The increased population needs to be accommodated in a pleasant environment, with ease of mobility, adequate physical and social infrastructure and employment opportunities.

This plan is prepared within the global framework of the Sustainable Development Goals (SDGs) and the National and Kiambu Government's legal and policy frameworks. It takes cognisance of the many opportunities and resource potential that Kikuyu Sub-County has and needs to sustainably exploit when addressing its development needs.

Sectoral programmes and projects form key components of the plan whose objective is to ensure integration and coordination of development priorities. The successful implementation of this plan will therefore enable Kiambu County, not only to improve service delivery but also direct development to the most appropriate locations.

In this process, sectoral strategies will be implemented within a spatial framework and in turn, reflect the socio-economic analysis across the entire Kikuyu Sub-County. The plan has structured an implementation mechanism for short-mid- and long-term gains. The low-hanging fruits are structured as quick-win projects which are to be implemented within the first year of the project cycle, paving way for fast-tracking of the mid- and long-term programmes and projects. In

addition, the plan takes cognisance of the need to ensure consistency across the entire planning and implementation cycle, by institutionalising the County Planning Unit (CPU).

My administration acknowledges with utmost appreciation the World Bank for the support in preparing this plan. I would like to commend the National Government through the Ministry of Transport, Infrastructure, Public Works, Housing and Urban Development, whose Directorate of Nairobi Metropolitan Development has provided steadfast technical and supervisory support during the preparation of this plan.

I wish to appreciate the County Department of Land Housing, Physical Planning and Urban Development for liaising with National and other County Departments and Agencies, supporting the consultants with the necessary information and data, and coordinating engagements with other stakeholders that have made the realisation of this plan. I also appreciate the efforts of other stakeholders including professional bodies, resident associations, the business community, community-based organisations, and *wananchi,* for their valuable inputs during the various stages of the preparation of this plan.

My government commits to continuous engagement and collaboration with all stakeholders to achieve the full realisation of this plan. I am convinced that in the approach, the plan will positively impact positive changes on us individually and collectively.

I welcome you all to support this noble cause in realising Kiambu's Vision.

Ahsanteni.

Hon James K. Nyoro

H.E. Governor

Kiambu

CERTIFICATION

This Plan has been approved 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……..

ACKNOWLEDGEMENTS

The County Government of Kiambu wishes to thank all who have played a crucial role in ensuring the successful completion of this Integrated Strategic Urban Development Plan (ISUDP) – hereafter referred to as the Plan. We thank VisionRI Connexion Services Pvt Ltd. (VisionRI), the consultant awarded the assignment by the Ministry of Transport, Infrastructure, Housing, Urban Development and Public Works (MoTIHUD&PW).

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 Moiré (Deputy Project Supervisor), and all team members.

I would like to express our gratitude to the County Government of Kiambu's Technical Working Group under the leadership of Ms Jane W. Mwaniki (Director, Physical Planning) and all Technical Working Group members for their role throughout the preparation process of the plan.

I especially thank all respondents we came in to contact with including the Municipal Board, and different State and County Departments and Agency members, who patiently met the members of the planning team, and provided useful information that was essential in carrying out this planning exercise.

The VisionRI team was led by Plan. Requito Bellosillo (Team Leader); Plan. Paul G. Chege (Deputy Team Leader); and Mr Jitender Pal Singh Economist/Business Analyst. The Cluster Planning Team members included: Dr Margaret Ngayu; Plan. Mildred Ambani; Plan. Philip Olale; Peter Macharia; and Rose N. Gachiengo, who coordinated the reporting process.

The plan's preparation also involved professional and thematic experts including; Dr Joseph K. Kurauka (Environmentalist); Dr Luke Obala and Abigail Gacheru (Land Economists); Mr Elijah Kimani Mutuango (Social Expert); Mr Imtiyaz Ahmed (Transport Planner); Francis Muchiri (Communications); Jacqueline N. Kairu (Architect); and Dennis Wakaba (Urban Design).

I might not be able to mention everyone individually, who we consulted during public stakeholder consultations and they, in turn, provided invaluable contribution and cooperation that greatly contributed to the successful completion of this Plan.

Thank you all.

Mugo Kimani

CECM, Lands, Physical Planning and Urban Development

EXECUTIVE SUMMARY

Urban Planning is a process that is 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, Kikuyu's Plan has been prepared as a broader initiative that addresses key urban development issues such as infrastructure provision. Kikuyu Sub-County has an area of approximately 17,149.35 hectares. The Sub-County is located at the south-western portion of Kiambu County. It is considered as part of the Nairobi Metropolitan Region's (NMR) and is about 20km northwest of Nairobi city.

The key objectives of the plan 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.

The Plan conforms with and is informed by the national aspirations, the physical planning statutes and the strategic directions provided by the Vision 2030 and the National Spatial Plan (NSP). Two approaches were adopted (integrated and strategic) in the plan's preparation, which was also participatory. The integrated approach included metropolitan-wide studies that contextualised the planning area's environmental setting, transportation linkages and functional role in the Nairobi Metropolitan Region (NMR), in particular, and Kenya, in general. The strategic approach was applied to several aspects of the Plan. First was in determining the functional role of the planning area within the NMR and the 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.

Kikuyu is one of the indigenous towns that grew from the settlement of the colonialist missionaries. The presence of a Railway Station played a key role in the growth of the town. Some of the area's residents to date still refer to the town as 'giceceni', a term coined from the word Station meaning the Railway Station which reached the town in 1899. The town has some British colonial history links, like the Right Reverend Musa Gitau (Swahili for Moses Gitau), an African believer during colonial times. He lived and worked in the town as a reverend and in his honour, two schools were named after him.

The Plan has identified the main constraints to sustainable development in the Sub-County to include inefficient land use planning and implementation mainly as a result of the weak institutional framework, and mismanagement of available natural resources as well as rural-urban disconnection. This has resulted in uncontrolled growth within the planning area. To address these development challenges, the Plan provides for a balanced and controlled development across the Sub-County.

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ABBREVIATIONS AND ACRONYMS

BOT	Build Operate Transfer
CBD	Central Business District
CDR	Crude Death Rate
CIDP	County Integrated Development Plan
CIP	Capital Investment Plan
CoK	Constitution of Kenya 2010
CRA	Commission of Revenue Allocation
CSP	County Spatial Plan
CTWG	County Technical Working Group
DoNMED	Directorate of Nairobi Metropolitan Development
EAC	East African Community
ECDE	Early Childhood Development Education
EDAMs	Electronic Development Application Management
EPZ	Export Processing Zone
ERS	Economic Recovery Strategy
FDI	Foreign Direct Investments
FGD	Focus Group Discussion
FMCGs	Fast Moving Consumer Goods
GCI	Global Competitiveness Index
GDP	Gross Domestic Product
GIS	Geographic Information System
GJLOS	Governance, Justice, Law and Order Sector
GoK	Government of Kenya
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
KWCL	Kiambu Water & Sewerage Company Ltd
KWFT	Kenya Women Finance Trust
MoTIHUD&PW	Ministry of Transport, Infrastructure, Housing, Urban Development and Public Works
MTP	Medium-Term Plan
NaMSIP	Nairobi Metropolitan Service Improvement Project
NBFIS	Non-Banking Financial Institutions
NEMA	National Environment Management Act
NLC	National Land Commission
NMR	Nairobi Metropolitan Region
NMT	Non-motorised Transport
NSDI	National Spatial Data Infrastructure
PCEA	Presbyterian Church of East Africa
PPA	Physical Planning Act
PPP	Public-Private Partnership
PSV	Public Service Vehicle
ROW	Right-of-Way
SHEP-UP	Small-scale Holder Horticulture and Promotion Unit Programme
SIDA	Swedish International Development Cooperation Agency
SMEs	Small and medium-sized businesses
SPC	Spatial Planning Concept
STI	Science, Technology & Innovation
SWOT	Strengths-Weaknesses-Opportunities-Threats
TFR	Total Fertility Rate
TOD	Transit-Oriented Development
TOR	Terms of Reference

UACA	Urban Areas and Cities Act
UNEP	United Nations Environment Programme
WHO	World Health Organization
WRMA	Water Resources Management Act
WRA	Water Resources Authority

PART I: INTRODUCTION AND PLANNING CONTEXT

1. INTRODUCTION

1.1 Background

The preparation of the Kikuyu Integrated Strategic Development Plan (ISUDP) 2020–2030 hereafter referred to as the Plan is part of Component 1: Institutional Reform and Planning of the Nairobi Metropolitan Service Improvement Project (NaMSIP) which is a broader initiative that addresses key urban development issues such as infrastructure and governance capabilities in the metropolitan area. This Project was implemented by the Directorate of Nairobi Metropolitan Development (DoNMED), with the support of the World Bank. The consulting firm VisionRI Connexion Service Private Limited of India supported by Urban Lines Consultants Ltd, Kenya was commissioned to provide technical consultancy services for the Project.

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 transformation in the county" and employs a "strategic planning approach that is more flexible and development-oriented that is desirable to catalyse the government's own economic recovery strategy for wealth and employment creation" as defined in the Term of Reference (ToR).

The strategic planning approach mentioned above, in turn, involves the identification of "*priority programmes and projects that can transform the project towns into vibrant well-planned satellite towns of Nairobi that tap on the advantages of their proximity to the capital city*" 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 form and character through innovative urban design.

The key planning principles that underlie plan preparation are also provided in the 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 plan 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 Plan includes:

- Articulating the aims of the National and County government 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 planning area;
- 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

The key planning challenges facing Kikuyu Sub County are as outlined below:

- Inefficient land use planning and implementation;
- Overexploitation of resources leading to excessive pressure on limited available resources;
- Slow economic growth within the rural areas such as Nachu which is characterised by inaccessible roads;
- Massive subdivision of land because of the growing population, which has led to the conversion of agricultural lands into residential land uses;
- Inadequate social and physical infrastructure;
- Encroachment into the road reserves resulting in traffic congestion and accidents along the roads;
- Poor drainage systems, which lead to seasonal flooding during the rainy seasons;
- Poor solid and liquid waste disposal because of lack of proper planning resulting in poor sanitation; and
- Inadequate health facilities having a few health centres within the planning area understaffed.

1.5 Goals and Objectives of the Plan

Following the TOR, the objectives of the Plan are:

- To determine the boundaries of the planning area 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 planning area (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 the planning area;
- To provide a basis for development control and investment decisions;
- To develop a plan implementation and monitoring framework; and
- Scope of the Plan

1.5.1 Geographical Scope

The geographical scope of the Plan includes a wider territory considering the urban sprawl that has occurred from the original central business district (CBD). The planning area covers most of Kikuyu Sub-County and includes the wards and sub-locations shown in **Error! Reference source not found.**-1.

Table 1-1: Wards & Sub-locations covered by the Kikuyu Plan

Ward	Sub-location
Karai	Gitiba
	Gikambura
	Karai
Kikuyu	Kikuyu
	Thogoto
Kinoo	Kinoo
Nachu	Kari
	Lusigetti
	Nachu
	Rengutti
Sigona	Sigona
	Kerwa

Source: KNBS, 2009 Population Census Reports

1.5.2 Scope of Planning Tasks

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

- Delineation of the boundaries of the planning area;
- Preparing an elaborate base map showing the existing spatial structure of the planning area to include planning boundaries, existing road network, landmarks, major natural features and topography;
- Carrying out a contextual analysis of the planning area and its environs;
- Undertaking a land-use and socio-economic study and survey of the planning area, accommodating all the changes that have occurred over time and projecting

future changes, and comparing how these changes compare in the metro region and in the 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 the planning area;
- Detailed study on the redevelopment of the central business districts (CBD);
- Identifying suitable land for residential, industrial, education, recreational, public purposes, commercial, public utilities, transportation and other uses applicable to the planning area;
- 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 the planning area;
- Preparing detailed 10-year Sectorial Development Plans in support of the land use plan for the planning area;
- Preparing individual implementation plans to include proposed requisite resource and institutional frameworks; and
- Preparing zoning plans for Kikuyu with requisite development densities and guidelines.

1.6 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.

1.7 Vision and Mission of the Plan

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 "**To make Kikuyu a sustainable agro-based industrial and residential Sub-County.**"

The mission of this County Government towards the realisation of this plan is "**To transform Kikuyu into an economically vibrant, liveable Sub-County with high standards of living and ensure optimal utilisation of available resources.**"

1.8 Methodology

1.8.1 Preparatory

The Plan's preparation was guided by a Planning Model that ensured that the inter-relationship of factors attendant to the planning area's development were adequately considered and that the identified development strategies were properly implemented.

Based on the Model, the Plan was framed within the planning area's Planning Context, which considered affecting legislation and policies, economic & urban development contexts, and transportation linkages, amongst others. The contextual analysis considered related plans and programmes at the National, Regional and County levels and their impacts on strategy formulation.

The Plan was framed upon the Planning Area's Situation Analysis, which entails the review and analyses of the current state and anticipated requirements of its various development sectors such as Demography, Economic, Land Use, Urban Design, Transport, Social, Physical Infrastructure, and Governance.

The Planning Context and Situation Analysis were clustered together to form the basis for the pivotal point in Plan preparation which is the crafting of the planning area's Integrated Development Analysis comprising a cross-cutting assessment of development challenges and potentials, collective Development Vision, Mission Statement, Goals and Objectives along with their physical translation – the Spatial Framework Plan. The latter provided the overall policy direction, which guided development initiatives for the planning area within the planning period.

The Spatial Framework Plan was then localised into specific geographical dimensions through the Land Use Plan. At this level, the precise locations of various urban types of developments are provided along with the location of environmental protection areas, if any. The Land Use Plan will mainly be implemented through a Zoning Plan, which will ensure that development applications will be in line with the intents of the Spatial Framework and Land Use Plan in terms of the type of use, and magnitude of the proposed development, amongst others.

The Land Use Plan is supported by Sectoral Development Plans to comprise programmes and projects for broad sectors such as Social, Economic, Transport, Physical Infrastructure, Environment and Urban Governance. The Sectoral Development Plans shall be implemented in two streams, i.e., through policies & regulations and a local development investment programme.

A monitoring and evaluation mechanism has been provided to enable plan implementers to ascertain if outputs and outcomes are within the Plan's objectives and targets.

1.8.2 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.

1.8.3 Data Collection

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 especially in the slums (but also in the towns and corridors) 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.

i. **Secondary data:** Secondary data was collected through desk studies from past reports and publications on the Project area. This was carried out before field visits were made with the objective of clearly identifying data gaps to be collected from the towns. Reports such as publications, topo-cadastral maps and land-use plans were reviewed to give clear insights into the planning area. 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; The Kenya Power and Lighting Company Master Plan; and the Konza City Master Plan.

ii. **Primary data:** Field studies were carried out to fill any information gaps, which were identified during the desk study. This involved collecting information on existing 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:

- **Conducting comprehensive stakeholder forums:** included stakeholder forums to establish the key development challenges including on transport, access to amenities and community facilities and the challenges involved, amongst others; the key forums held are summarised below.

Table 1-2: Stakeholder Forums

No.	Stakeholder Forum	Date	Venue	Purpose
1	Kikuyu Town	10/8/2018	Kikuyu Sub-county offices	Presentation of key findings of the thematic studies to key stakeholders for orientation of stakeholders, refinement of the town's problems, visioning and objective setting of the project design.
2	Nachu Ward	13/8/2018	Kikuyu Sub-county Offices/Nachu	Presentation of key findings of the thematic studies to key stakeholders for orientation of stakeholders, refinement of the town's problems, visioning and objective setting of the project design.

Source: VisionRI

- **Observations** were undertaken to provide information on traffic volumes by the day, hour, direction and type of vehicle amongst other physical conditions affecting development.

- **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.

- **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 the length of the road in the project areas. It also involved determining conditions of other utilities such as water, drainage and sewer systems.

- **Key informant interviews:** The key informant's interviews were used to collect data on the historical as well as current infrastructural information. They include officials from Kenya Urban Roads Authority, Kenya National Highways Authority, Kenya Roads Board, Ministry of Lands, Housing and Urban Development, County Director of Physical Planning, Ministry of Energy and Petroleum, Ministry of Transport and Infrastructure, and Kenya Railway Corporation.

- **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 hand-held global positioning system (GPS) receivers 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 format was scanned, geo-referenced and digitised into vector maps on the same coordinate system as the project base map. Datasets that were acquired in hardcopy format included Registry Index Maps (RIM) showing the land subdivision, administrative maps, existing and proposed road networks, fibre optic cable network, power distribution network, etc.

1.8.4 Plan Formulation

Formulation of the Plan was based on thematic studies which involved the in-depth carrying of various studies and data collection. The output included a detailed analysis of secondary and primary data and identification of critical issues for planning. These key findings of the thematic studies were presented to key stakeholders for validation. Based on the validated situational analysis, a draft plan and development proposals were prepared. Findings and conclusion of studies were modelled and presented in a spatial context showing desired outcomes, alternatives, strategies and programmes. The output was presented to the stakeholder forum for comments. This was followed by the formulation of alternative development proposals and selection of preferred alternative using the Goals Achievement Matrix (GAM) to inform land management and investment decisions. A stakeholder meeting focussing on the presentations of the draft plan

proposal and preferred models was then organised to gain consensus on preferred plans and strategies for approval.

1.8.5 Plan Approval

The approval of this Plan 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.

2. PLANNING CONTEXT

2.1 Historical Development of The Town

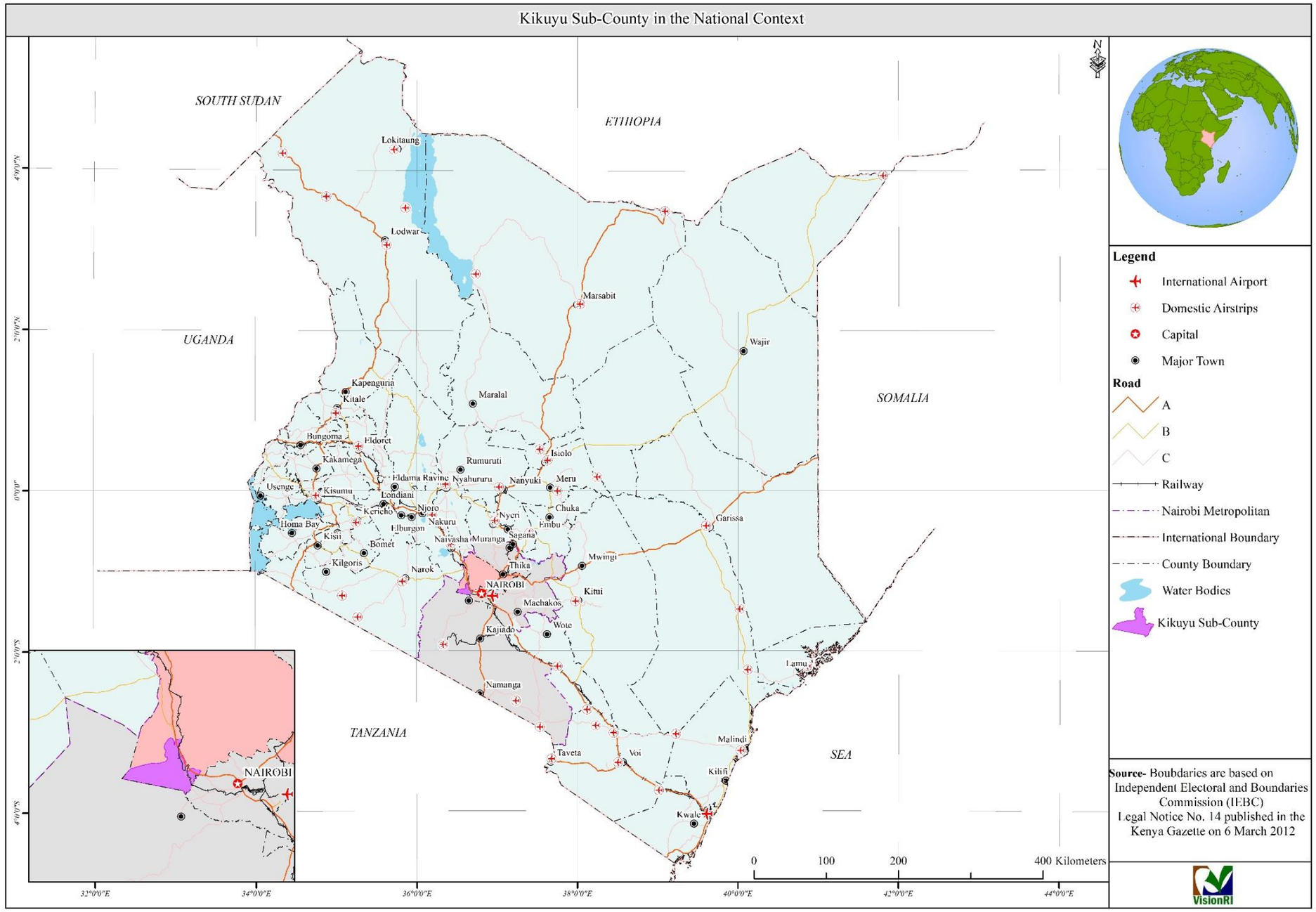
Kikuyu is one of the indigenous towns that grew from the settlement of the colonialist missionaries. The presence of a Railway Station played a key role in the growth of the town. Some of the area residents to date still refer to the town as '*gicecení*', a term coined from the word Station meaning the Railway Station, which reached the town in 1899. The town has British colonial history links, like the Right Reverend Musa Gitau (Swahili for Moses Gitau), an African believer during colonial times. He lived and worked in the town as a reverend and in his honour, two schools were named after him.

During the British colonial era, the town was known as Fort Smith named after a famous officer Eric Smith in 1891 of Imperial British East African Company (IBEA), in whose watch it was strengthened. It had identified a place at the border between the Kikuyu and Maasai tribes that was ideal for supplying the Uganda road with farm produce from Kikuyu farmers. From the early days of Swahili and Arab traders, the fortified village was a supermarket. Caravans stopped over to trade with the Kikuyu near the fort. The planning area was mainly pastoralist land up to 1976 when the whites subdivided some of the lands to those in Nachu and Lusingetti. In 1992, the further subdivision was carried out and those within and outside Nachu had parcels assigned to the local community. There was a parcel that had been set aside to plant castor, but the plan was never implemented.

2.2 Geographic Location and Size

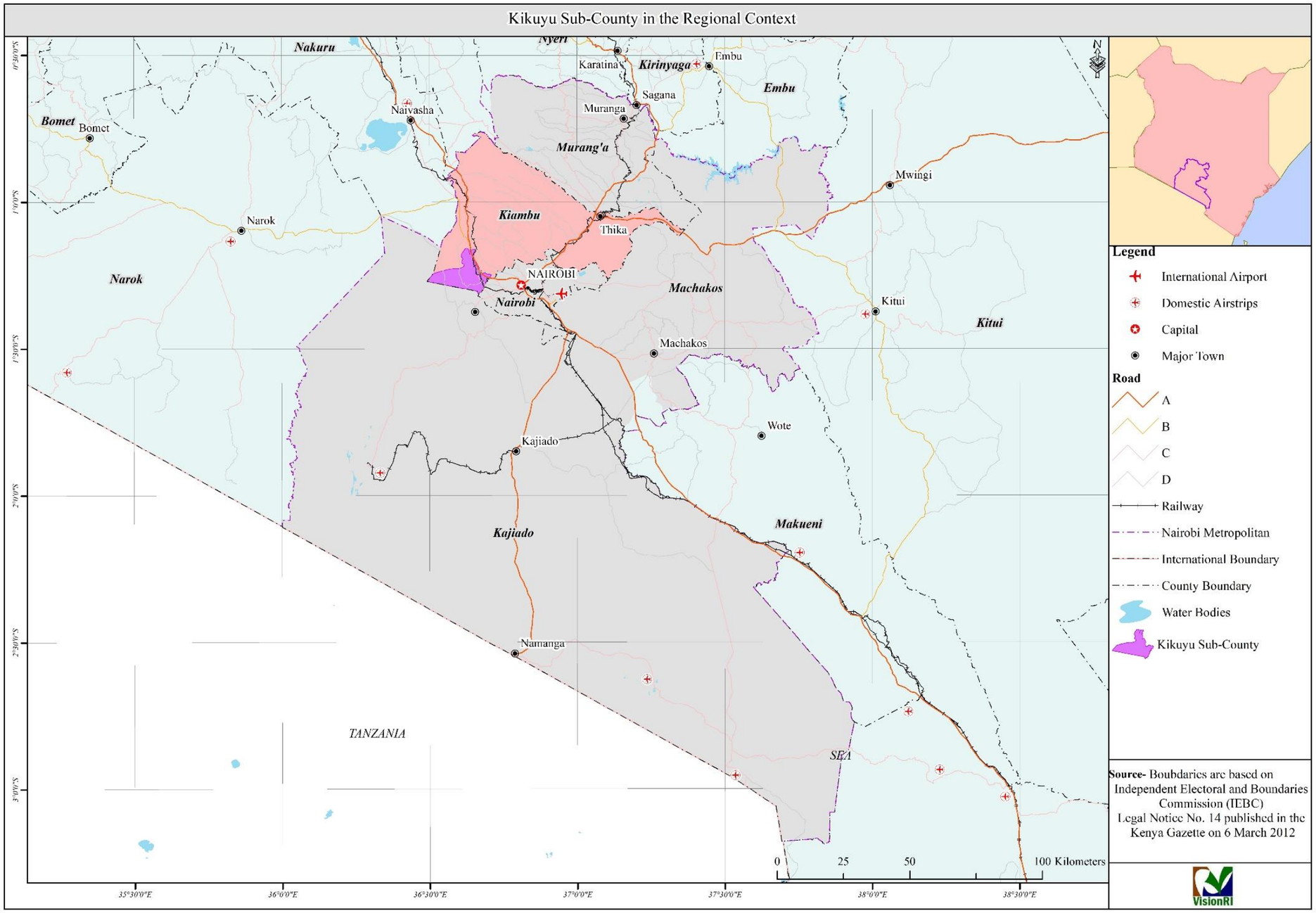
The Kikuyu planning area is located within Kikuyu Sub-County at the southwestern part of Kiambu County. Sub-County Kikuyu borders Gatimu sub-location to the north, which is within Limuru Central Ward of Limuru Sub-County. To the east, the planning area is bordered by Kabete Sub-County specifically the sub-locations of Muguga, Gitaru, Kanyariri and Uthiru. To the south lies Kibiko sub-location (part of Kajiado West Sub-County) and Kerarapon (part of Kajiado North Sub-County) in Kajiado County. Nairobi City defines the planning area's South-Western boundary and Kikuyu Town. The planning area's traditional urban centre is located about 20km northwest of Nairobi city. It is located at the lower eastern slopes of the Aberdare range with Kikuyu Town having an elevation of about 1,700m above sea level. It has a total land area of approximately 17,149.35 hectares, which comprises the entire Kikuyu Sub-County.

The mapped location of the planning area in relation to the national/ regional and local contexts are shown in Map 1-1, Map 1-2, and Map 1-3. The map of the entire planning area is, in turn, presented in Map 1-4.



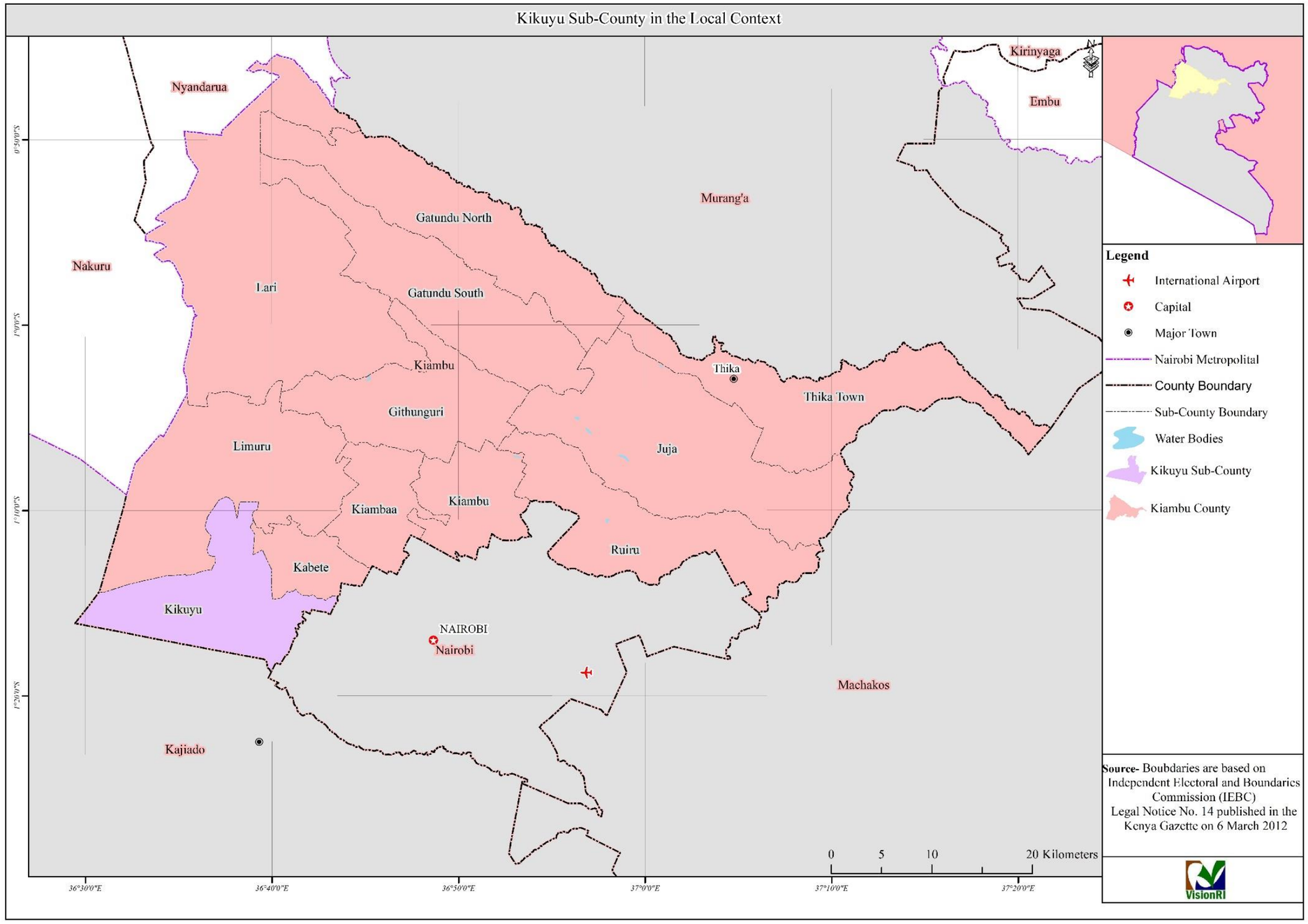
Map 2-1: Location of the Planning Area in the National Context

Source: VisionRI



Map 2-2: Location of Planning Area in Regional Context

Source: VisionRI



Map 2-3: Location of Planning Area in the Local Context

Source: VisionRI

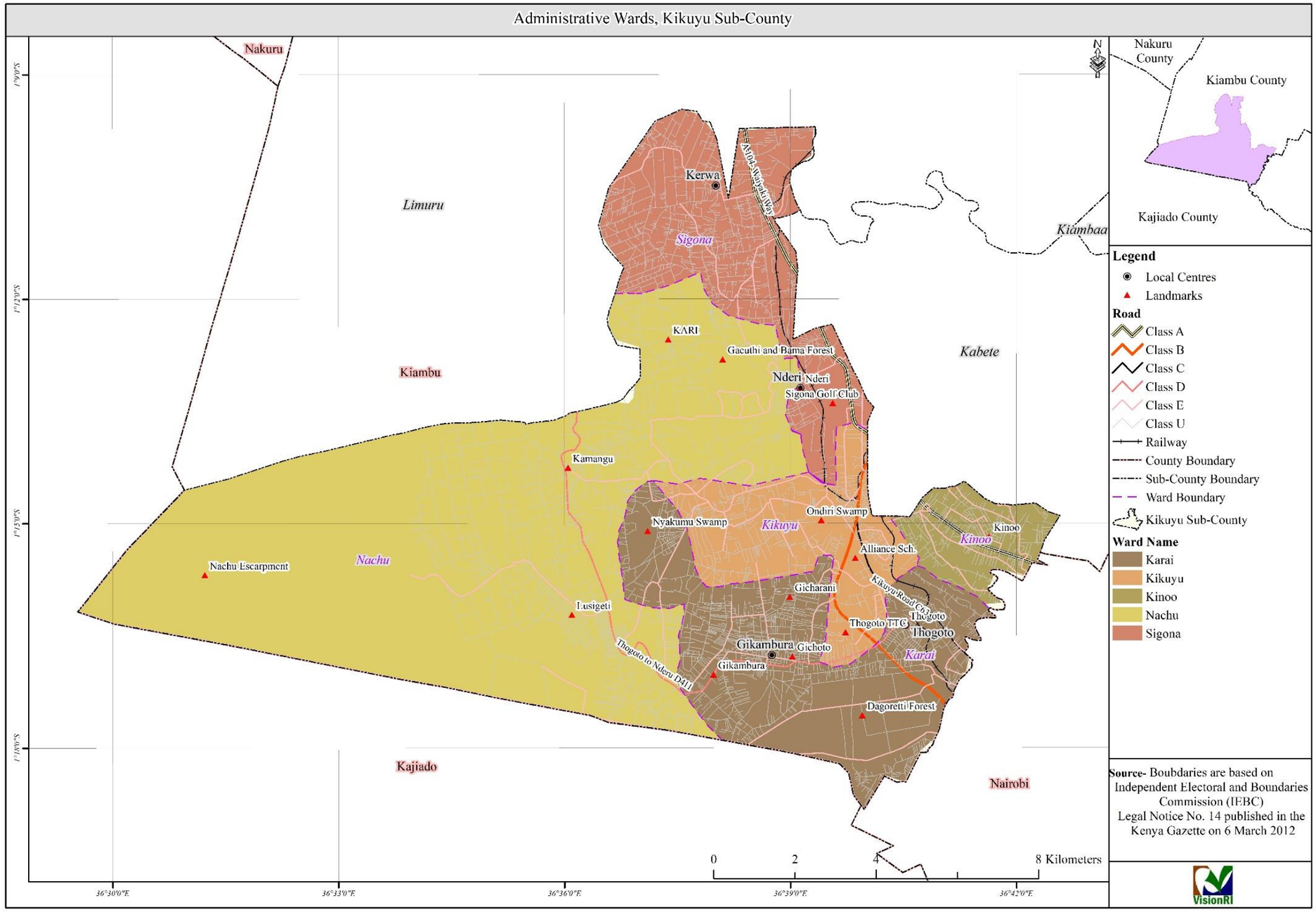
2.3 Administrative Units

The Kikuyu Sub-County ISUDP covers five wards, which include Kikuyu town, Karai, Kinoo, Nachu and Sigona wards Sub-County whose respective land areas are presented in Table 2-1 and Map 1-5.

Table 2-1: Administrative and Political Units

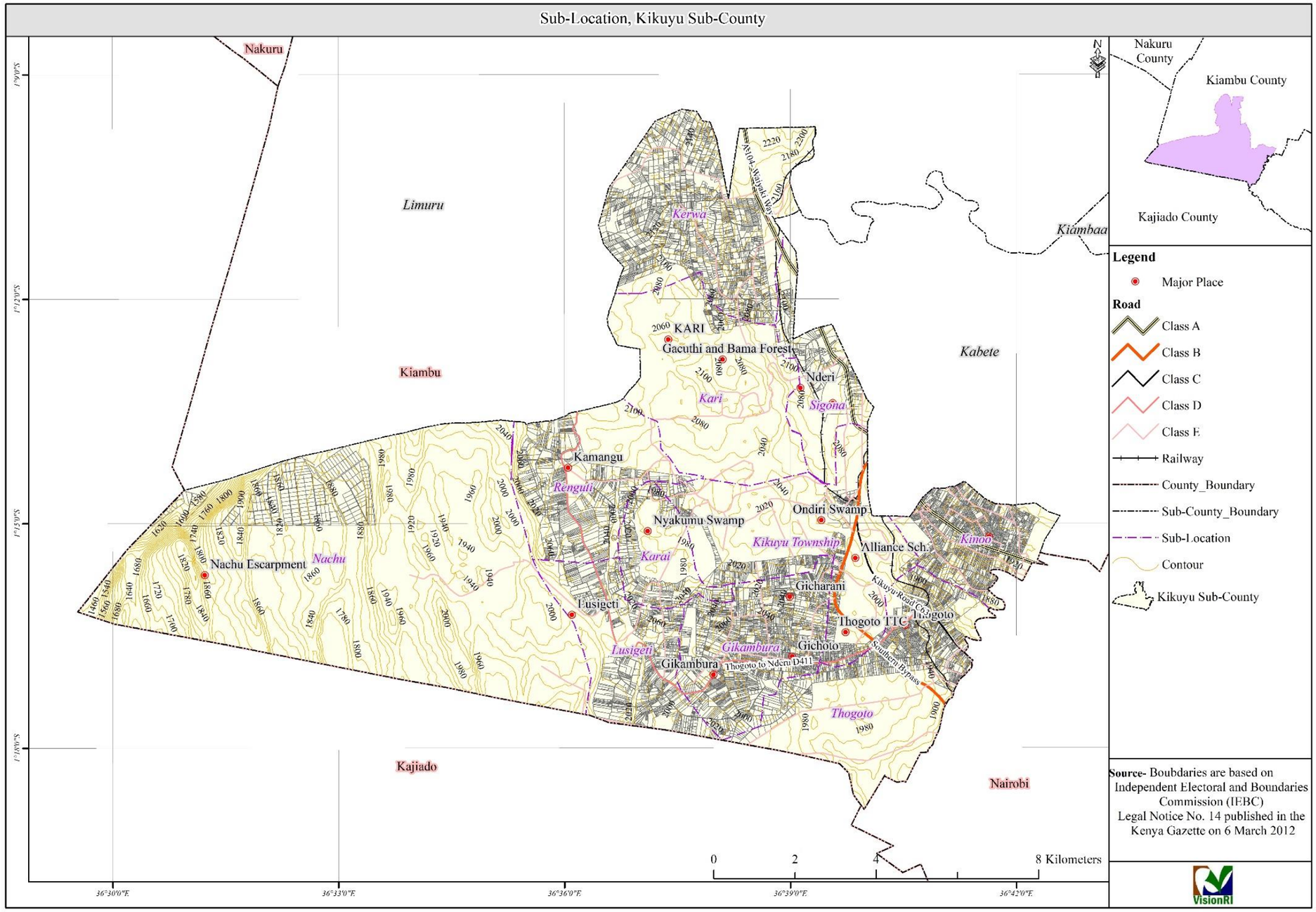
Ward/ Sub-location		Area in hectares		Share in %
		Ward	Sub-location	
Karai		2330.35		13.59%
	Gitiba		1084	
	Gikambura		1192	
	Karai		54	
Kikuyu		2104		12%
	Kikuyu		1415	
	Thogoto		689	
Kinoo	Kinoo	628	628	3.66%
Nachu		963		56.18%
	Kari		1312	
	Lusigetti		1139	
	Nachu		6201	
	Rengutti		982	
Sigona		2453		14.30%
	Sigona		670	
	Kerwa	-	1783	
Total		17,149.35	17,149.35	100%

Source: KNBS 2009 Population Census Reports



Map 2-4: Administrative Boundaries in Kikuyu Planning Area

Source: VisionRI



Map 2-5: Administrative Boundaries in Kikuyu Planning Area

Source: VisionRI

2.4 Legislative Context

2.4.1 National Laws

i. **Constitution 2010:** The Constitution of Kenya, 2010 provides the overarching legislation that guided the preparation of this Plan. Through the objects of a devolved system of government, the Constitution further 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 the coordination of planning by the counties while counties are in charge of planning and development control within their jurisdiction.

Further to the above, the preparation of the Kikuyu Plan has been 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, the Plan has observed and achieved various principles achieved such as:

- Security of land rights;
- Sustainable and productive management of land resources;
- Sound conservation and protection of ecologically sensitive areas such as forests, swamps and wetlands;
- Under Article 66, the Plan has been developed 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; and
- Lastly, the overall implementation of this Plan 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 Plan include amongst others:

    - To manage public land on behalf of County Government of Kiambu;
    - To conduct research related to land and the use of natural resources, and make recommendations to appropriate authorities; and
    - To initiate investigations, on its initiative or a complaint, into present or historical land injustices, and recommend appropriate redress and 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 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)).

iii. **Urban Areas and Cities Act 2011:** The Urban Areas and Cities Act 2011 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, 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, 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 under this Act with the approval of the County Executive Committee Member.

Article 36 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, 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 uses 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, subdivision plans amongst other plans. The Act also stipulates the plan preparation and approval processes.

Article 56 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 consider and approve all development applications and grant all development permissions.

v. **Environment Management and Co-ordination (Amendment) Act of 2015:** Environmentally, this Plan seeks to ensure 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 (Amendment) Act of 2015. The entitlement to a clean and healthy environment in the Plan 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 Plan 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).

2.4.2 County Laws

i. **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 county government service delivery; to enable structured co-operation between the County Government, residents and businesses; to facilitate the activities of the 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.

ii. **The Kiambu County Valuation and Rating Act, 2016:** This act is meant to affect the implementation of Article 209 (3) (a) of the Constitution of Kenya, 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 other functions.

2.4.3 Other Related Legislation

Other laws involved are presented in Table 2-2 below.

Table 2-2: Additional legal provisions

Law	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

Law	Purpose
	Highways Authority, Kenya National Urban Roads Authority and Kenya National Secondary Roads Authority; and to provide for their functions and powers; and for connected purposes.
The Government Lands Act, Cap 280	An Act of Parliament to make further and better provision for regulating the leasing and other disposal 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 the public benefit.
The Land Act, 2012	To give effect to Article 68 of the Constitution, to revise, consolidate and rationalise 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 rationalise 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 to 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

The other sectoral laws considered in this Plan are summarized in

Table 2-3.

Table 2-3: Other Sectorial Laws

Law	Relevance
Agriculture, Fisheries and Food Authority Act, (2013)	Provides the confines within which to make proposals on agriculture promotion and conservation of soils and fertility for sustainable agriculture and optimisation 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.
Land Act, 2012	Provides for sustainable administration and management of land and land-based resources nationally.
National Land Commission Act, 2012	Provides for County Land Management Boards which are critical in processing Development applications and allocation of public land as well as NLC that will monitor and have oversight responsibilities over land use planning throughout the country.

Source: VisionRI

2.5 Policy Context

2.5.1 Global Policies

i. **Sustainable Development Goals:** The World Agenda for Sustainable Development come into effect after the expiring of the millennium development goals. It includes Sustainable Development Goals (SDG) which represent the world's blueprint to achieve a better and more sustainable future for all. The SDGs address common global challenges such as poverty, inequality, climate change, affordable housing, environmental degradation, peace, and justice, amongst others. The SDGs were ratified by all the members' states and government under the United Nations umbrella.

The preparation of ISUDP aims at achieving the relevant SDGs such as eradication of poverty, promoting clean water and sanitation, enhancing the use of affordable and clean energy, promoting sustainable cities, promoting peace, and industrial growth.

ii. **New Urban Agenda 2017:** The New Urban Agenda 2017 is a common global vision to promote sustainable urbanisation. It is estimated that by the year 2050, the world urban population will have doubled making urbanisation as major issues in the 21st century. To tackle the challenges of urbanisation, the New Urban Agenda aims at promoting safe and sustainable cities for all.

The guiding principles of the New Urban Agenda to achieve sustainable urban development include:

iii. **Urban equity and eradicating poverty:**

- Sustainable and inclusive urban prosperity and opportunities for all; and

- To foster ecological and resilient cities and human settlements.

The ISUDP endeavours to meet the vision of the Urban Agenda 2017 by ensuing sustainable urbanisation within Kikuyu Sub-County.

iv. **Africa Union Agenda 2015:** This Agenda, published in 2015, promotes unity amongst the African states with the aspirations to achieve a prosperous Africa based on inclusive growth and sustainable development, an integrated and politically united continent, good governance, democracy and respect for human rights and the rule of law, a peaceful and secure Africa, a continent with strong cultural identity, people-driven development, and a strong united and influential global player.
The Kikuyu Plan is aligned with these aspirations.

2.5.2 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), the Kikuyu Plan seeks to increase the level of value addition of local agriculture products such as tea, cereals, seedlings, cheese, ghee, yoghurt, milk, feeds and horticulture products. 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 strategy puts forward proposals in with the promotion of ICT, gender balance and catering for persons with disabilities. All these aspects have been observed in the Plan through provisions for all the 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 National Environment Policy, 2013, the Plan recognises 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 define 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, this Plan promotes and encourages a 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 emphasises 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, this Plan sought 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 Plan through:

- Anchoring the sub-county land development initiatives that will respond positively to the market demands;
- Environmental management and sustainable production initiatives in the utilisation 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 utilisation of land resources to meet governance, social-economic, political and cultural obligations of the people of the county and Kenya at large.

2.5.3 Other relevant policies

Other relevant policies that this Plan has considered and integrated are summarised in Table 2-4.

Table 2-4: Other Relevant Policies

Law	Relevance
Housing Policy Sessional Paper No. 3 of 2004	That comprehensive land-use planning as 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 (GHG) 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.

Law	Relevance
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 essential priority packages based on the burden of disease and the required support systems to deliver service amongst major players in the health sector include the government represented by the Ministry of health and the county government, private sector and non-governmental (NGOs).

Source: VisionRI

2.5.4 Institutional Planning Framework

Core Planning Mandate

Institutional mandates for planning in Kenya are examined in relation to urban planning at various scales. Schedule Four of the Constitution of Kenya (2010) distributes planning functions across a two-tier 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 of Kenya 2010 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 also are governed by 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 following shows a table for allocation of planning mandates from the aforementioned powers.

Table 2-5: Roles and responsibilities

Level of Government	Roles and Responsibilities
National Government	• Formulating general principles, policies, standards and guidelines of land planning; • Preparation and approval of the National Physical Development Plan, National Policies, i.e. land use;

Level of Government	Roles and Responsibilities
	• Planning at international boundaries within Kenya borders amongst Tanzania, Uganda, Somalia, South Sudan and Ethiopia; • Coordination of Regional Spatial Plans/Inter-County Spatial Plans; • Capacity building and technical support to counties; • 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 Development Plans, Sectoral Plans, development control and enforcement; • Formulating country-specific policies; • Implementing national policies, standards and guidelines; and • Planning Research at the county level.
County Assembly	Approval of plans

Source: VisionRI

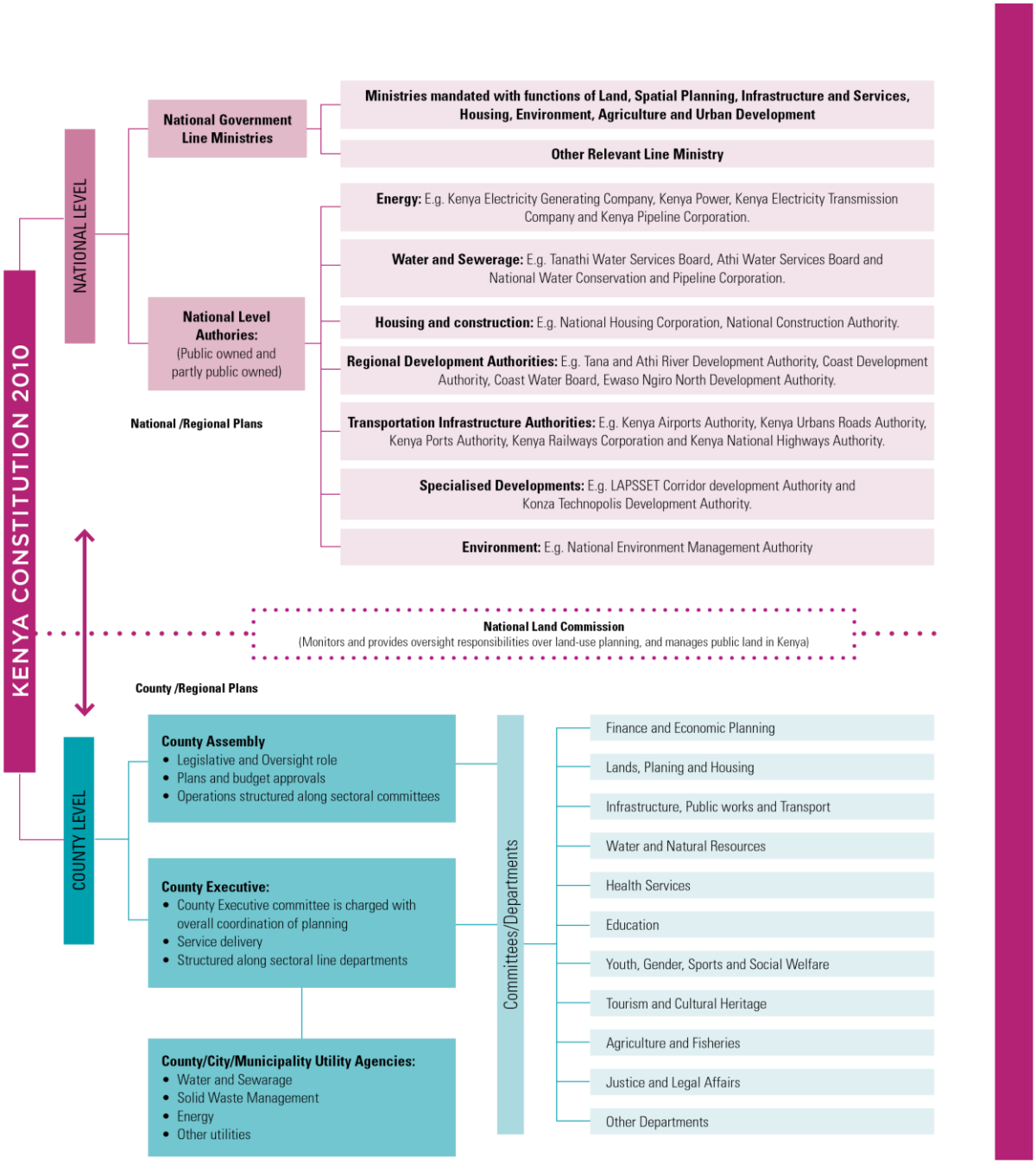


Figure 2-1: Institutional linkages between National and County Government stakeholders

Source: Urban Planning for City Leaders Handbook

2.5.5 Cross-Cutting Stakeholders

Key stakeholders usually include; government agencies; civil societies that include civil society organizations themselves, residents' associations, community-based organisations, non-governmental organisations and the community at large; the private sector; developers and property owners (donor agencies or development partners) and local businesses inter alia. 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 entailed 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 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 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 & Urban Development	• The Ministry consists of the following five State Departments: State Department for Transport; State Department for Infrastructure; State Department for Housing and Urban Development; State Department for Maritime and Shipping Affairs; and State Department for 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; continual 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 of Kenya, 2010. Responsible for amongst others managing public land on behalf of the National and County Governments; recommending a national land policy to the national government; advising the national government on comprehensive programmes for the registration of title in the land throughout Kenya; and monitoring and oversight responsibilities over land use planning throughout the country.

Institutions/Organizations	Roles and Responsibilities
National Environment Management Authority (NEMA	• Established by the Environment Management and Coordination Act, No. 8 of 1999. Key agency in charge of the coordination of environmental management activities; ensure compliance with environmental guidelines; and advise the government on legislative measures concerning environment management.
Kenya National Highways Authority (KeNHA)	• State corporation established under the Kenya Roads Act 2007 under section 3, 4 and 5 with the responsibility 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)	• State Corporation established by the Kenya Roads Act 2007 under Section 9, 10, 11 and 12 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. Mandated to conserve, develop and sustainably manage forest resources for Kenya social-economic development.
Water Resources Management Authority (WRMA)	• Established under the Water Act, 2002. State Corporation under the Ministry of Water and Irrigation mandated in nation-wide water resources management.
Council of Governors of Kenya (CoG)	• Established under Section 19 of the Intergovernmental Relations Act (2012) with the mandate to provide a mechanism for consultation amongst Counties 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	• Constitutes of County Assembly and County Executive Committee with responsibilities outlined under Constitution 2010 Part 2 (Fourth Schedule, Article 185 (2), 186 (1) and 187 (2); • 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 (KenInvest or KIA)	• A statutory body established in 2004 through an Act of Parliament (Investment Promotion Act No. 6 of 2004). Mandated in promoting investments in Kenya. Responsible for facilitating the implementation of new investment projects, providing After Care services for new and existing investments, as well as organising investment promotion activities both locally and internationally.
Micro and Small Enterprise Authority (MSEA)	• A state corporation established under the Micro and Small Enterprise Act No. 55 of 2012. The Act was developed through a stakeholder's consultation process. Tasked in financing, training, infrastructure development and policy development.
Kenya Industrial Estate Ltd (KIE)	• 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

Kikuyu Sub County Administrative Structure is illustrated in Figure 2-2 below:

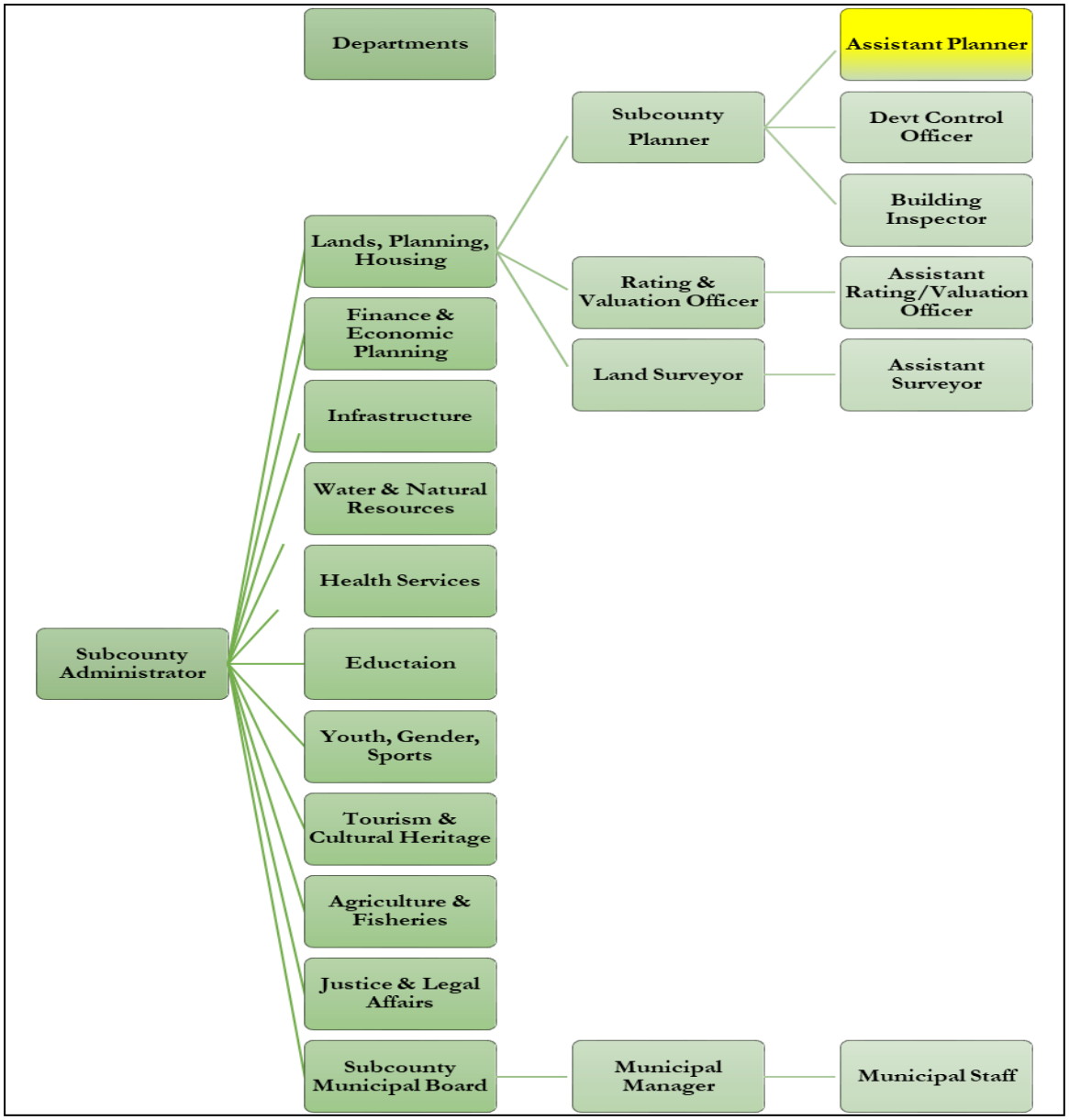


Figure 2-2: Kikuyu Sub County Administrative Structure

Source: VisionRI

2.6 Planning Policy Linkages

2.6.1 National Spatial Plan

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

The specific objectives of the National Spatial Plan include:

- Creating a spatial planning context that enhances economic efficiency and strengthens Kenya's global competitiveness;

- Optimizing utilisation of land and natural resources for sustainable development;
- Creating a liveable and functional Human Settlements in both urban and rural areas; and
- Securing the natural environment for a high quality of life.

Establishing an integrated national transportation network and infrastructure system. Based on the characteristics of the planning area, the key strategies outlined in the National Spatial Plan that have been integrated into this Plan are as presented in Table 2-7.

Table 2-7: Relevant National Spatial Plan Strategies

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

2.7 Regional Policies

2.7.1 Nairobi Metro 2030

Nairobi Metro 2030 provides the policy direction for the development of the metropolis to support Kenya Vision 2030. The Plan has been guided by these policies particularly in the course of determining the town's overall development goals and the 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; 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; ensuring a safe and secure region and build world-class governance systems.

2.7.2 Spatial Planning Concept for NMR

The Spatial Planning Concept 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 Concept promotes a land-use system intended to ensure the development of an "environmentally sustainable region" that will 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 Nairobi Metropolitan Region; and employ World-Class Metropolitan Governance Systems. Key parameters that are provided in the NMR Spatial Plan that guided the development of the Plan, envisions Kikuyu's economic function 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
Karuri	Agro-based Industrial Town
Githunguri	Agro-based Industrial -cum- Administrative Town
Gatundu	Administrative Town

Spatial Units	Envisaged Function
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
Kajiado	Administrative -cum- Service Town
Loitoktok	Administrative Town
Sultan Hamud	Transit Town
Magadi	Industrial Town

Source: Spatial Planning Concept for NMR

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, Karuri, Juja, Mavoko,	• Intermediary towns;

Level	Settlement Hierarchy	Settlements	Characteristics
		Kitengela, Loitoktok	• An 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 • Is 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 the 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

2.8 County Policies

2.8.1 Kiambu County Spatial Plan, 2016-2026

The Kiambu County Spatial Plan 2016-2026 has its strategic focus on land use planning, multi-modal transportation planning, informal settlements as well as 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 urbanising County with rapid outward growth from its core. The County Spatial Plan is inextricably linked to the County Integrated Development Plan having a key focus on optimal utilisation of resources and ensuring infrastructural development in the region. The planning area will have its plans and programmes mainly pegged on Kiambu CSP and Kiambu CIDP. This will act as the base for the articulation and formation of action area plans and zoning plans for the Plan. Table 2-10 illustrates 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;

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

Source: Kiambu CSP, 2016

2.8.2 Kiambu County Integrated Development Plan, 2018-2022

Kiambu CIDP 2013-2017 has five main pillars that are meant to steer development in the County. These pillars are security, employment, education, health and urban planning. The plan brings together varied elements of planning in the formation of the plan. The Kikuyu Plan has integrated relevant strategies as provided in the Kiambu CIDP 2013-2017, with a key focus on projects that have already been planned for or are ongoing. Some of the programmes and projects in Kiambu CIDP relevant for this Plan are summarised in Table 2-11.

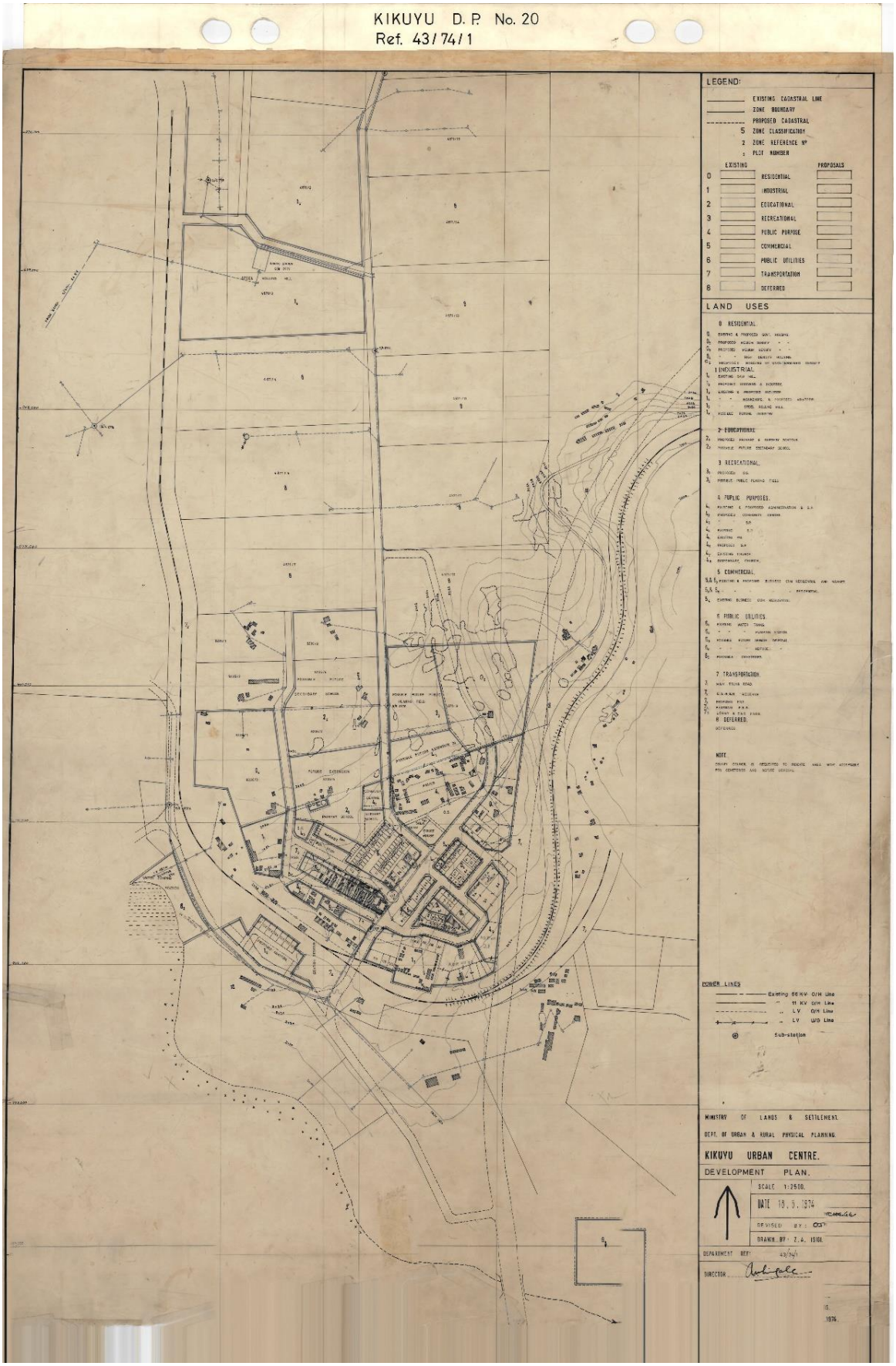
Table 2-11: Relevant CIDP Strategies

Sectors	Strategies
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.
Energy, Infrastructure and IT	• Supporting ICT infrastructure development hence ensuring efficiency inaccessibility; • Creating incentives for service providers to deploy services in rural and underserved areas; and • 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 portable 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 in the hospitals by equipping the health centres, increasing the number of staff as well as the number of health centres.

Source: Kiambu CIDP, 2013

2.8.3 Kikuyu Development Plan, 1974

The only previous planning intervention in the planning area is the Development Plan of 1974.



Map 2-6: Kikuyu Development Plan of 1974

2.9 Cluster Potential

While pointing out to the lack of an integrated approach to development in the NMR, the Spatial Plan 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 Consultant's terms of reference have got some economic logic. 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 the 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 region 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 workforce 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 a major impact 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 illustrates the assessment for adopting a cluster-based planning strategy.

Table 2-12: Assessment for adopting 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.
	Ruiru	Small and Medium-Scale Businesses, Agriculture, Industry including Jua Kali.	Education, Real Estate.	
	Nairobi-Thika	Education, Transport, Real Estate.	Education, Real Estate, Agro-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.

Cluster No.	Town/ Corridor	Existing Economic Activities	Identified Economic Planks	Economic Clustering Potential
	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: Spatial Planning Concept for NMR

PART II: SITUATIONAL ANALYSIS

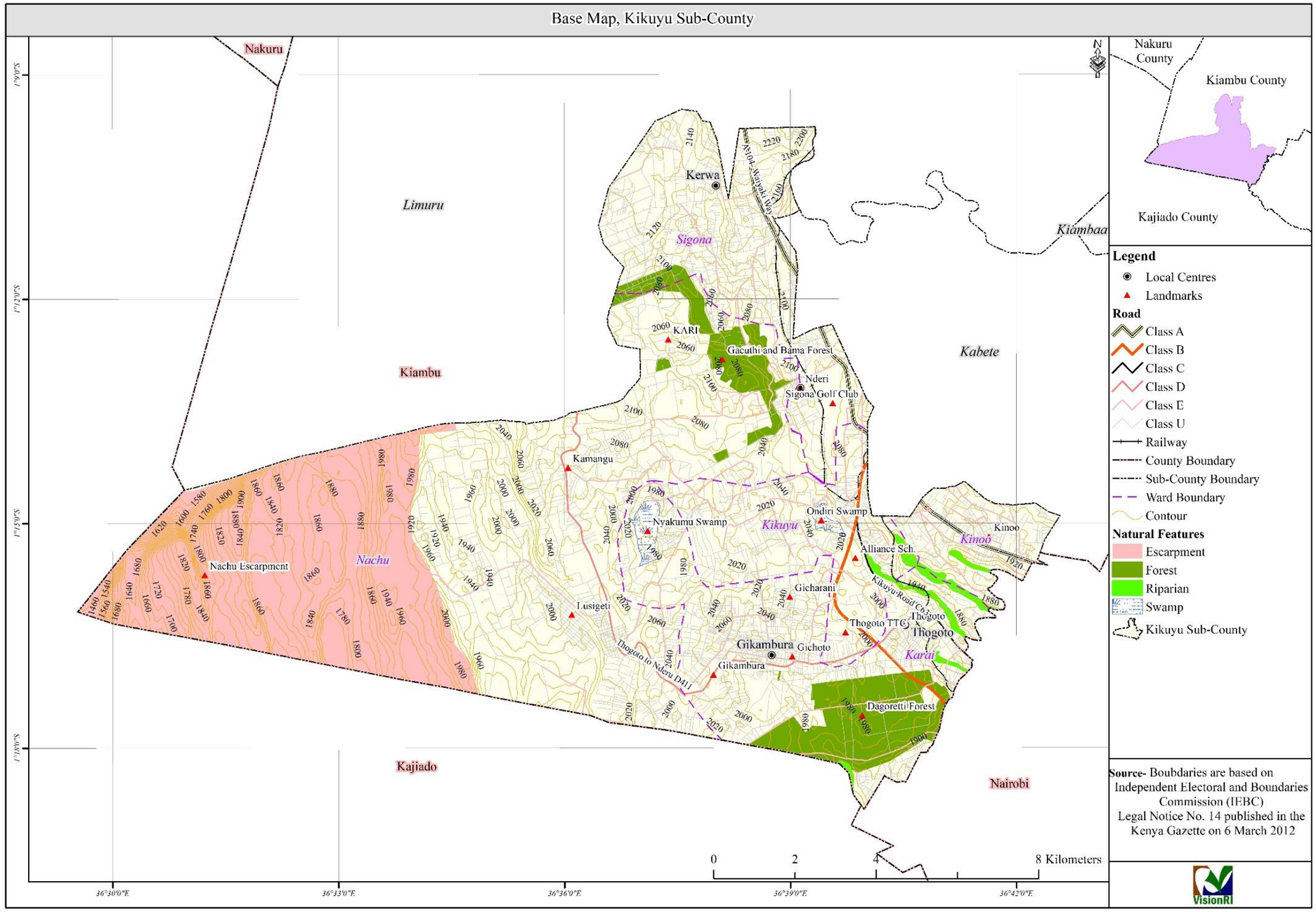
3. PHYSIOGRAPHIC CHARACTERISTICS

3.1 Overview

The Kikuyu planning area is located within Kikuyu Sub-County at the southwestern portion of Kiambu County. The planning area is bordered to the north by Gatimu Sub-location, which is within Limuru Central Ward of Limuru Sub-County. To the east, the planning area is bordered by Kabete Sub-County specifically the sub-locations of Muguga, Gitaru, Kanyariri and Uthiru. To the south lies Kibiko Sub-location (part of Kajiado West Sub-County) and Kerarapon (part of Kajiado North Sub-County) in Kajiado County. Nairobi City defines the planning area's South-Western boundary and Kikuyu Town. The planning area's traditional urban centre, located about 20km northwest of Nairobi city. It is located at the lower eastern slopes of the Aberdare range with Kikuyu Town having an elevation of about 1,700m above sea level. It has a total land area of approximately 17,149.35 hectares, which comprises the entire Kikuyu Sub-County.

3.2 Base map

The base map of the entire planning area is, presented in Map 3-1.



Map 3-1: Kikuyu Sub-County Base Map

Source: VisionRI

3.3 Topography and Landforms

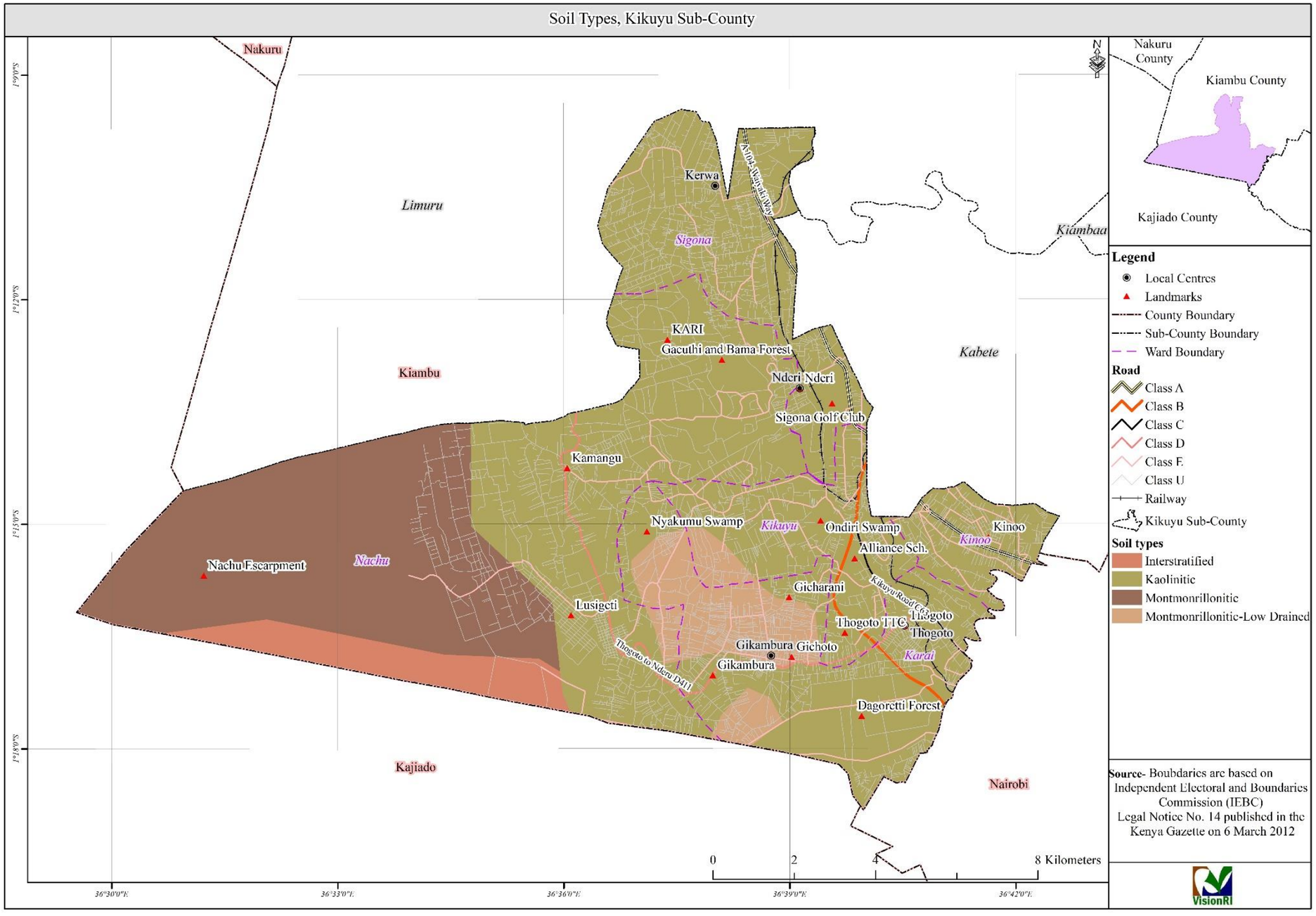
The planning area lies within the Kikuyu Highlands and has rich, well-drained volcanic loam soils that support crop farming. It lies in relatively higher elevation at an altitude of about 1,700m above sea level. The planning area is generally characterised by gentle to steep slopes and valleys. The central and southern portions of the planning area are forested. Muguga Forest is found at the Kari-Sigona area while Dagoretti Forest is located at the Gitiba area.

3.4 Geology & Soils

The planning area is characterised by volcanic rocks underlain by Kapiti phenolate, below which lies the basement system. Volcanic rocks are characterised by good water capacity, which is associated with adequate water recharge. The soils comprise of welded tuffs and sediments, which are mainly underlain by Kerichwa Valley Series. Varied zones within the planning area are underlain by Nairobi Trachytes which overly Nairobi Phonolites. Nairobi phonolites layers underlain by Mbagathi Trachytes interbedded with the Athi tuffs and Lake Beds of the Upper Athi Series.

Soil pollution is a key environmental challenge within the planning area. This is mainly because of the use of fertilisers and chemicals in farmlands and plantations, which has led to soil poisoning hence interruptions of the natural and productive soils. The addition of artificial fertilisers interferes with soil nutrients and soil structure. Soil pollution affects underground water when chemicals leach and surface water is affected when run-off is experienced during rainfall[1].

[1] DeKimpe & Morel, 2000



Map 3-2: Kikuyu Sub-County Soil Map

Source: VisionRI

3.5 Hydrology

Surface water bodies in the planning area include major rivers namely, Nyongara, Mbagathi, Nairobi, Githaturu and Mweteta Rivers. Within the planning area, 90% of people use pit latrines while only 10% of the population, which are mostly located in Muthiga, Kinoo, Kikuyu Town and other areas along Nakuru Highway, use septic tanks. The planning area lacks a proper sewer infrastructure; this leads to the discharge of wastewater into the rivers leading to pollution of water bodies.

Kikuyu area is a net groundwater recharge zone. Groundwater contribution to water demand in Kikuyu is about 13,855 m^3/day. Discharge takes place at the eastern and southern fringes through base flow in rivers, which originate from the area, the Kikuyu springs, Nyakumu swamp and Ondiri Swamp[2]. Ondiri wetland is a swamp with bog-like characteristics. It covers an area of approximately 30 ha, is 2 to 3 metres deep with a perimeter of about 3.3 km. The swamp is located about 200 metres from Kikuyu Town.

Some of wastewater discharge pipes from various facilities are oftentimes connected alongside pipes supplying clean water that is being managed by the Kikuyu Water Company (KIWACO). There are numerous boreholes sunk in the area, particularly through the volcanic rocks. Within the planning area, the boreholes sited on volcanic areas are more successful than those sited in Basement System rocks are.

Water pollution is a key challenge for households that cannot afford to buy potable water for drinking and other domestic uses. Other causes of water pollution within the planning area include:

- Open sewers and poor drainage system that overflow into rivers during mild floods;
- Use of riparian areas as dumpsites;
- Use of chemical fertilisers in agricultural areas; improper disposal of industrial waste such as, amongst others, lubricating agents, lead-acid batteries and metal alloys, and waste from quarries; and
- Soil erosion through anthropogenic activities such as livestock keeping. To mitigate wastewater disposal challenges, the County Government of Kiambu engaged the services of technical experts to design a sewer system to serve the Kikuyu area.

3.6 Vegetation

Kikuyu is characterised by a variety of vegetation cover. Tree species reported to be dominant are as follows: Azadirachta indica, Calliandra calothyrus, Senna siamea, Casuarina equisetifolia, Croton megatocepus (Mukinduri), Prunus africana (Muiri), Cupressus lusitanica, Eucalyptus species, Ficus species, Grevillea robusta, Mangifera indica, Moringa oleifera, Senna siamea, Sesbania sesban, Terminalia brownie, Schefflera actinophylla, and Spathodea camulanata, amongst others.

Muguga and Dagoretti forests are the two protected areas in Kikuyu. Muguga Forest is located in the Kari-Sigona area and hosts the Kenya Forest Reservation Institute and Kenya Agricultural Research Institute while Dagoretti Forest is located in Gitiba. Dagoretti Forest actually joins with Embakasi Forest located south of the planning area. Muguga forest reserve covers over 225.3Ha

[2] Feasibility Study and Master Plan for Developing New Water Sources for Nairobi and Satellite Towns – Master Plan Report

of both indigenous and exotic tree species and supports over 40,000 persons in neighbouring villages of Kerwa, Nderi, Kikuyu, Thigio, and Karai-Ndeiya.

3.7 Wildlife

Kikuyu is situated within an area predominantly agricultural, whereby human activities have altered the natural habitat of wildlife over the years. Consequently, there are no major animals in the environs except birds, insects, and small rodents.

3.8 Climatic Conditions

3.8.1 Rainfall

The rainfall is bimodal, with long rains occurring in April and May and short rains during the months of October and November. The average annual rainfall is 1500 mm. The long rains within the planning area lie between mid-March and May followed by cold season while the short rains occur between mid-October and November. This rainfall pattern is optimal for settlement and development. The average rainfall is shown in Figure 3-1.

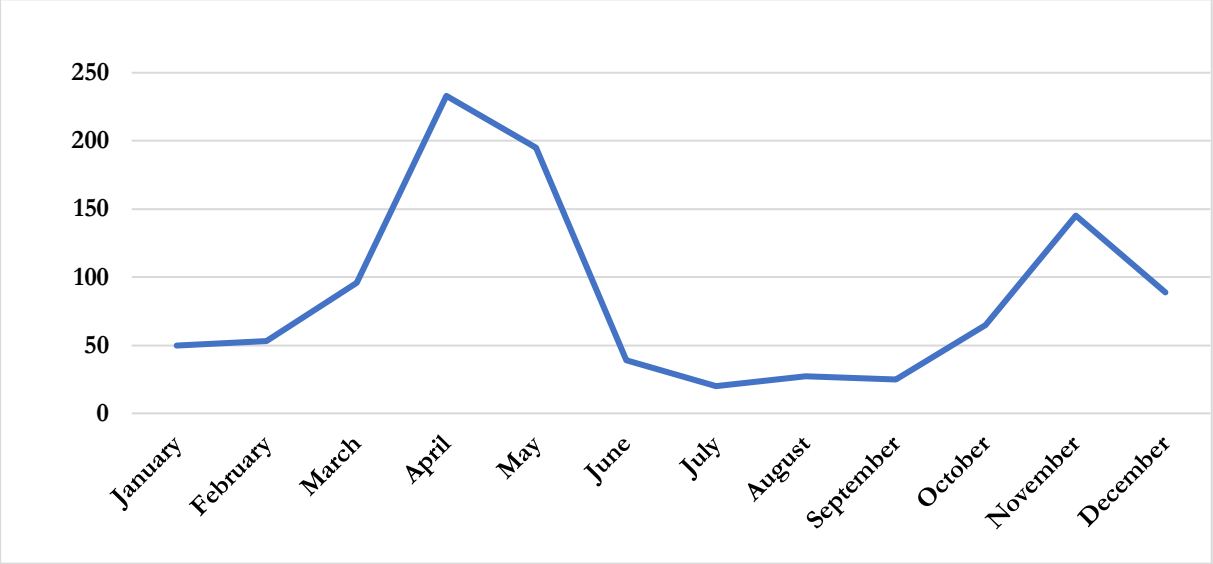


Figure 3-1: Average Rainfall in Kikuyu

Source: Kenya Meteorological Department (kmddl.meteo.go.ke)

3.8.2 Average Winds

The planning area has its wind speeds ranging from 6.4 miles per hour to10.4 miles per hour. This implies that the average speed of wind within the planning area lies at 8.4 miles per hour. Highest wind velocities are experienced between September and April. The potential for wind power generation has not been analysed for this area.

3.8.3 Evaporation

Evaporation rates in Kiambu County range from 1500 to 2000 mm per year (Dagg and Woodhead, 1970).

3.8.4 Relative Humidity

The relative humidity is defined as the amount of water vapour present in the air, which is usually expressed as a percentage of the amount needed for saturation at the same temperature. The average humidity of Kikuyu planning area lies at 42 per cent.

3.8.5 Temperature

The area has a mean annual temperature of 26ºC, which ranges between 20.4ºC in the upper highlands to 34ºC in the midlands of Karai in Kikuyu division. Low temperatures are experienced in July and August while January, February and March are the hottest months. Temperature ranges in the planning area are indicated in Figure 3-2. This average temperature is sufficient for solar power generation in the Sub-County.

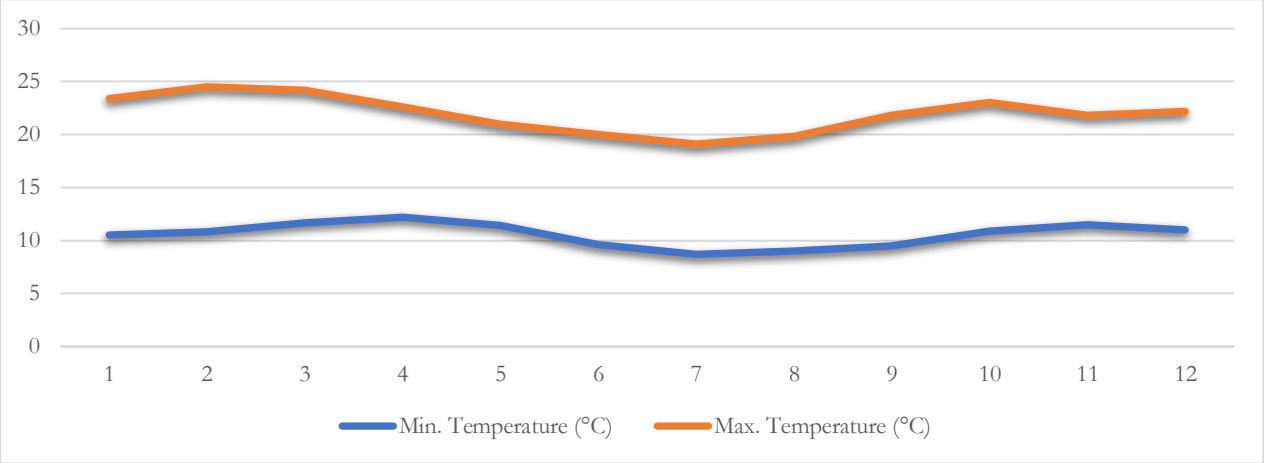
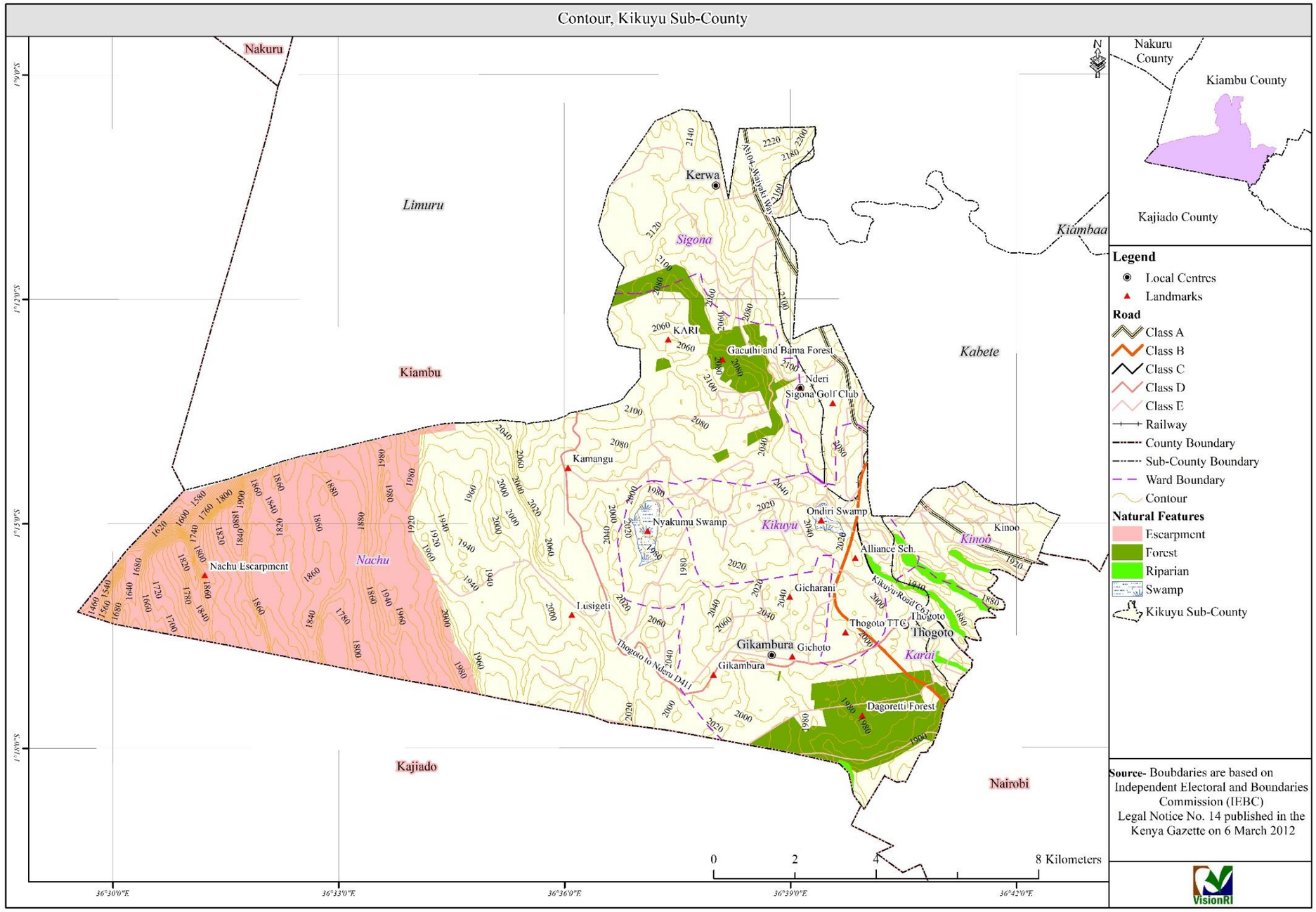


Figure 3-2: Temperature range in Kikuyu

Source: Kenya Meteorological Department (kmddl.meteo.go.ke)



Map 3-3: Contour Map

Source: VisionRI

3.9 Air Quality

Air quality in Kikuyu is generally within acceptable standards. Air pollution is due to increased motor vehicle traffic and emission from processing factories located in Kikuyu town, and dust from quarries. The term air emissions or air pollution describes the phenomenon of health hazardous gases and particles, which are put into the air or emitted by various sources. The sources within the planning area could be mobile (e.g., cars, trucks, buses) or stationary (e.g., power plants such as electric generators, factories, refineries etc.), as well as indoor sources (e.g. some building materials mainly asbestos and cleaning solvents). The components of the emission include carbon dioxide (CO_2), carbon monoxide (CO), lead (Pb), nitrogen dioxide (NO_2), ozone (O_3), particulate matter (PM), and sulphur dioxide (SO2). Air pollution is also caused by emissions from lighting sources. The major lighting source within the planning area is paraffin that consists of greenhouse gases, such as Carbon IV oxide, which pose risks not only to the locality but to the globe (Kiambu County Integrated Development Plan, 2013-2017). The emission parameters that should be regularly monitored are as follows: Sulphur dioxide (SO_2), carbon dioxide (CO_2), carbon monoxide (CO) and nitrogen dioxide (NO_2). An environmental concern regarding the exposure of people to air pollutants at higher concentrations and longer durations is the potential of developing health complications. It is therefore imperative that Air Emission Pollution levels are constantly monitored by the relevant institutions (NEMA and County Government) and the necessary mitigations put in place, should they be found to be above permissible levels.

3.10 Noise Levels

According to NEMA regulations on Noise and Excessive Vibration Pollution (Control) Regulations, 2009, noise means any undesirable sound that is intrinsically objectionable or that may cause advance effects on human health or the environment. Noise pollution means the emission of uncontrolled noise that is likely to cause danger to human health or damage to the environment. Noise pollution in the planning area emanates from; automobiles such as public vehicles (matatus), lorries, excavators and trains; and large scale posho mills, amongst others. Noise is also seen to emanate from; crusades, bars and business premises that play loud music and other entertainment joints. The other sources of noise can be classified to include Radio, TV, other sound-amplifying devices, Parties and social events, Hawkers, peddlers, touts, street preachers, Machinery, Construction at night, Noise from construction, demolition.

3.11 Key Planning Issues

Table 3-1: key planning issues on physiographic characteristics

Key Highlights	Opportunities
Planning area lies within the Kikuyu Highlands and has rich, well-drained volcanic loam soils.	Good soil for crop farming.
The planning area is characterised by volcanic rocks underlain by Kapiti phenolate.	Adequate water recharge.
Soil erosion prevalent in the planning area.	
Location of Ondiri Swamp, Nyakumu swamp and Kikuyu springs in the planning area.	Conservation of the wetlands and use for tourist attraction.

Source: VisionRI

4. ENVIRONMENT, CLIMATE CHANGE AND DISASTER RISK REDUCTION

4.1 Overview

Kikuyu Sub-County is located within the lower midland topographical zone of Kiambu county, which lies between 1200-1360 Metres above sea level. The soils in the area are dissected and easily eroded. Kikuyu is known for its steep slopes and escarpment in Nachu, which are unsuitable for cultivation.

4.2 Natural Environment, Climate Change and Disaster Reduction

4.2.1 Land

A bigger area of Kikuyu Sub-County has very fertile land suitable for various agricultural activities practised in the planning area, apart from the escarpment in Nachu. The land is the primary natural resource supporting agriculture as a major economic driver for the Sub-County. The area practices both commercial and subsistence agriculture, growing major crops including maize, Irish potatoes and beans.

4.2.2 Water Resource

The main surface water bodies in Kikuyu Sub-County are rivers like Mbagathi and Nyangara, Nairobi, Githaturu and Mweteta rivers. Groundwater is from Nyakumu swamp in Karai ward, Ondiri swamp and Kikuyu springs in Kikuyu ward.

4.2.3 Forests and Vegetation

The Sub-CountySub-County has both natural/indigenous forests and planted forests. There are three natural forests in Kikuyu Sub-County including Dagoretti, Muguga, Gacuthi and Bama forests.

4.2.4 Ecological Sensitive areas

Environmentally sensitive areas include all areas that require special protection due to their natural characteristics, landscape form, historical value as well as wildlife component. Policies and strategies are often well laid out to ensure adequate protection of environmentally sensitive areas in varied zones. Urban growth should be planned and guided to safeguard the environment. This calls for the protection of environmentally-sensitive locations such as the Nyakumu swamp in Karai, Ondiri swamp and Kikuyu springs in Kikuyu as well as Dagoretti, Muguga, Gacuthi and Bama forests. Surface water bodies in the area like Nyongara, Mbagathi, Nairobi, Githaturu and Mweteta Rivers are also prone to pollution due to lack of sewer infrastructure that leads to the discharge of wastewater into the rivers.

The riparian reserves should entail a 30 m buffer on both sides of the rivers. The buffer zones should be provided to create physical distances between environmentally sensitive areas and high-density urban developments. This could be achieved by modelling the planning area to have high-density areas within the growth nodes, which graduate into lesser densities towards environmentally-sensitive areas. It is also important to establish "urban limits" such that urban

sprawl will not fully overrun the remaining open agricultural areas thus losing valuable urban open space. Urban growth should, as much as practicable, be confined to strategic and suitable locations.

4.2.5 Greenery and open spaces

Green open spaces are important elements of the built environment. Such spaces provide a breakaway space for recreation/leisure and help to sequester the carbon for a cleaner atmosphere. The planning area is near Nairobi and there are chances that many of the people who live there and require sports and recreation facilities may be using those in Nairobi. Play and picnic for the family are becoming common practice for the modern family in Kenya's urban areas. For this to happen there is a need for public parks that are clean, secure and spacious. These spaces will be the backbone of social life in urban areas in the coming years and should be included in urban and regional plans. Kikuyu Town has a very small park located in the town centre that hardly host more 100 people, thus defeating its use as a park. There are no playgrounds around the planning area. However, there are notable large Open Spaces, such as Ondiri swamp abutting the CBD, one park/open space at the heart of the CBD and pocket opens spaces found in the low-density residential development zones surrounding the CBD.

4.2.6 Adaptation to Climate Change

Climate is the average weather conditions of a given location observed over a period (at least 30 years). Climate plays an important role in many socio-economic and environment activities since it determines the space-time distribution of the world's resources; about 90 per cent of all-natural disasters world-wide are climate-related; and about 10 per cent of the disasters often emanate from geological, biological and technological/anthropogenic activities.

Transformation of many parts of Kikuyu from agricultural to build up zones has led to low water seepage during rainy seasons sue to concrete surfaces resulting in floods. In cases where heavy downpour is experienced, if the situation is not curbed, flooding would lead to loss of property and deaths.

Kikuyu is characterised a relatively steep topography having encroachment into the riparian reserve this could lead to future risks of landslides. This could lead to massive destruction of both life and property.

The effects of climate change including but not limited to:

- Unpredictable weather patterns, including rainfall;
- Flooding and displacement of people from flood-prone areas;
- Droughts;
- Short rainy seasons and prolonged dry spells during rainy seasons;
- Drying up of rivers and lakes;
- Water scarcity; and
- Declining flora and fauna, and declining rare natural species.

4.3 Disaster Incidents

4.3.1 Disaster Risk Reduction and Management

Disasters disrupt people's livelihoods, destroy the infrastructure, divert planned use of resources, interrupt economic activities and retard development. Therefore, disaster management is a

planned, deliberate, organised, directed and visualised effort to mitigate, prepare for, respond to and recover from a disaster or emergency or its effect.

Disaster preparedness involves an integrated combination of planning, training personnel qualification, drills, acquisition of equipment and standard certification. Disaster responsive strategic plans provide mechanisms and systems for setting priorities, integrating and linking required stakeholders in line with their functions, and ensuring that communications and other systems are available and integrated in support of a full spectrum of incident management requirements.

The overarching legislation According to Kiambu CIDP 2018-2022, disaster management and special programmes is under the Department of Administration and Public Service. The core functions of this unit are:

- To improve disaster preparedness and management services;
- To enhance safety;
- To increase resilience; and
- To build a more sustainable society.

In Kikuyu Sub-County, the main disasters were found and categorised into two major types:

Natural disasters:

- Floods – experienced along river lines and when stormwater drains get blocked during heavy rains;
- Droughts and famine – around Nachu on the west of the Sub-County;
- Landslides – on steep and hilly areas such as Karai; and
- Wind storms – blowing off roofs from schools in Nachu area.

Man-made disasters:

- Fires – These have been reported in institutions, commercial areas and in homes;
- Road accidents – along major highways and roads in urban and peri-urban areas;
- Drugs and substance abuse – mostly alcohol and drug abuse amongst the youth; and
- Collapse of buildings – Owing to poor construction standards.

4.3.2 Analysis of Disaster Risk Reduction

Based on Kiambu's County Annual Development Plan 2018/19, the table below shows a SWOT analysis of DRR management in Kikuyu Sub-County.

Table 4-1: SWOT Analysis of Disaster Management and Resilience

Strengths	Weakness
• Existence of the disaster management committee and emergency funds • Good road networks • Presence of good health facilities; • Existence of traffic rules and regulations	• Poor road maintenance; • Poor enforcement of traffic rules and regulations; • Poor disaster management skills; and • Lack of disaster warning signs.
Opportunities	**Threats**
• Presence of programmes and funding agencies on disaster management; • Draft Disaster Management Policy.	• Increased population; • unpredictable weather; • Global warming and climate change; and • Quarrying.

Source: VisionRI

4.3.3 Emerging Environmental Issues

Urban consumption of energy helps create heat islands that can change local weather patterns and weather downwind from the heat islands. The heat island phenomenon is created because cities radiate heat back into the atmosphere at a rate of 15 per cent to 30 per cent less than rural areas. The effect of urban heat island in Kikuyu is an aspect that needs to be considered.

Urban areas affect not only the weather patterns but also the runoff patterns for water. Urban areas generally generate more rain, but they reduce the infiltration of water and lower the water tables. This means that runoff occurs more rapidly with greater peak flows. The aspect of increasing coverage of paved surfaces needs to be reconsidered not to increase runoff in the urban area.

Use of GIS to inform management of the urban environment. GIS can be used most effectively for environmental data analysis and planning. It allows better viewing and understanding physical features and the relationships that influence in a given critical environmental condition. Factors, such as the steepness of slopes, aspects, and vegetation, can be viewed and overlaid to determine various environmental parameters and impact analysis.

Digital information can be overlaid on photographs to provide environmental data analysts with more familiar views of landscapes and associated data. GIS can provide a quick, comparative view of hazards (highly prone areas) and risks (areas of high risk which may occur) and areas to be safeguarded.

On completion of data analysis, GIS can help in effective planning and managing environmental hazards and risks. In order to plan and monitor the environmental problems, the assessment of hazards and risks becomes the foundation for planning decisions and mitigation activities. GIS supports activities in environmental assessment, monitoring, and mitigation and can also be used for generating environmental models. GIS can aid in hazard mitigation and future planning, air pollution & control, disaster management, forest fires management, managing natural resources, wastewater management, oil spills and its remedial actions etc.

4.3.4 Key Planning Issues

Table 4-2: Key planning issues on the Environment, Climate Change, and Disaster Risks

Key Highlights	Opportunities
Endangered natural resources. The Sub-CountySub-County has important natural resources such as Ondiri Swamp and Nachu escarpment, whose potential has been underestimated and under-exploited.	The natural resources to tap into the tourism industry hence promotion of the local economy; and Sustainable exploitation of natural resources such as building stones and sand.
Encroachment of human activities on riparian and open spaces	Protection of riparian reserves through the creation of buffer zones.
Rivers are also prone to pollution due to lack of sewer infrastructure that leads to the discharge of wastewater into the rivers.	Provision of a sewer line in the planning area.

Source: VisionRI

5. POPULATION AND DEMOGRAPHY

5.1 Population Size

5.1.1 Population Distribution and Density

According to the Kenya Population and Housing Census, the current population of Kikuyu is 323,881. This represents a 66.2% growth from the 2009 population of 109,477[3]. Kikuyu's growth will steadily increase owing to the improvements in the transportation systems and upcoming urban nodes in the hinterlands e.g. Lusingetti, and Gikambura. Kikuyu sits at an extremely strategic location, served by the main A109, the Southern By-pass, the Commuter Rail line and the 17km dual carriage Western By-Pass. This will as well encourage demand for land along the Gitaru Road, creating the required impetus for population growth, albeit at a slowed pace compared to Ruiru and Juja Sub-Counties.

Table 5-1: Historical Growth of Population

Wards	2009	2019	Growth %
Karai	9001	23661	62.0
Lussigetti	6526	16704	60.9
Nachu	5028	6213	19.1
Kerwa	14866	21635	31.3
Kikuyu	30854	176344	82.5
Thogoto	16120	30624	47.4
Kinoo	27082	48700	44.4
Total	109477	323881	66.2

Source: KNBS Kenya Population & Housing Census 2019

The population densities for the various wards in the planning area are shown in the table below.

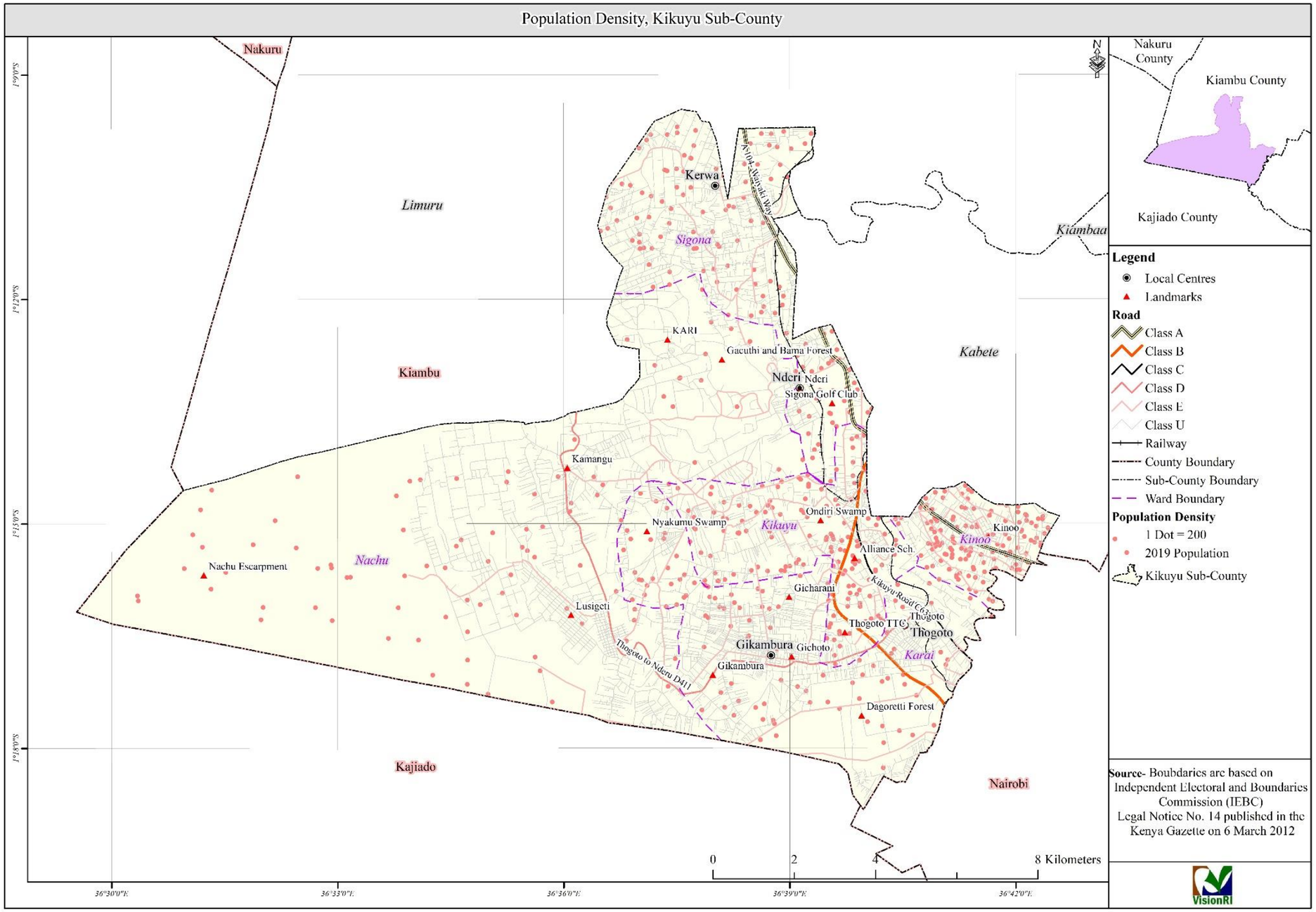
Table 5-2: Population Density by Ward

Wards	Area Sq. Km	Density Persons per Sq. Km	Total
Karai	16.8	1408	23,661
Lussigetti	21	795	16,704
Nachu	59.3	105	6,213

[3] 109,477 is the accounted Ward population based on the data provided in the 2009 KNBS KPHC Report Volume 1B

Wards	Area Sq. Km	Density Persons per Sq. Km	Total
Kerwa	31.2	693	21,635
Kikuyu	20.4	8644	176,334
Thogoto	17	1802	30,624
Kinoo	7.2	6807	48,700

Source: Based on KNBS, 2019 Census Report



Map 5-1: Kikuyu Population Density Map

Source: VisionRI

5.1.2 Population structure

According to the Kenya Population and Housing census 2019, the average household size for in Kikuyu was 3.7. The household size of 1 - 2 persons per household is 22%, 3 - 4 persons is 26%, 4-5 persons is 29%, and above 7 persons per household is 23%. In terms of structure, the population of the planning area is generally youthful.

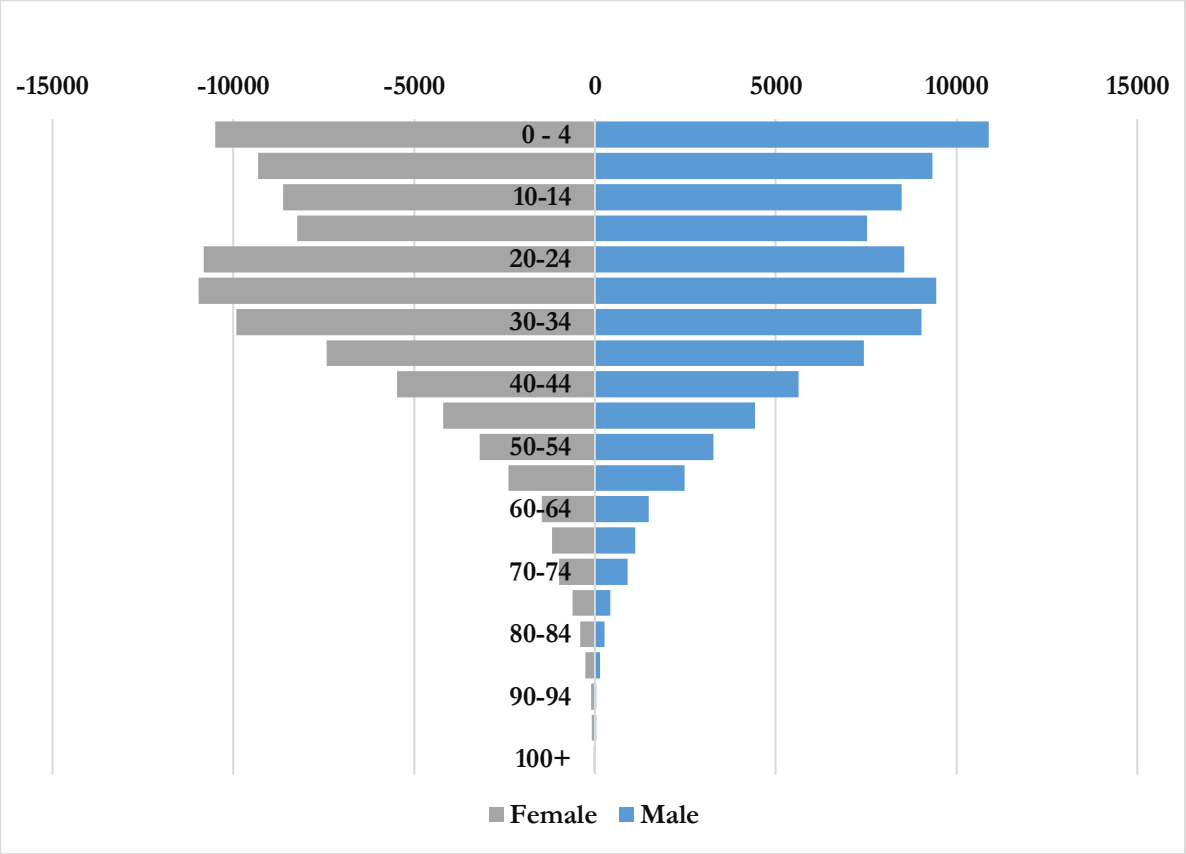


Figure 5-1: Kikuyu's Population Structure

Source: Based on the 2019 Kenya Population and Housing Census Report

Table 5-3: Population Structure of Kikuyu in 2019

Age	Male	Female
Kikuyu	90,919	96,198
0 - 4	10,893	10,494
5-9	9,332	9,311
10-14	8,476	8,629
15-19	7,520	8,241
20-24	8,548	10,816
25-29	9,443	10,962

Age	Male	Female
30-34	9,028	9,913
35-39	7,445	7,423
40-44	5,624	5,472
45-49	4,434	4,193
50-54	3,282	3,181
55-59	2,482	2,385
60-64	1,480	1,472
65-69	1,112	1,194
70-74	903	984
75-79	424	616
80-84	265	413
85-89	144	265
90-94	44	111
95-99	32	86
100+	8	35

NB: The 5-person difference in the population has been factored in as Intersex in the 2019 Kenya Population and Housing Census Report

5.1.3 Population Projections

The planning area's population is expected to grow from 323,881 in 2019 to 431,678 by the end of the planning period in 2030 at a steady annual growth rate of 2.49% as shown in the table below. The population projections are based on the inter-censual population growth recorded between 2009 and 2019, as guided by the data provided by KNBS reports.

Table 5-4: Projected Population, 2019 to 2030

Wards	2019	2030
Karai	23661	38,321
Lussigetti	16704	26,882
Nachu	6213	7,398
Kerwa	21635	28,404
Kikuyu	176334	215,227
Thogoto	30624	45,128
Kinoo	48700	70,318

Wards	2019	2030
Total	323881	431,678

Source: Based on KNBS, 2019 Census Report

5.2 Demography

The main driver for Kikuyu's growth is attributed to its proximity to Nairobi, the presence of good transportation links and vibrant growth nodes. Although it is viewed as a dormitory region, Kikuyu provides affordable land for residential development, creating a huge demand for commercial and residential land use investment.

5.2.1 Fertility and Birth Rates

Fertility is defined by the total number of live births a woman can have during her productive years. It is influenced by factors including the age of sexual debut, access to education, social practices including FGM, teen pregnancy, health factors and access to contraceptives. Contextually, Kiambu County has one of the lowest fertility rates in the country at 2.7 compared to a national figure of 3.9 per woman. In 2009, the County's age-specific fertility rate for girls aged between 15 – 49 years was at 47 births per 1000 girls which is half the national rate of 96. Kiambu County has the lowest fertility rates in the County. Cascaded at Sub-County level, these statistical rates influence the fertility rates of Kikuyu and continue to have a bearing on its future growth.

The following table represents important demographics.

Table 5-5: Demographic

Particulars	Status
Total fertility	2.7
Mortality rate = infant mortality rate (per 1000 live births)	33.9
Mortality rate = under-five mortality rate (per 1000 live births)	72
Life expectancy = 63.55 Years	63.55
kikuyu's Age-sex ratio (Male to Female)	1:1.04
Children below 1 year = KIKUYU	21,387

Source: KNBS 2019 Population Census

5.2.2 Fertility rate

This is described as the total number of live births a woman has during her productive years, which is between 15 – 49 years or 12- 49 years for international and Kenyan standards, respectively. According to (KNBS, 2012), the national Total Fertility Rate (TFR) was at 6.7 children in 1989 and 4.8 children in 2009. This drop was largely contributed by the use of contraceptives and late marriages. In the case of our planning area, we see the population increases at a rate of 2% - 2.2% people per annum. This means that the population has been growing at a very slow pace. Much as the women have been very fertile, the population growth and fertility rate have significantly dropped. The positive impact of the drop is that there will be a steady urbanisation rate in the future, while the most dominant-negative effect is that; the population will be comprised of an increased number of older people than the youth, thus decreasing the human labour as a source of production. The following table shows the Crude Birth Rate and Total Fertility rate of Kiambu County.

Table 5-6: Crude Birth Rate and Total Fertility rate, Kiambu County

	1989- 1999	1999- 2009	1989- 2009	Adjusted 2009
Crude Birth Rate	32.7	30.4	-2.4	38.7
Total Fertility Rate	3.4	3.2	- 0.2	3.2

Source: Based on KNBS, 2009 Census Report

5.2.3 Migration Trends

Kikuyu planning area has experienced rapid urbanisation because of the close proximity to Nairobi, the capital city of Kenya. Urban growth has been driven by demand for residences following the rent-seeking behaviour of the property market. The relatively cheaper cost of development in the Kikuyu planning area as compared to Nairobi city, supplemented by convenient road access, has made it an attractive area for the construction of owner-occupied housing or rental units. In turn, this has made Kikuyu be a dormitory town serving Nairobi City.

The relative location of the Kikuyu planning area to Nairobi city has made it an attractive location for residential and industrial developments. This has led to lower cost and availability of land coupled with the expansion of infrastructures and opening up of new frontiers. Urban growth has transformed the planning area's predominantly agricultural economy to one that has a strong service and industrial base. This is evidenced by increased migration of people to new areas opened up by the new roads built by the government. Completion of the southern bypass in the planning area led to the massive immigration of people in buying land within the planning area. This led to the development of community facilities and the growth of the commercial centre.

According to 2009 census, Kikuyu had a population of 125,402 hence the third largest urban centre in the NMR, next only to Nairobi city having 3,133,518 and Ruiru having 238,858. Nonetheless, its population size during the same period is about 13 times lesser than that of Nairobi city is, which highlights the primacy of the latter within the NMR. Kikuyu's annual population growth rate of 4.13% could be considered mid-range as the town only ranked 13th amongst the NMR's 24 urban centres. The planning area's urban growth might have been influenced by the two forests and the difficult terrain resulting in Nairobi city's growth towards the north and the south. To the north, Juja's population growth rate lied at 21.01%. Towards the southwest, the population growth rate of Mavoko was 17.76% and Kitengela had 20.09%.

During these transformation processes within the planning area, appropriate urban planning and management schemes were considered. In turn, this has manifested itself within the planning area in form of the inadequate provision of physical and social public infrastructure, environmental degradation and land speculation, amongst others.

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 the; 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 (Kelley, 2016), the average life expectancy was 52.81 years in 1999; while in 2009 the average life expectancy was at 57.80 years. The current statistics show that the average population can live up to an average of 63.4 years. In the current century, women are expected to live up to an average of 65.8 years while the men live up to an average of 61.1 years. The increase in life expectancy is attributed to an improvement in the people's health. Quality health care has been provided to the people by the government as well as the private sector and the people generally take healthy food in Kikuyu Sub-County.

5.2.6 Age-sex ratio

The sex ratio is the ratio of males to females in a population. In Kikuyu Sub-County, the age-sex ratio of the male to the female population as per the 2009 census is 1:0.98. This shows that the female population of Kikuyu Sub-County is slightly higher than the male population. This difference is expected to grow gradually if the life expectancy of the female population continues to be higher than the males in the future.

5.3 Social Analysis

Heritage sites and artefacts vary from one place to another. This helps people to relate the present to the past and future meaningfully. In Kikuyu planning area, there are two main heritage sites – Thogoto Forest at the source of Mbagathi River and the big mugumo (ficus natalensis or ficus thonningii) tree of Thogoto. The source of the Mbagathi River in Thogoto Forest is considered sacred and it was reported that the Mungiki sect adherents use the site for baptism and initiation to the sect. Old Kikuyu men also consider the big mugumo tree in Thogoto as sacred and whenever they have serious community matters to discuss, they do it there while drinking local brew and eating goat meat.

The underground caves dug by Indian coolies when constructing the Kenya-Uganda railway are also considered heritage sites. These caves are found just below the town under the railway facing Magana farm. Other sites include the graves of two explorers who were killed by lions in the 19th Century at Kanyariri, a few metres from where Fort Smith was situated; the Ondiri swamp which

is a stone's throw from the town's CBD and the PCEA Church of the Torch, the first building at Thogoto. The other cultural and heritage sites are Watson Memorial Chapel and Mensa Kikuyu.

5.4 Key Planning ISSUES

Table 5-7: Key planning issues on population and demography

Key Highlights	Opportunities
High population growth rate thus encroachment into public land by inhabitants.	Youthful and educated population.
Diverse population due to proximity to Nairobi.	Economic linkages to Nairobi City.
High educational achievement.	Good human resource base.

Source: VisionRI

6. LAND ANALYSIS

6.1 Overview

This section analyses land ownership/categories, land tenure systems, land administration, land use patterns, land availability & suitability, and land values/market in Kikuyu Sub-County.

6.2 Land Ownership/Categories

There are three types of land categories in Kenya as outlined in Article 61 of Kenya Constitution 2010 and the National Land Policy. They include; 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; public land which is held by the government or state organ; and community land which is held by a community on the basis of ethnicity, culture or other similar interests.

6.3 Land Tenure Systems

The land tenure system in Kikuyu Sub-County is mostly freehold. The only land under leasehold is Kikuyu town and a small part of Muguga (KPLC land). There is no clear documentation on the land tenure system.

6.4 Land Administration and Management

Land administration and management in Kikuyu Sub-County are handled by both the National Government and the County Governments. 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 and supporting land taxation and valuation. Land administration and management in Kenya is undertaken at two levels; at National level and County level.

The Kiambu County Land Management Board (KCLMB) is charged with managing public land. The functions assigned to the KCLMB include:

- Processing of transactions (allocate of public land, change of user, extension of user, sub-division of public land, renewal of the lease, the extension of lease) to be approved by the National Land Commission subject to physical planning and survey acts;
- Inspection of Public land allotment for adherence to planning requirements; and
- Encourage the use of alternative and traditional dispute resolution mechanism in land dispute amongst others.

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

Table 6-1: Land Administration and Management Actors

	Key Actors	Roles	Guiding Legislation
National Government	National Land Commission	• Amongst other functions of the National Land Commission, the main ones are: • Manage public land on behalf of the National and County Governments. • Monitor and have oversight responsibilities over land use planning in the country. • Alienate public land	Kenya Constitution 2010 Article 67 National Land Commission Act of 2012
	National Director of Physical Planning	• According to the Physical and Land Use Planning Act 2019, the Director has the following functions: • Advise government on strategic physical and land use planning matters • Formulate policies, guidelines and standards • 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. • 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	• Functions of the office include the following; • Establish and manage land control boards, • Process and approve development applications	Land Act of 2016 Land Registration Act of 2012

	Key Actors	Roles	Guiding Legislation
		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 • Document public land and preservation of fragile ecosystems e.g. wetlands and water catchment areas for purposes of conservation.	
	Principal Land Registrar/Chief Land Registrar	• Registers land titles, leases.	Land Registration Act of 2012 Community Land Regulations of 2017
County Level	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 County Government Act, 2012
	County Director of Physical Planning	• Develop sustainable strategies for urban and rural development and management. • Formulate, implement and review various policies in the Department • Promote and facilitate the development of decent housing • To achieve timely delivery of planning decisions on private sector and community development initiatives.	
	County Director of Survey	• Carry out a survey on public land. • Develop a Geographic Information System and Land Information System database for spatial data management • Provide efficient land and property management for effective county land documentation and land taxation;	County Government Act of 2012 Survey Act, 1961 (Revised 2012)

	Key Actors	Roles	Guiding Legislation
	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. • 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 • Advise county on new innovations in the land and planning sector.	Urban Areas and Cities Act, 2011 Physical and Land Use Planning Act, 2019 Physical Planners Registration Act, 1996 Land Act, 2012 (Amended 2016) Water Act, 2002
	Registered Land Surveyors	• Boundary confirmation • Beaconing of approved subdivision and amalgamation scheme • Amendment of RIM • Preparation of deed plans	Survey Act, 1961 (Revised 2012)

Source: VisionRI

6.4.1 Land Administration and Management Challenges

The land registry at the County is where all land transactions are recorded. However, the Registry is still operating on analogue platforms, which make access to land information difficult. Evidentially, there are gaps in management and administration legislation. These 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 the County; District Land Officer and the County; National Land Commission, County Government and the District Land Officer. This eventually leads to delays in the delivery of services related to land;
- Overlap of mandate between various land actors;
- 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 it lacks professional and technical representative well versed 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;
- The lengthy process of amalgamation, subdivision; change of user etc., leading to many people avoiding the process resulting into unplanned development;
- Poor 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, and all fairness has been observed, they do not proceed to the respective County Government Department to seek approval of that particular transaction. This leads to the uncontrolled subdivision of land and loss of revenue;
- Rate charging on agricultural land as caused a lot of resentment from the public; and
- Land-use planning has been a preserve of urban areas, hence negating rural and agricultural land resulting in subdivision and land uses, which lead loss of vital agricultural, forest and land uses.

6.5 Land Use Patterns and Trend Analysis

6.5.1 Land Use Patterns

The current land use inventory is as indicated in table 6-2.

Table 6-2: Land Use Inventory

User	Area in Hectares (Ha)	Percentages (%)
Residential		
Residential - High	2149.52	12.53%
Residential - Medium		
Residential cum commercial		
Total	2,149.52	12.53%
Industrial	73.31	0.43%
Educational	477.73	2.79%
Recreational	69.27	0.40%
Public Purpose	752.27	4.39%
Commercial	71.77	0.42%
Public Utility	3.54	0.02%
Transportation	763.12	4.45%
Conservation Areas		
Escarpment	3588.68	20.93%
Forest	1003.95	5.85%

User	Area in Hectares (Ha)	Percentages (%)
Riparian	25.72	0.15%
Water bodies	134.02	0.78%
Total	4752.37	27.71%
Agriculture	8,036.45	46.86%
Mixed Use	0.00	0.00%
Total	17,149.35	100%

Source: VisionRI

The general land use pattern of the planning area may be characterised as having a pronounced CBD at Kikuyu Town with linear urban growth along major roads. The CBD is located near the intersection of three major roads, namely Nairobi-Nakuru Highway, Kikuyu Road and Southern by-pass. There is also a railway line traversing the CBD. There are urban corridors radiating from the CBD, which follow the alignments of the three major roads.

Land use along the corridors are predominantly commercial. Low to medium-rise residential developments characterise the interior portions of these urban corridors such as may be found in Kinoo. The edges of the planning area are characterised by open and agricultural areas with low-density residential use. Muguga and Dagoretti forests are the two protected areas in Kikuyu. Muguga Forest is located in the Kari-Sigona area and hosts the Kenya Forest Reservation Institute and Kenya Agricultural Research Institute while Dagoretti Forest is located in Gitiba. Dagoretti Forest actually joins with Embakasi Forest located south of the planning area.

There is an educational hub located at the southern central portion of the planning area situated between Kikuyu Road and the Southern Bypass Road. The hub hosts University of Nairobi's Kikuyu Campus, Alliance Girls Highs School, and the Presbyterian University of East Africa. The area is also the site of the PCEA Kikuyu Hospital and Kikuyu Orthopaedic Hospital.

Incongruous developments within the planning area include:

- Industrial use near a residential area in Kikuyu Town brings issues about damaged roads, crowd control and environmental sanitation; and
- Urban growth, such as being experienced in Thogoto, results in environmental pressures in forest areas.

Figure 6-1: Section of Kikuyu CBD

Source: Field Survey 2015

Figure 6-2: Expanding the Urban Corridor in Dagoretti-Thogoto Forest

Source: Field Survey 2015

6.5.2 Trend Analysis

The planning area has undergone rapid development since the development plan of 1984 as depicted from the Google earth images of 1984 to 2020.

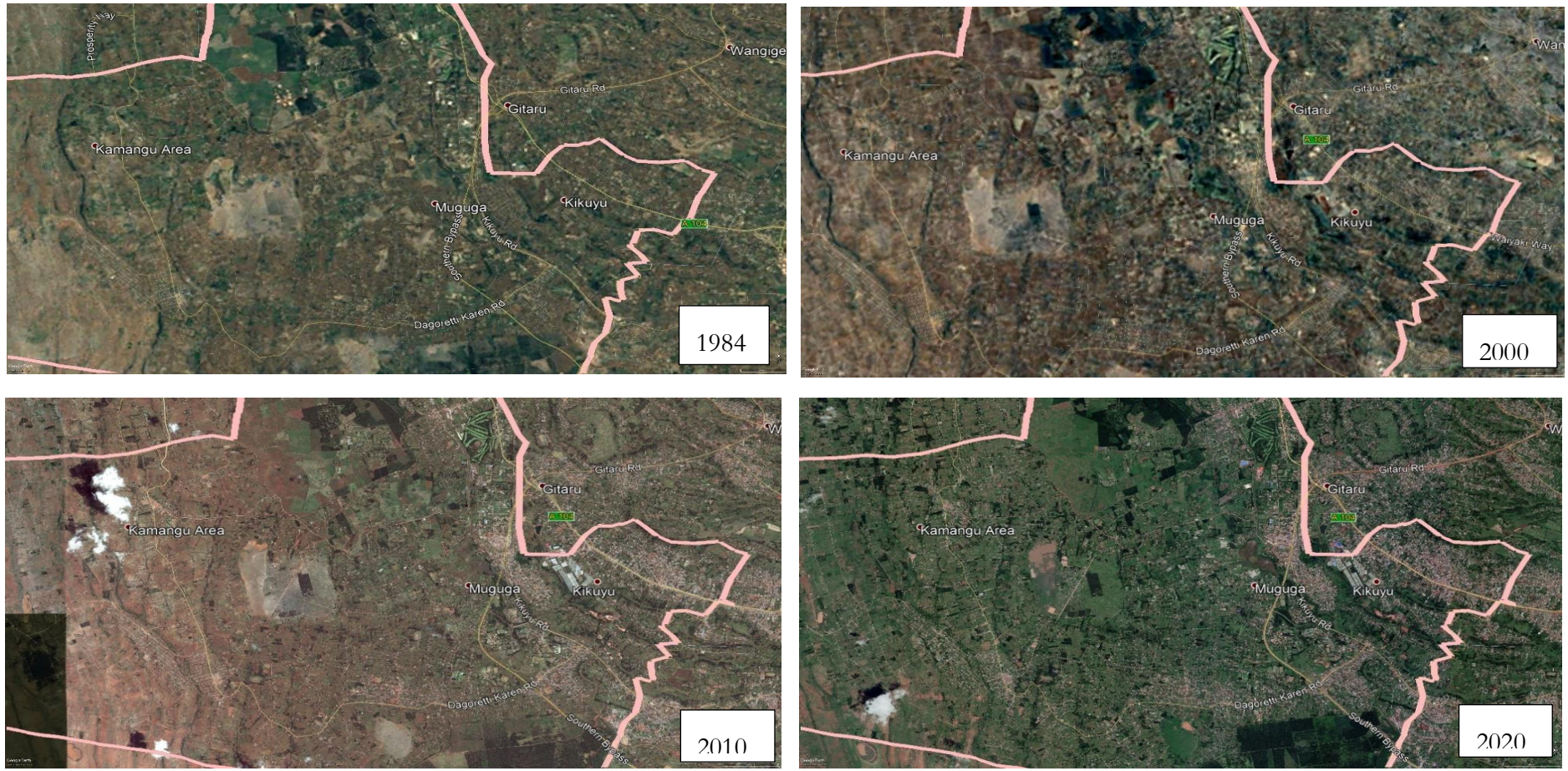
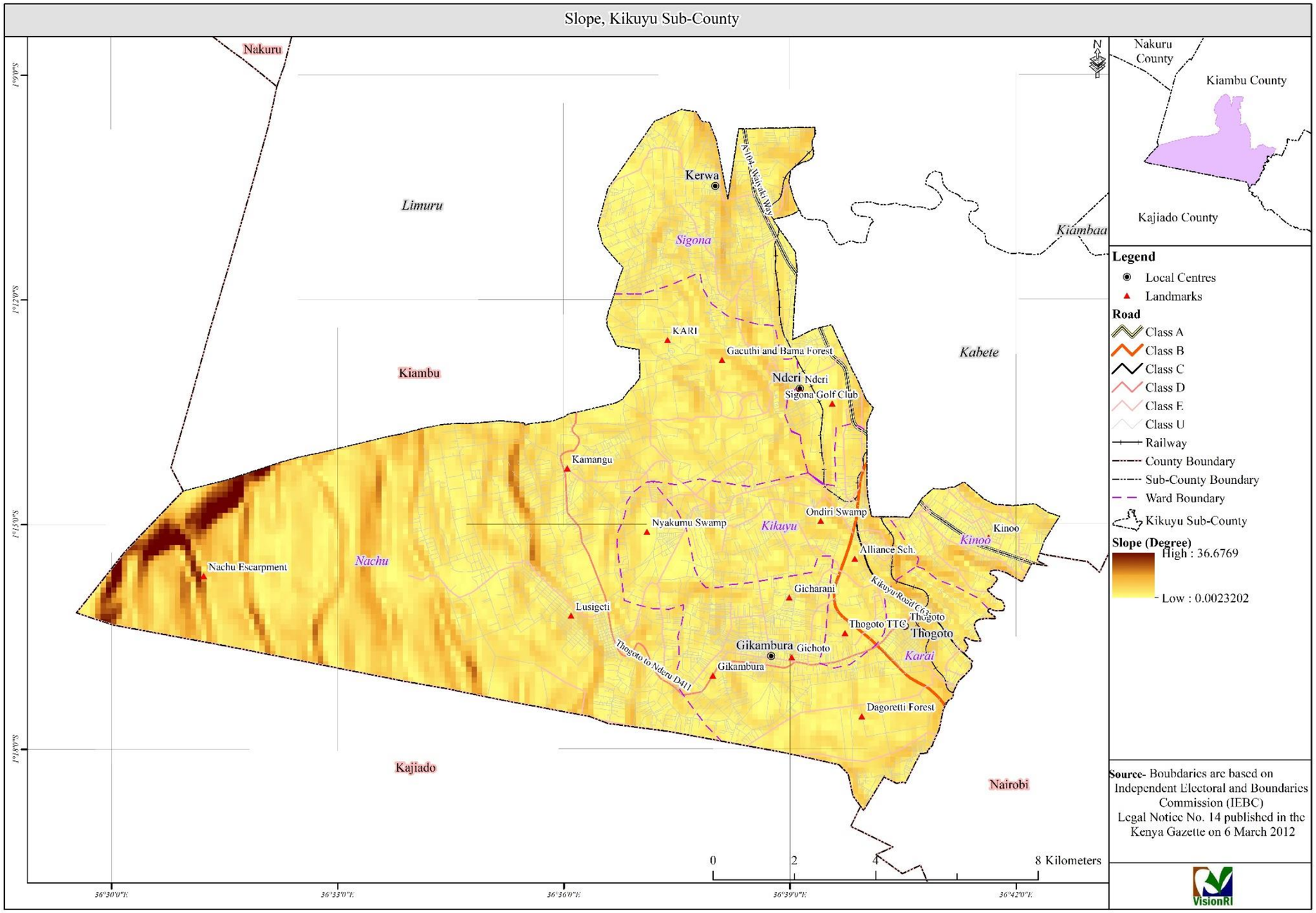


Figure 6-3: Rapid development since 1984

Source: Google Earth Imagery

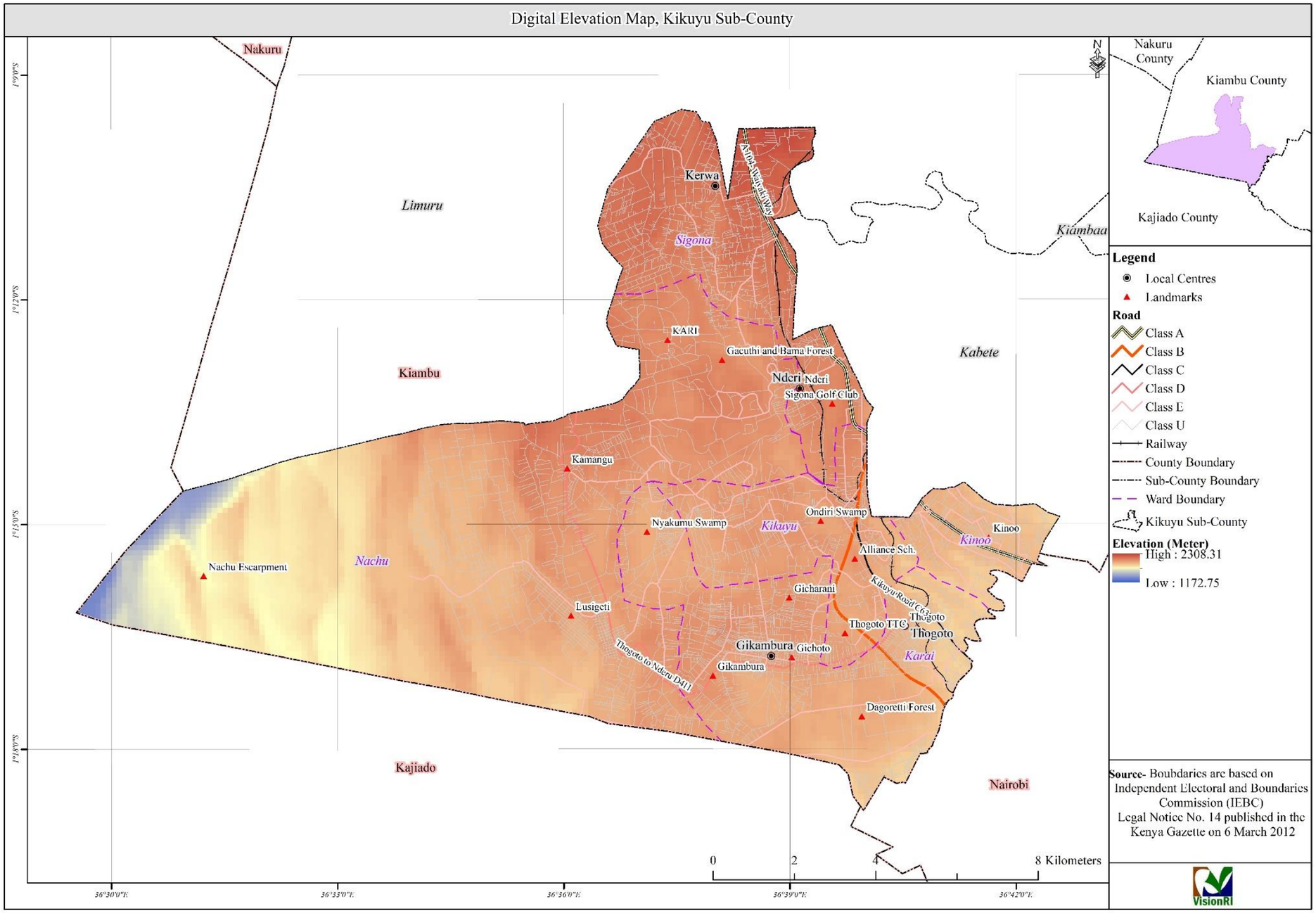
6.6 Land Availability and Suitability

The slope analysis of the planning area demonstrates that most of the Sub-County is generally flat (less than 5 degrees slope) and suitable for human settlement and development. A few pockets of the area have medium slopes of 16-25 degrees. The steep area of 26-37 degrees is the Nachu escarpment which is deemed not suitable for human settlement and development. The slope analysis map below illustrates the land suitability of the planning area.



Map 6-1: Slope Map

Source: VisionRI



Map 6-2: Elevation Map

Source: VisionRI

6.7 Land Values/Market

The construction works along the southern bypass have led to rising in the prices of plots and the cost of renting business premises and houses in the planning area. Real estate and industrial activities in the planning area have started to pick up, with land prices shooting up at a rapid rate. This has been characterised by real estate developers showing interest in tapping the potential of the planning area resulting in an increase in the number of rental properties under construction. There is also an increasing interest from commercial investors who have begun constructing factories and commercial buildings in the area. In essence, three years ago, a quarter of an acre was going for between Sh1 Million and Sh1.2 Million but now fetches about Sh6 million and over.

Nonetheless, a rather interesting phenomenon is being witnessed where some of the people who had bought land earlier are now selling again after they discovered that it is not that rosy. This is because at some point the Southern bypass is passing above the plots limiting their accessibility. Similarly, in areas where developers have already bought large chunks of land, some residents have been forced off their land by the lack of privacy and chosen to relocate. Therefore, while many choose to capitalise on the gains of increasing land prices, others – especially those near the Southern bypass – are opting to wait. This is because the residents have become aware of the potential of the land near the bypass. This has made them refuse to sell to developers in the hopes of getting a higher price once the bypass is complete. Others have embarked on subdividing and selling the land in small portions, some of which are uneconomical.

6.8 Key Planning Highlights

Table 6-3: key planning issues on land administration and management

Key Highlights	Opportunities
Land Tenure System of the Sub-County is not documented.	The Sub-County to document the land tenure status of all the wards.
The land use pattern shows an urban sprawl trend of Kikuyu town, hence congestion of the CBD.	Kikuyu CBD to be decongested through planning and improvement of the other towns like Thogoto, Kinoo and Nderi.
Inadequate awareness of the importance of planning by the Kikuyu Sub-County residents.	Organizing community-planning clinics to create awareness to the public on the importance of planning.
Land subdivision and development without approved planning schemes; and Incongruous developments due to lack of development control.	Protection of open spaces, riparian and forest reserves.

Source: VisionRI

7. URBAN DEVELOPMENT AND HUMAN SETTLEMENTS

7.1 Overview of Urbanisation

Kikuyu Town is the traditional CBD of the planning area. The town has its origins from the railway station, which is located at its western side, just above Ondiri swamp. The town hall is only three blocks away from the railway station. Kikuyu is wedged between the railway line and the Southern bypass road at its eastern side. Open land, such as Ondiri swamp and low-density residential developments surround the town. Having no immediately surrounding sprawling urban areas, it is apparent that the town does not have a significant push factor to drive urban growth in its periphery. Rather, sprawling urban growth occurred along the border with Nairobi city, about four kilometres from the centre of town.

7.1.1 Overall Structure of the Planning Area

The urban structure of the planning area is that of a cross which follows a northwest-southeast axis. The Nairobi-Nakuru Highway defines the planning area's northwest axis while the Southern Bypass road represents the southwest axis. Kikuyu Town is nearly at the centre of these two axes. Aside from Kikuyu Town, most urban growth may be found at the South Eastern section of the planning area. Developments follow a linearly sprawling fashion following the direction of Nairobi-Nakuru Highway. Dagoretti Forest constrains urban growth at the southern end of the planning area.

Low-density agricultural, open space and residential areas characterise the north-western and western portions of the planning area. Similar to the southern end, urban growth in this area is somehow constrained by Muguga Forest. Residential areas are observed to have been developed in a leapfrog manner in these areas. These are wedged in-between open areas which are either used for subsistence agriculture are left open.

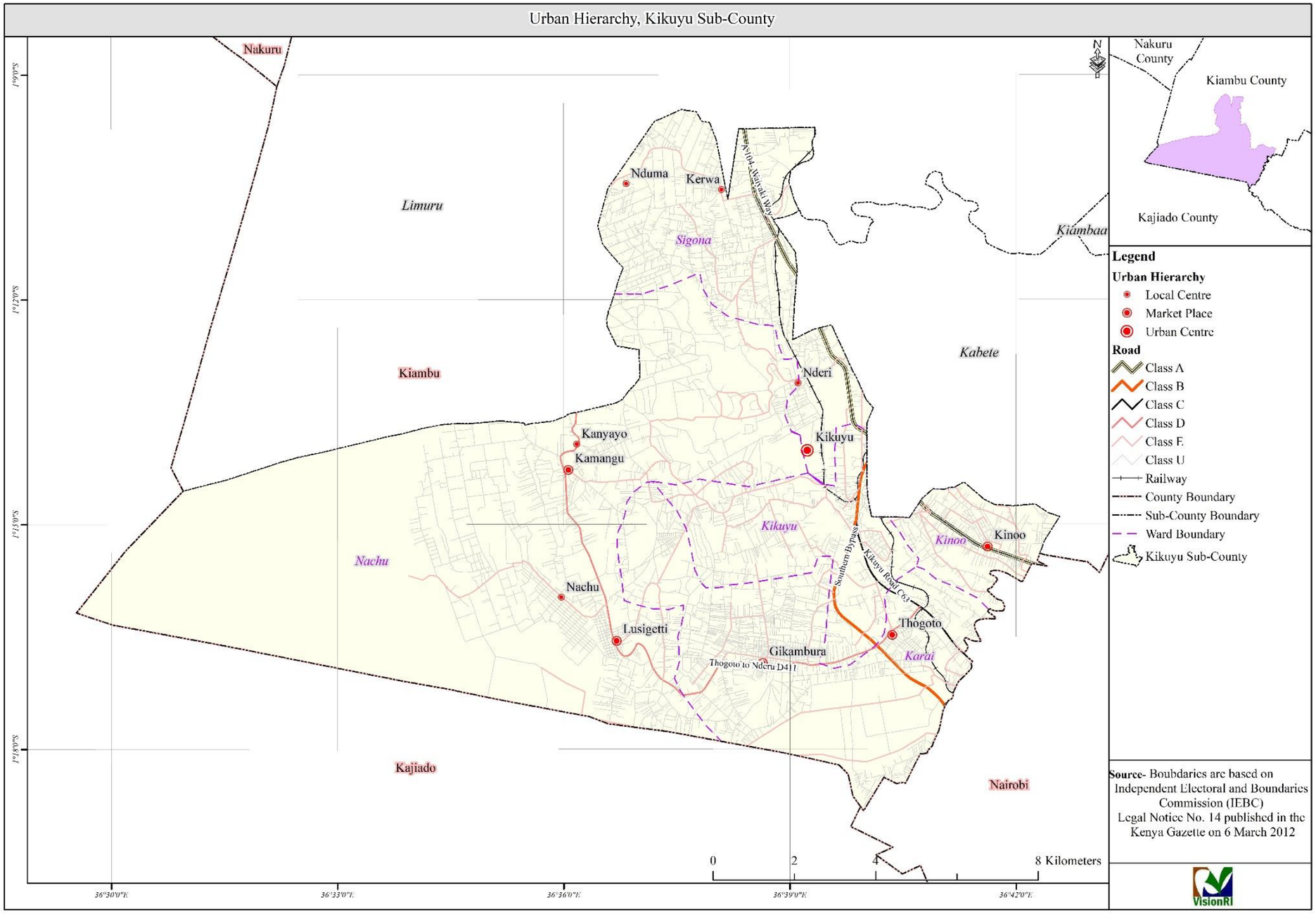
7.2 Hierarchy of Existing Centres and their Functions

Kikuyu Town is the main and only urban centre in the planning area. There are Six (6) market centres namely Kinoo, Thogoto, Dagoretti, Kamangu, Lusigetti, and Gikambura. The Six (6) local centres in the Sub-County include Nderi, Kerwa, Nduma, Karinde, Riu nderi and Kanyanjara. The table below outlines the hierarchy of the existing centres in Kikuyu Sub-County.

Table 7-1: Hierarchy of existing centres

Urban centres	Market centres	Local centres
Kikuyu town	Kinoo	Nderi
	Thogoto	Kerwa
	Dagoretti	Nduma
	Kamangu	Karinde
	Lusigetti	Riunderi
	Gikamabura	Kanyanjara

Source: VisionRI



Map 7-1: Hierarchy of Existing Centres

Source: VisionRI

7.3 Nodes and Corridors

7.3.1 Activity Nodes

Kikuyu Town is the only distinct mixed-use activity node in the planning area. Considered as the planning area's CBD, the town is laid out in rectangular grid fashion, with longitudinal roads laid out on a northeast-southwest axis. The main street is called Post Office Road whose entry is at its junction with the Southern Bypass Road and ends at the railroad tracks. This road is flanked on both sides by 3 street blocks. The predominant land use is commercial, and the CBD has a highly compact, dense and robust character. There are many 4 to 5 storey buildings that were built in close proximity to each other. Significant landmarks include the Town Hall, Railway Station, Law Courts Building, shopping centre, Equity Bank and the bus park, amongst others.

The streetscape though is vehicle-oriented. There are no pedestrian sidewalks, cycling tracks, street furniture, and other features that make for a pedestrian-friendly urban area. Roads in the CBD are surfaced with murram and have narrow rights-of-way of about 5 to 6 metres only. Parking, especially at the interior portion of town, is an issue as many vehicles were observed to park along road rights-of-way.

7.3.2 Cross Spines

The planning area's cross spines include Nairobi-Nakuru Highway and Southern Bypass roads. These are high-speed transport corridors with rights-of-way widths of at least 60 metres. These spines have provided a strong definition of the planning area's settlement pattern.

7.4 Urban-Rural Linkages

The urban-rural linkages for Kikuyu planning area are three main spines that link Kikuyu urban centre to the rural hinterlands. They are Kikuyu -Karai road, Kikuyu-Nderi road, and the Kikuyu-Gikambura road.

7.5 Formal Settlements

Kikuyu town has a generally linear manner along the cross spines. Planned settlements were developed using a grid pattern such as those in Kinoo, Thogoto and Gikambura. Most interior roads are earth-paved and without drainage systems. These also lack pedestrian sidewalks, street furniture, street lighting and other features that make pedestrian-friendly urban areas.

7.6 Informal Settlements

This informal settlement on about 4 acres of land started in 1950. In 2015, the settlement had about 2,000 people. Houses in the settlement are mainly made of iron sheet roofs and walls, and screed or earthen floors. A room of about 10 feet by 10 feet costs about 500 shillings per month to rent. People in the settlement mainly earn their livelihoods by running small enterprises and providing manual labour in neighbouring towns. The majority of the people in the settlement are Kikuyu but there are other communities including Luo, Kamba and Luyha.

There are no educational institutions in the settlement except a private nursery school. Pupils from the settlement go to Mugutuini and Thirime Primary Schools. There is also no public health centre in the settlement and thus residents rely on private health centres or travel to neighbouring areas

to seek medical attention. Common ailments include malaria, tuberculosis, HIV/AIDS, pneumonia, typhoid, and ENT infections.

In addition, the residents face poor stormwater drainage, lack of wastewater systems, and poor roads. Children are in danger of domestic violence; child labour and trafficking; drug abuse; and dropping out of school. On the other hand, women face domestic violence; assault and rape; forced prostitution; and early marriage.

7.7 Housing

7.7.1 Introduction

The housing situation in the planning area especially in Kikuyu Town and along the highways where residential housing for tenants comprises of apartments. However, in the rural areas of the planning area, there are poor housing units for the rural poor. Even for the good houses including those inside the Kikuyu Campus of the University of Nairobi are characterised by the inadequate sewerage system. The construction sector in Kikuyu is booming mainly because of its proximity to Nairobi. Housing units including apartments for sale are constructed frequently.

7.7.2 Building Materials & Construction Sub-sector

The main building materials for walling, quarry stones, are obtained from the neighbouring Sub-counties of Ruiru and Juja as well as from Narok and Nakuru Counties. Timber is more expensive and is obtained from within the Sub-County as well as from neighbouring counties and other countries such as Uganda and the DRC Congo for hardwood. The sources of building material are shown in Table 7.2.

Table 7-2: Sources of Selected Building Materials

Material	Source	Remarks
Quarry Stones	Nakuru, Narok, Kajiado and Machakos Counties.	30 – 60 kilometres away.
Sand	Nakuru, Narok, Kajiado and Machakos Counties.	30 – 60 kilometres away.
Timber	With Kikuyu Sub-County and Kiambu County; Meru, Uganda, DRC Congo.	Hardwood is usually imported but softwood locally available.
Steel	Nairobi	Distributed through local hardware shops.
Galvanised Iron Sheet	Nairobi	Distributed to local hardware shops.

Source: Discussions with Key Informants, 2015

In Kikuyu Sub-County, corrugated iron sheets are used as roofing material in 76% of the households. Concrete is used by 17.5% while tiles being used by 2.2% as the roofing material. Other roofing materials used within the planning area include; asbestos, mud, makuti as well as grass. This entails 4.3% of all the roofing materials used in the planning area.

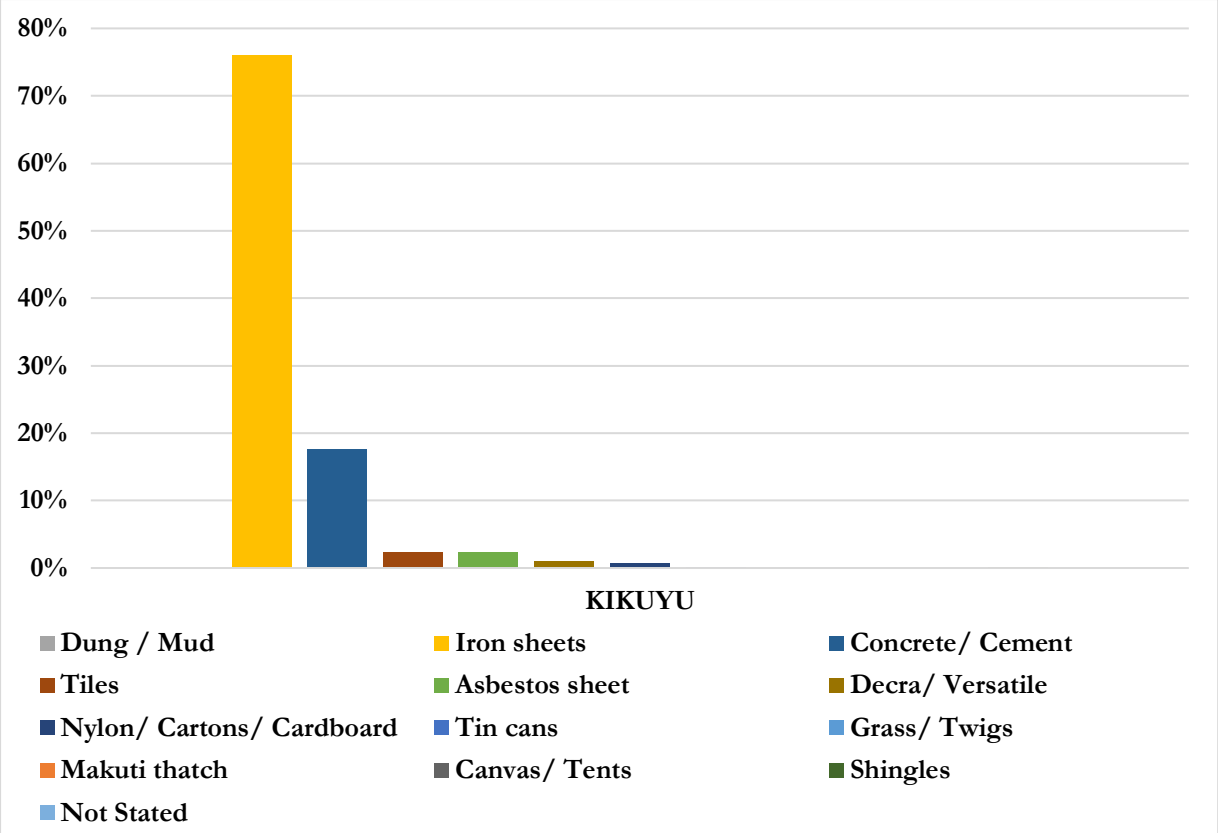


Figure 7-1: Roofing Material in Kikuyu Planning Area

Source: Based on KNBS 2009, Census Report

Iron sheets are the most common walling material in Kikuyu planning area with a frequency of 41.8 per cent for all the households. This is mainly because the Kikuyu planning area has a large rural extent. Stone as walling material is used by 25.2% of the households. The houses in the planning area with concrete as the walling material entail 24.1%, wood as 2.8% while those with timber entail 2.1% and bricks at 1.6%. Other walling materials such as mud, offcuts, covered adobe and cane entail 2.4% of all the households.

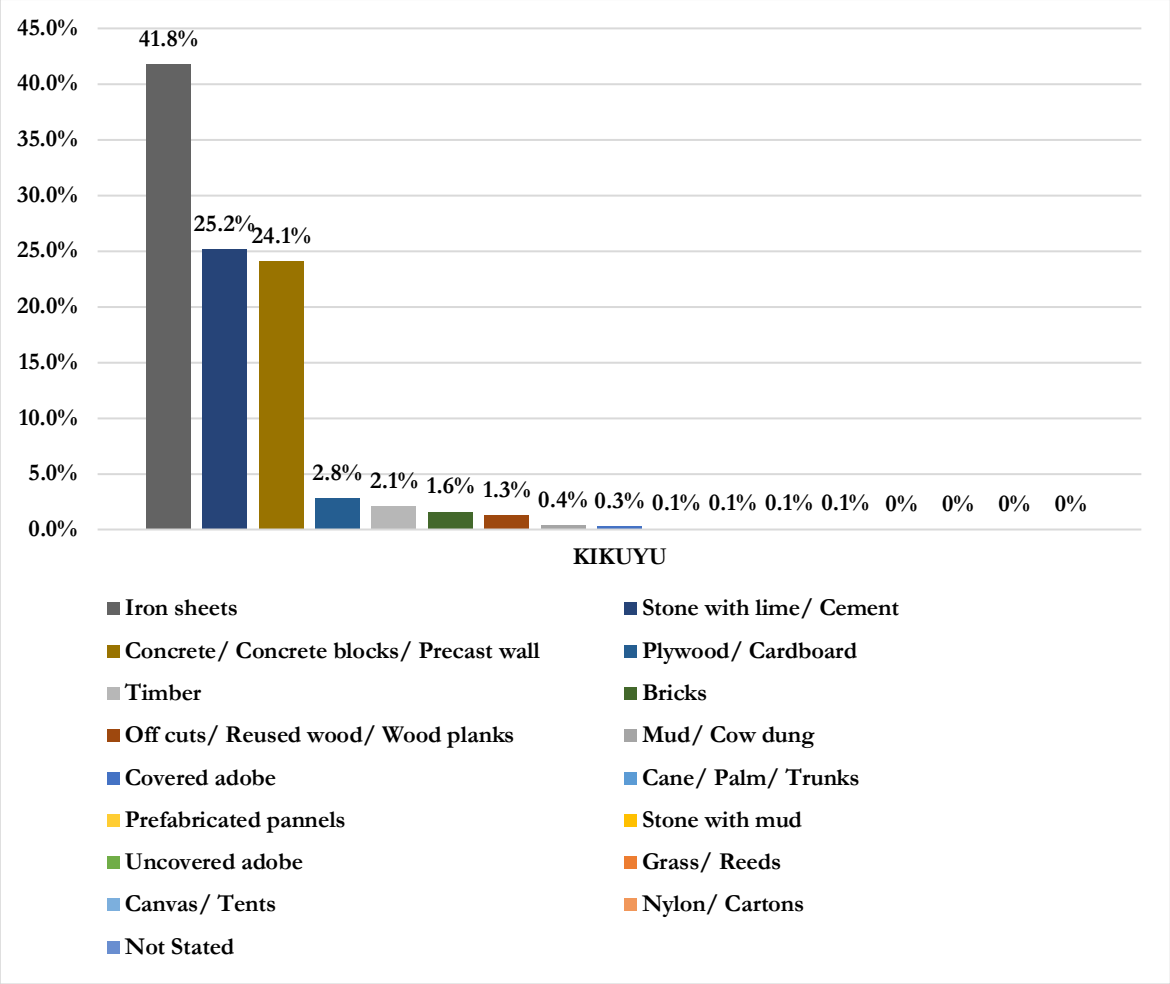


Figure 7-2: Walling Materials in Kikuyu Planning Area

Source: Based on KNBS 2019, Census Report.

Within the planning area, cement is the main floor material with a frequency of 64.4%. Earth is used by 26.4% of the houses in the planning area as floor material. Other houses in the planning area using parquet or polished wood as floor material entail 6.9% while those having tiles, wall to wall carpet, wood planks, palm/bamboo and dung as the floor material entail 2.3%.

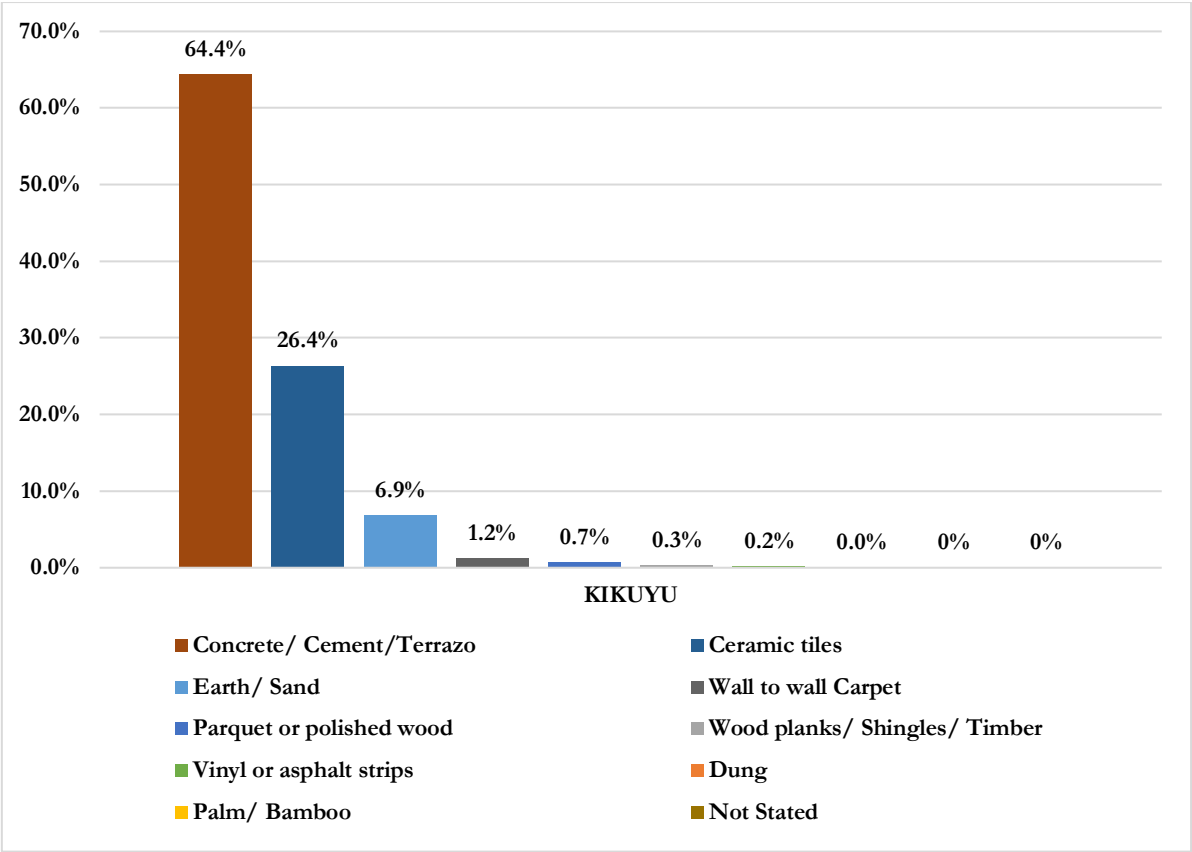


Figure 7-3: Type of Floor Material (%)

Source: Based on KNBS 2019, Census Report

7.7.3 Housing Tenure and Typology

In the rural areas of the planning area, there are housing units of poor quality. In the main urban centres especially Kikuyu Town and along the main highways are high-quality apartments, townhouses and bungalows for rental or sale. Majority of the people especially in the rural areas of Kikuyu live in their own houses on inherited land. In the urban areas and along the main roads, many people have bought land and built their houses or bought built houses including apartments. However, the majority in those houses are tenants who commute to Nairobi for work.

The poor rural housing units are made of light gauge corrugated iron sheet roof. In urban areas such as Kikuyu Town, the good houses are roofed with high quality corrugated iron sheets and tiles. Similarly, poor rural houses are walled with iron sheets, timber or mud – some of them with screed floors and others with earthen floors. The high-end housing units in urban areas and along the highways are walled mainly with quarry stones.

Table 7-3: Distribution by Mode of Tenure-ship

Sub-County	Total	Tenure Status (Conventional Households)					
		Owned		Rented/ Provided		Not Stated	
		Number	%	Number	%	Number	%
Kikuyu	60686	24005	39.6	36606	60.4	8	0

Source: Based on KNBS 2019, Census Report

Table 7-4: Distribution of Owned Households by Mode of Acquisition

Sub-County	Owned	Mode of Acquisition					
		Purchased		Constructed		Inherited	
		Number	%	Number	%	Number	%
Kikuyu	24005	552	2.3	21332	88.9	2121	8.8

Source: Based on KNBS 2019, Census Report

Table 7-5: Distribution of Rented/Provided Households

Sub-County	Rented/ Provided	Mode of Tenureship											
		Govt.		County Govt.		Parastatal		Private Company		Individual		FBO	
		Number	%	Number	%	Number	%	Number	%	Number	%	Number	%
Kikuyu	36606	430	1.2	50	0.1	631	1.7	1243	8.8	33893	92.6	359	1

Source: Based on KNBS 2019, Census Report

7.7.4 Housing Stock and Projections

The housing stock is derived from the 2009 Population and Housing Census Report Volume 2 page 300 that indicates that about 35% of the households in Kikuyu District (which covered the planning area) had permanent houses. Therefore, the stock as of 2009 at just 35% of the demand and projections into 2030 are as shown in table 7-6. The housing stock as at 2009 represents a 65% deficit given the population levels at that time. Subsequent projections are based on the total required housing units given the projected population and number of households.

Table 7-6: Housing Stock and Projections into 2030

Wards	2009	2016	2018	2021	2030
Karai	1,429	4,700	4,885	5,163	5,538
Nachu	1,305	4,294	4,463	4,717	5,059
Sigona	1,877	6,174	6,417	6,782	7,274
Kikuyu	2,269	7,463	7,756	8,198	8,792
Kinoo	1,895	6,234	6,479	6,847	7,344
Total	8,775	28,865	30,000	31,707	34,007

Source: Based on the 2009 Population and Housing Census Report Vol. II, and Population Projections

7.8 Key Planning Issues

Table 7-7: key planning issues on housing

Key Highlights	Opportunities
Congestion of Kikuyu Central Business District (CBD).	Decongestion of Kikuyu town by planning and upgrading of the market centres and upcoming local centres.
The planning area's development is defined by two major cross spines namely the Nairobi-Nakuru Highway and the Southern Bypass.	The cross spines are major linkages of the planning area to other counties.
The planning area has two informal settlements, namely, Muthiga and Kiamburi with lack of public facilities such as roads and lighting.	International support for slum upgrading programs around the country and region National and county government commitments to increasing decent housing for residents.
Ample land for housing development especially for owner-occupied housing in the rural areas.	Ample supply of sand and quarry stones from neighbouring counties at affordable prices
High standards of housing set by about 35% of households who have permanent housing.	Close proximity to steelworks in Nairobi's industrial areas.

Source: VisionRI

8. PHYSICAL INFRASTRUCTURE

8.1 Overview

Physical infrastructure focuses on the existing transportation system of the planning area, water, waste management, stormwater management, energy infrastructure, the general ICT system of the area.

8.2 Transportation

8.2.1 Regional Connectivity

The road is the main mode of transport in Kikuyu planning area. There is a commuter rail transport between the planning area and Nairobi in the morning and evening peak hours. Most of the roads in Kikuyu town are under rehabilitation to bitumen standards. Outside the town, most roads are narrow and in poor condition and become impassable during rainy seasons. Such roads include Ondiri-Kerwa road, Kerwa-Thigio road, and Muhuri road, amongst others.

8.2.2 Interconnectivity and Intra-Connectivity

Kikuyu town is well connected to the major National truck road A104 Nairobi-Nakuru Highway which passes through it. The road is the gateway of Kenya to Uganda through Malaba town. In Kenya, it links Nairobi county and Nakuru county. Kikuyu is also well served by inter-county road linkages that include Southern Bypass a 29 km road which starts from Mombasa road to Kikuyu. Other intra-county roads of lower hierarchy roads that connect different neighbourhoods within Kikuyu include Kerwa road, Dagoreti, Gicharani road amongst others. The condition and the surface types are as indicated in the table below. Table 8-1 lists the main roads that are within Kikuyu.

Table 8-1: Main roads in Kikuyu

Road Name	Link	Length within the planning area (km)	Surface Type	Condition	Average Daily Traffic Volumes (Both directions)	
					NMT	MT
Dagoretti-Gitiva Road	Dagoretti Road to Gitiva	7	Gravel	Poor	-	-
Muhuri Road	Dagoretti Road to Waiyaki Way	5.3	Paved	Poor	-	-
Thogoto-Gikambura Road	Dagoretti Road to Mutwarakwa	25	Paved	Fair	-	-
Gicharani Road	Thogoto Road to Gicharani	5	Gravel	Fair	-	-

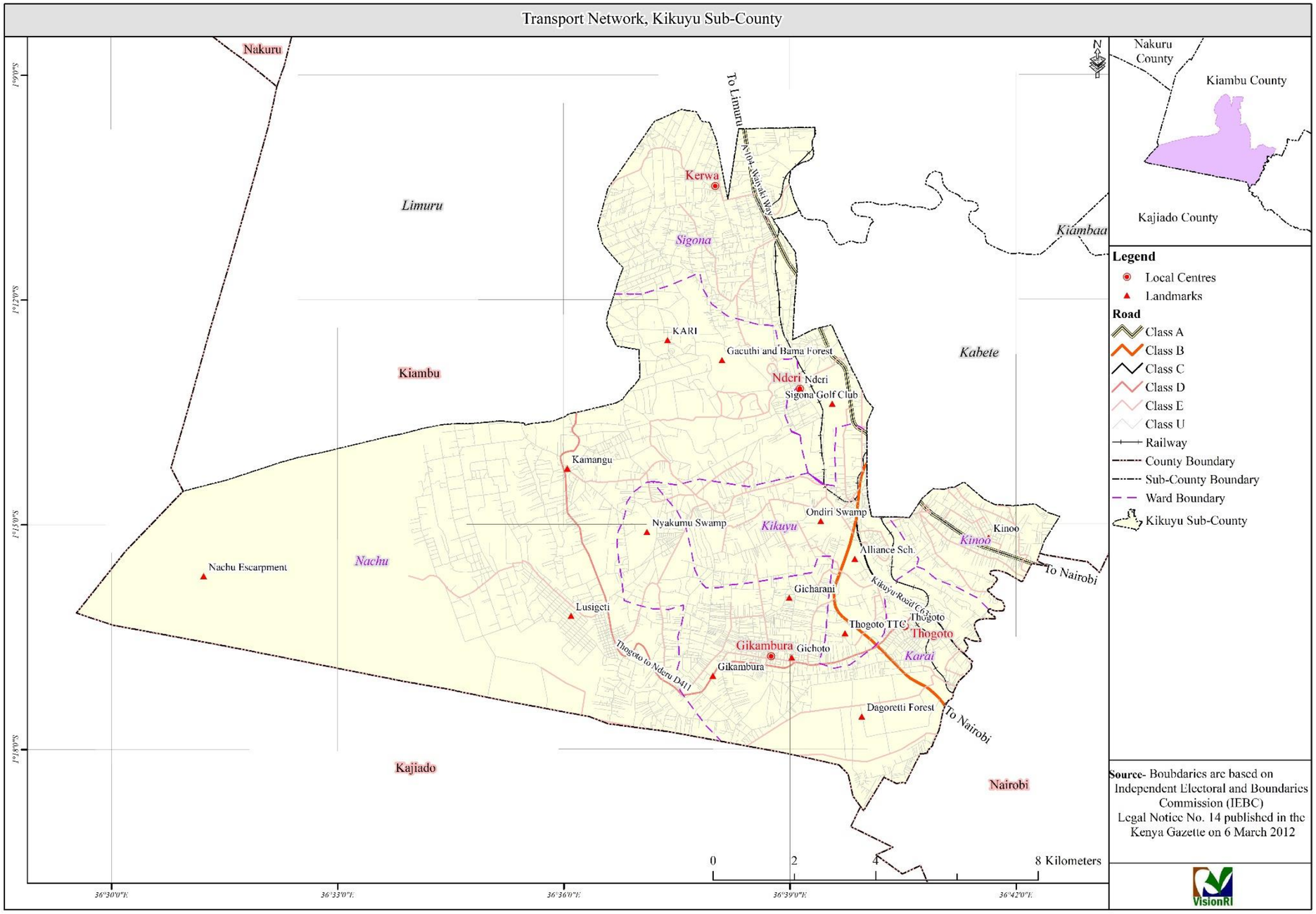
Road Name	Link	Length within the planning area (km)	Surface Type	Condition	Average Daily Traffic Volumes (Both directions)	
					NMT	MT
Gikambura Road	Thogoto Road to Gikambura.	5	Paved	Fair	-	-
Mai-i-hii-Gikambura Road	Thogoto Road to the Green Garden Schools	6	Gravel	Fair	-	-
Hospital Road	Thogoto Road to Dagoretti road	3	Paved	Good	-	-
Dagoretti Road	Dagoretti to Kikuyu	10	Paved	Fair	2,188	7,189
Ondiri Road	Dagoretti Road to Ondiri via Southern Bypass	7.3	Road Under Construction		-	-
Waiyaki Way	87 to Limuru	11.4	Paved	Fair	7,265	16,756
Kerwa Road	Waiyaki Way to Kerwa Road	8	Gravel	Poor	-	-
Nderi Road	Kikuyu to Nderi	7	Paved	Good	-	-
Posta Road	Bypass to Kikuyu Town	0.9	Paved	Fair	5,757	4,869
Market Road	Posta Road to Market	1	Under Construction		-	-
DEO Road	Posta Road to District Education Officer Office	2	Gravel	Poor	-	-
Southern ByPass	Section 1: Waiyaki Way to Bus Park.	1.3	Paved	Good	7,157	6,544
	Section 2: Bus Park to Thogoto	33.7	Paved	Good		
Gitaru Wangige		5.2	Paved	Poor	-	-
Ndumboine Road	Waiyaki Way to Ndumboini	5	Paved	Fair	-	-
Magana Road	Waiyaki Way to Magana	2	Gravel	Poor	-	-

Road Name	Link	Length within the planning area (km)	Surface Type	Condition	Average Daily Traffic Volumes (Both directions)	
					NMT	MT
Kinoo-Gaitumbi Road	Kinoo to Gaitumbi	8	Gravel	Poor	-	-
87-Kanyariri	87 to Kanyariri	10	Paved	Poor	-	-
Dagoretti-Karen Road	Dagoretti Road to Karen	5	Paved	Fair	-	-

Source: Department of Roads Kiambu County

Figure 8-1: State of some roads

Source: Field Survey, 2018



Map 8-1: Transport network in Kikuyu

Source: Department of Roads Kiambu County

8.2.3 Trip Generation

Kikuyu town is a convergence of routes within Kiambu and Nairobi counties are the main sources of external traffic. Many trips within the town originate from three key areas, which are the neighbouring residential areas such as Gitaru, Thogoto, Nachu, Kerwa, Ndeiya etc. Being an institutional town hosting Thogoto Teachers College and the Presbyterian University of East Africa, most traffic is generated from these institutions well as aforementioned residential areas.

8.2.4 Modal Split

According to IDS (2016), the modal split for Ruiru is as follows: Walking 37%, Matatu 36%, motorcycle 17%, cycle 7%, Car 2%, 1% other (railway). This modal split will be used as representative typical trends in towns across Kiambu County, i.e. Juja, Kikuyu, Limuru, and Kikuyu.

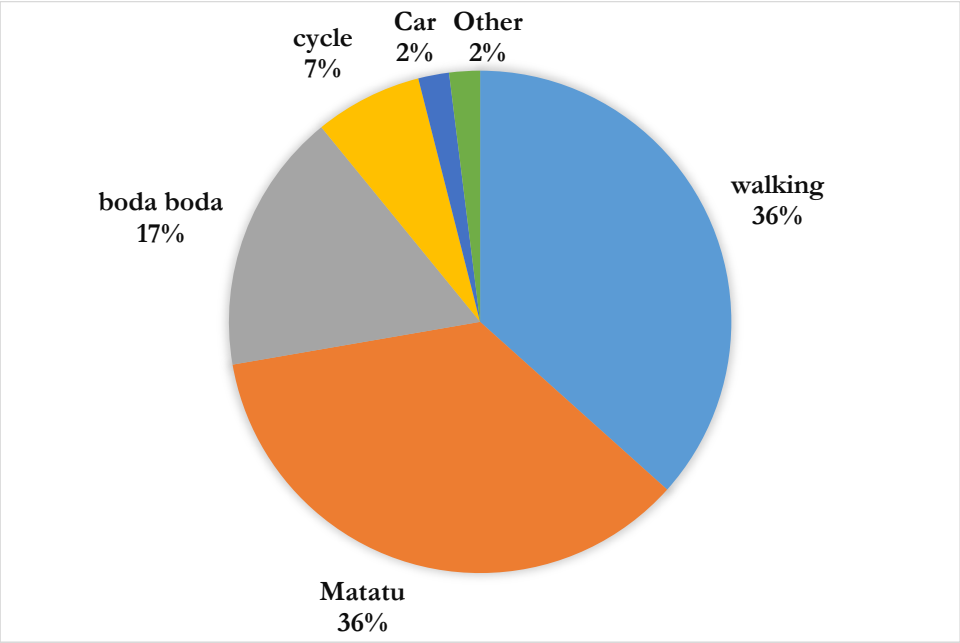


Figure 8-2: Chart showing modal in Kikuyu town

Source: VisionRI

8.2.5 Means of Transport

i. **Non- Motorized Transport:** As indicated above, 42% of trips in Kikuyu are made by walking and cycling. Unfortunately, the demand does not meet the infrastructural provision as most streets lack 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 high number of pedestrians walking on the carriageway conflicting with moving cars. Additionally, there are few safe pedestrian crossings in Kikuyu. In some parts along Think Road (A20), they have provided a footbridge. Though usable, the footbridge is not comfortable for pregnant women, elderly and persons carrying heavy luggage. Inadequate pedestrian crossings expose pedestrians to high risks of accidents making it unsafe especially for school-going children. A cycle track is completely absent in Kikuyu. This explains the lower number of cyclist in the

region. Further, there are no designated safe and secure cycle parking in Kikuyu CBD. This makes it hard to secure bicycles in town.

Map 8-2: Showing footpath in Kikuyu

Source: Department of Roads Kiambu County

ii. **Public Transport:** After walking, public transport is the second most commonly used mode in Kikuyu. Public transport is largely provided by privately owned minibuses and buses known as matatus. Within Kikuyu Sub-County, the National Transport Safety Authority (NTSA) has registered over 160 matatu savings and credit cooperative organizations (SACCOs) with approximately 1448 vehicles, with the majority being 14-seater matatus. The matatus ply routes within Kiambu County as well as the neighbouring counties of Nairobi, Nakuru and Murang' a. Kikuyu has one main bus park located in Kikuyu town with a capacity of 100 matatus that is congested and lack adequate facilities such as public toilets, customer information, waste bins etc.

The matatus are demand-driven and this is seen in fierce competition for the customers. At the terminal, the matatu only departs when all the seats are full. This inconveniences majority of passengers wait for public transport in the intermediary stages. Fares are not regulated and often some percentage increase during peak hours.

Figure 8-3: Images showing public transport in Kikuyu

Source: Field Survey 2018

iii. **Boda bodas:** According to County Government of Kiambu, there are approximately 500 boda bodas operating in Kikuyu Sub-County. The number could increase due to high demand of passengers as well as the high unemployment rate in the country.

Motorcycle boda bodas operate from 'stands' within the Kikuyu 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 are organised in Saccos and are largely regulated by NTSA. The prices are not fixed and are dependent on the distance covered and operator. There is slow adopting of technology in the area such as Uber boda bodas, Safe Boda, Bolt etc.

iv. **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.

v. **Rail Transport:** The Mombasa – Nairobi – Kampala railway line passes through the planning area. The line is rarely used for commuter passenger transportation to and from Nairobi during peak hours and inter-city freight transportation. The Nairobi Commuter Rail Development Master Plan proposes a commuter rail network, which will be developed to provide rail-based mass transit services between Nairobi Central Railway Station and the planning area. When this is implemented, it will provide alternative means of transport to Nairobi. Figure 8-4 illustrates the old Uganda Kikuyu Railway line.

Figure 8-4: Old Uganda Kikuyu Railway line

8.2.6 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[4]. Considering that Kiambu County is a dormitory for Nairobi city, we can assume 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 together with population and car growth forecasts, a simple modal share prediction to glean potential impacts of shifting transport investment priorities to more sustainable modes can be made. As shown in the chart 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: VisionRI

Under the sustainable mode, the scenario is made with an assumption that the proposed bus rapid transit (BRT) in Nairobi as well as investment 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.

8.2.7 Parking

Parking in Kikuyu is largely unregulated. Most streets in the town 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 revenue 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 CGK charges Ksh 60 per day for on-street parking—far too low to have a sizable impact on commuter behaviour. Consequently, the town centre experiences localised shortages with some of the most visible parking facilities being full despite the overall availability of parking space.

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

8.2.8 Planned and On-going Projects

Kikuyu is one of the areas where the proposed Regional Orbital (road and rail) in the Nairobi Metropolitan Region (NMR) will pass through. According to the Spatial Planning Concept (SPC), the Regional Orbital will inter-connect the regional urban centres and promote direct accessibility and flow amongst them without the necessity to pass through Nairobi city. Both passenger and goods movement, in equal proportion, would take place along the orbital (see Figure 3.0.12). Kikuyu will be connected to Karuri, Karen and Ongata Rongai via the C63 and C58 roads. It is proposed that the Regional Orbital should have a road reserve of at least 110m to accommodate green areas, dual carriageway roads, and two railway lines.

The planning area will be connected to Nairobi CBD via the A104 and the Southern bypass roads, and the railway line. The A104 is due for expansion from the Nairobi CBD to Rironi, past Kikuyu, and will incorporate a BRT lane up to Kangemi. Like in other NMR towns, a nodal terminal should be developed in Kikuyu for efficient movement of both passenger and freight, since it is at the intersection of the Regional Orbital and a Radial Road. The terminal would be multi-use complexes with commercial, office and other uses. The terminal would provide the interface between the intra-town traffic and the regional transport system. In the long term, heavy trucks should be diverted to the D411 road from Thogoto through Kamangu to B3 road. This will help in reducing congestion and keep away heavy trucks from the town centre. The table below outlines the ongoing and proposed projects in Kikuyu Sub-County by the Department of Roads, Transport, Public Works and Utilities.

Table 8-3: On-going and proposed projects of the Department of Roads, Transport, Public Works and Utilities

Wards	On-going and proposed projects	Costs (Ksh.)
	Mechanical Transport Fund Program	
Sigona	1) Abdullah-Kahiga rd(1km)	20,739,070.60
	2)Kanyanjara rd(3km)	
Kinoo	1) Gaitumbi-Genesis Rd(2.0km)	
	2) Kihumo-Itukarwa Rd(1.2km)	
	3) Kihumo Rd(0.8km)	
Nachu	1) Lussegetti-Thiranga Rd(0.7km)	
	2) Thiranga-Kiahiti Rd(1.3km)	
	3) Thiranga-Ndacha Rd(2.0km)	
Karai	1)Rurie-Nderi Shopping Centre Rd(0.5km)	
	2) Nderi-Njaga Rd(1.6km)	
	3) Kanyanjara-Nderi Rd(1.9km)	
Kikuyu	1)Thogoto - Approved rd(1.7km)	
	2) Kia Wamagira rd(0.7km)	
	3) Baraneki-Shauri Yako Rd(0.5km)	
	4) Baneki-Muhuri rd(1.1km)	
	RMLF (Fuel Levy)	
Karai	Gichuhiro - Matangini Road	4,148,450.00
Kinoo	Orthodox Road	4,282,604.00

Wards	On-going and proposed projects	Costs (Ksh.)
Nachu	Karafuta-Ndiguini (Kianjiru) Road	4,158,205.60
Kikuyu	Thogoto Access Roads Rd	4,267,640.00
Sigona	Ika Tano-Ken Academy -Gitau Road	4,240,670.00
	CGK Funded Access Road	
Kinoo	Muthiga-Gaitumbi-Hamsa-Harvesters Church Road	3,969,404.00
Karai	Matangini Riu Nderi Road	3,912,332.00
Sigona	Thamanda Mechanic Access Roads	3,890,234.00
Kikuyu	Kidfarmco - Riverside Access Roads Rd	3,861,640.00
Nachu	Kigathi Kianjagi Road	5,867,848.40
	Kamangu Ndiguini Road	7,266,750.40

Source: Department of Roads, Transport, Public Works and Utilities

8.2.9 Railway Development

NaMSIP is currently upgrading and modernising the rail stations within the NMR. The Kikuyu station is projected to handle between 2,000 and 5,000 passengers per hour by the year 2030. Some of the improvements being undertaken at this station in readiness for this include:

- Provision of parking areas on each side of the station[5]. Approximately 217 vehicles will be accommodated. This is to allow for the actualisation of the park and ride concept where people leave their vehicles, board the trains, proceed to their destinations and come back in the evening to pick their vehicles;
- Creation of passenger interchanges with buses and matatus to allow integration with road transport. To this end, there are plans to expand the matatus terminus to allow more vehicles docking in for this anticipated passenger traffic. Kikuyu is beyond the coverage of the BRT coverage[6];
- Improvement of the access road and improvement of pedestrian access, and controlled area including ticketing booth, automatic point and paid toilets; and
- The Thogoto station is anticipated to handle below 2,000 passengers per hour by the year 2030. Thogoto is a major education hub with several education facilities (University of Nairobi – Kikuyu Campus, Presbyterian University of East Africa and Alliance schools. Some of the facilities to be included in the proposals to modernise this station include; Minor Park and ride facilities and overall modernization of the station.

Some of the projects being undertaken in all stations include the following:

- Platform and waiting area;
- Ticketing booth;
- Turnstile rack;
- Automatic selling points;

[5] Interdisciplinary Land-Use and Transport Metropolitan Analysis within the Nairobi Metropolitan Region, 2015 (EGIS)

[6] Component A, Final Report Development of Commuter Rail Master Plan for Nairobi Metropolitan Region, 2018 (Dar)

- Administrative office;
- Paid toilets;
- Police office;
- Security gate;
- Enclosure and lighting;
- Pedestrian walkway;
- Access roads;
- Parking area,
- Landscaping; and
- Utilities and access facilities.

When these proposals are implemented, the planning area will be well-connected to the A104 international transport corridor, Nairobi and the other towns in the NMR and will enable it to serve as the proposed Sub-regional Centre, promoting industrial development as shown below.

Figure 8-5: Proposed Rail Network from Nairobi to Limuru

Source: VisionRI

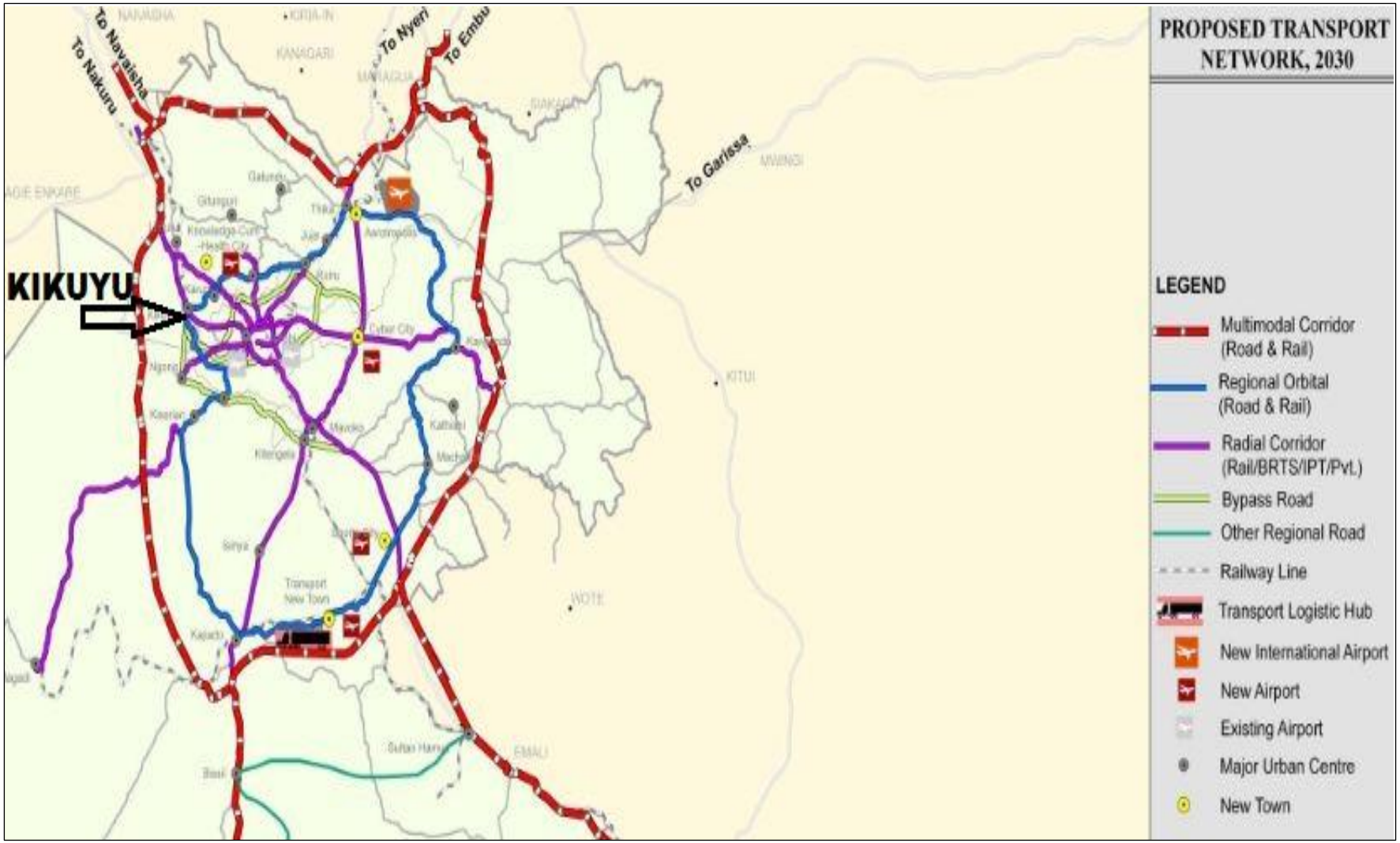


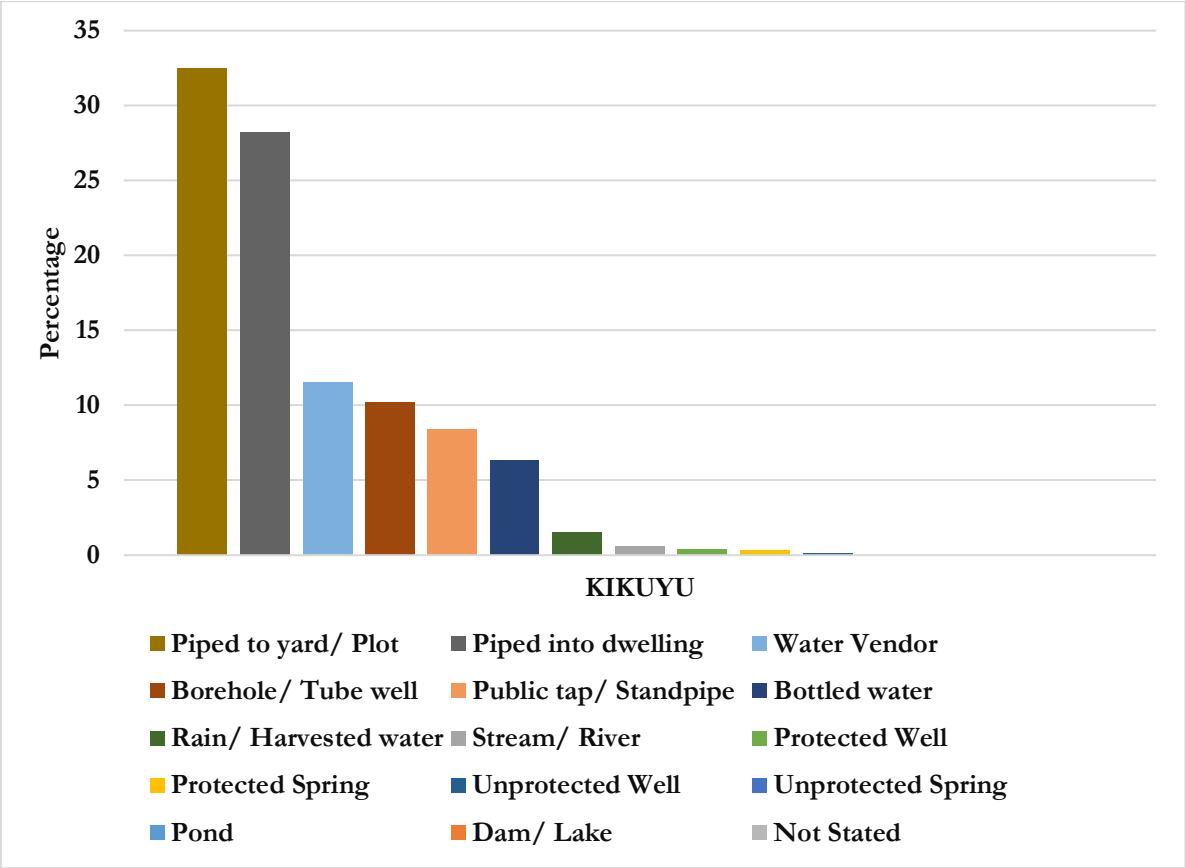
Figure 8-6: Proposed Transport Network for NMR, 2030

Source: Spatial Planning Concept for NMR

8.3 Water

8.3.1 Main Sources of Water

The main sources of overall domestic and drinking water in the planning area are piped to the yard at 32.5% and piped into the dwelling at 28%. Water vendors contribute to 11.5% of the water supply while borehole and public taps supply 10.2% and 8.4% respectively. Bottled water is consumed at 6.3% while rain harvesting brings in 1.5%. This implies that most residents in Kikuyu have not put infrastructure for rainwater harvesting given the small percentage it contributes.



Source: Based on KNBS, 2019 Census Report

8.3.2 Water Supply and Coverage

The main water service providers are Kikuyu Water and Sanitation Company and the Singuna Water Company, and self-help water providers.

Figure 8-7: Community Water Project in Kikuyu

Source: Field survey, 2015

KIKUTHI water project supplies borehole water in Kikuyu town. However, its original intention was to take the Kikuyu springs from the community in order to increase water supply in Kikuyu because the project has enough resources and manpower.

8.3.3 Demand and Volumes Produced

Kikuyu area is a net groundwater recharge zone. Groundwater contribution to water demand in Kikuyu is about 13,855 m^3/day. Discharge takes place at the eastern and southern fringes through base flow in rivers, which originate from the area, the Kikuyu springs and Ondiri Swamp[7].

There is no sewer system in Kikuyu planning area. The most commonly used sanitation infrastructure includes pit latrines, open defecation, septic tanks and soak pits. It affects the quality of water and as a result, there have been cases of typhoid. The year 2035 water demand for Kikuyu area is estimated at 55,526 m^3/day. The total production capacity of the present sources is 4,202 m^3/day. The proposed future sources to augment the present sources and meet the ultimate water demand for Kikuyu area are: (a) Additional Groundwater Sources – Stage I to supply 9,000m^3); (b) Kamiti 1 Dam (16.4Mm^3/day) to supply 16,416m^3/day; (c) Additional Groundwater Sources – Stage II to supply 9,000 m^3/day; and (d) Ndarugu 3 Dam to supply 20,736m^3/day.

Groundwater is locally available, and the first stage was implemented before the year 2015 to meet the present water supply deficit and the fast-increasing water demand for Kikuyu Area. Kamiti 1 Dam has been selected because it is the only feasible potential surface water source that can meet the demand centre by gravity.

[7] Feasibility Study and Master Plan for Developing New Water Sources for Nairobi and Satellite Towns – Master Plan Report

8.4 Waste Management

8.4.1 Solid Waste Management

- **Types and Volumes of waste produced:** The types of solid waste in Limuru Sub-County includes domestic waste, commercial waste; municipal waste; institutional wastes; industrial waste; and agricultural wastes. The County Government of Kiambu is responsible for collecting and disposal of solid waste in the planning area under the department of Water, Environment and Natural Resources. The main mode of solid waste disposal in the county include; landfills, dumpsites, incinerators, recycling and bio-decomposers. According to Kiambu County Spatial Plan, collection and disposal of waste at urban centres stands at 75%.

  With an average number of household persons are 5 and the average waste discharge ranges from 0.53 to 0.65 kg/person/day, with a population of be 168,790 the total waste generated in the planning area is 109.7 tonnes per day. Thus, 82.3 tonnes of waste is collected per day. The waste generated is expected to increase as the planning area continues experiencing urbanisation.

- **Sources of Waste:** Solid wastes in Kikuyu are a by-product of a broad spectrum of domestic, industrial, service and manufacturing and transportation industries. The areas around shopping centres and markets are more affected. Waste food products and polythene bags are disposed of in the open. There are pungent smells around these areas and polythene bags can be spotted hanging on trees, which spoils the aesthetics of these areas. Mismanagement of these wastes typically has resulted in pollution of the natural environment and may pose a substantial danger to public health and welfare.
- **Distribution of Waste Management Infrastructure:** Sub-County is zoned into major trading centres that include Kikuyu town, Dagoretti market, Kinoo market, Regen, Sigona, Gikambura, Lusingetti, Kamangu, Wangige market, Uthiru and Gitaru.

  The Sub-County is serviced with 1 Environmental officer, 22 support staffs, 1 garbage truck, 1 backhoe and 1 chaff cutter. There are seven (7) skip bins in the Sub-County placed as follows: Kikuyu market – 2 skip bins, Dagoretti market – 2 skip bins and Regen – 1 skip bin, Wangige – 2skip bins. However, additional bins are in the process of procurement which will serve other markets with high generation of solid wastes. There is one (1) Skip loader that is availed from the county director's office on need basis. There are 4 registered private waste collectors in the Sub-County mainly servicing the residential areas.

  The county has a dumpsite in Thika for waste disposal. The waste disposal is faced by long haulage distance (approximately 65 km away) and the heavy traffic encountered. The Sub-County is allocated a tipper with a capacity of 14 tonnes and a side loader with a capacity of 7 tonnes. The tipper has daily collection schedules for Kikuyu Sub-County.

- **Disposal Mechanism:** Waste disposal is a major environmental challenge in Kikuyu town. The common methods practised include open dumping, open burning, incineration of medical waste, informal waste picking. Of these methods, open dumping is the main mode of disposal at Kikuyu town. Solid waste is disposed at the Kikuyu Dumpsite (Kiambu County-owned and operated), which is already full and located in water catchment area near Ngobi forest posing a great risk to underground

water reservoirs. The County Government would like to collect and dispose of this waste in a sustainable manner, but they lack the capacity since the amount of waste being produced is increasing on yearly basis. The County Government is looking for private investors to collaborate in waste management. The problem on the solid waste in Kikuyu planning area needs to be addressed locally through the efficient collection, segregation and development of a landfill.

Expansion of the service area collection is needed to eliminate the dumping of wastes along the open spaces and riverbanks. 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.

- **Solid waste Projections:** According to a JICA report, it is estimated that rate of generation of solid waste is 0.53 to 0.65 Kg per Person per Day and that it is likely to increase up to 150 tons per day in the future (JICA 2010). Using an average of 0.6kg/person/day, in Kikuyu Sub-County it is estimated that the tonnage of waste to be generated by the year 2022 per day will be 129,834 tons from 121,629 tons estimated to have been generated in the year 2019. The table below shows a comparison of population increase against the expected increase in amounts of waste generated in the Sub-County.

Table 8-4: Population growth and the amount of solid waste generated

	Years				
	2019	2022	2025	2028	2030
Population	187,122	199,745	213,221	227,605	237,730
Waste generated (tons)	121,629	129,834	138,593	147,943	154,524

Source: Kiambu County

8.4.2 Liquid Waste Management

- **Sources and Volumes of Waste produced:** The three main sources of liquid waste in Kikuyu Sub-County are residential, commercial, and agro-industries. Stormwater is also a source of liquid waste. Liquid waste from domestic sources can be classified as black water, which contains excreta, and greywater, which does not.

- **Disposal mechanisms and management:** Despite the rapid population and development growth of Kikuyu town, the town does not have a centralised sewerage system, majority of the properties within the town are served by pit latrines, soakage pits and septic tanks. The soakage pits and septic tank often overflows and dispose of raw sewage into the drainage channels which ultimately end up into the permeable subsoil posing pollution threat to water resources and soil contamination.

  Used household greywater is discharged on the roads, most commercial and high and middle-income residential areas use septic tanks and soak pits whilst low-income residential areas use pit latrines. This trend has led to pollution of water bodies, during the rainy season since most residents' pump wastewater to the roadside from whence it is washed to the river. To curb this problem, there is a need to provide a sewer system, which will serve Kikuyu town and other areas like Muthiga, Kinoo, Gikambura, Thogoto, Gitaru, and Dagoretti.

Table 8-5 below indicates the wastewater projections in Kikuyu planning area.

Table 8-5: Wastewater projections Kikuyu Planning Area

	Year				
	2019	2022	2025	2028	2030
Population	187,122	199,745	213,221	227,605	237,730
Quantity of wastewater in litres	1,122,732	1,198470	1,279,326	1,365,630	1,426,380
Assumptions: • 1 person uses a minimum of 7.5 litres a day • About 80% of the water used results in wastewater					

Source: VisionRI

- **Emerging Management Waste issues**

  - **Lacks requisite sanitation facilities:** Kikuyu Sub-County lacks the requisite sanitation facilities for both solid and liquid waste management. This poses a serious public health threat for the growing population of the Sub-County.

  - **Rampant municipal solid waste open dumping:** The management of solid waste is worsened by unsustainable practices that improve environmental contamination and the spread of diseases. In particular, the open dumping in uncontrolled sites, open burning of waste fractions and the mismanagement of the leachate produced in final disposal sites, are the main issues detectable. The situation is worsened in Kikuyu with additional problems of increasing population, traffic, air and water pollution. Uncontrolled disposal in open spaces near water bodies are issues widespread in these contexts, which corresponds to public health issues.

  - **Municipal solid waste burning:** Waste open dumping is not the only environmental burden due to waste mismanagement. The combustion of waste with any precaution generates also contaminants, improving health risks to the population. Uncontrolled combustion, generation of methane gas, and low-temperature burning are major factors for the formation of dioxins in dumping sites.

  - **Construction waste disposal mechanisms:** The main issue due to construction waste is the final disposal site landslides, which can affect the life of the population. For avoiding this impact, the volume of waste dumped in landfills should be reduced, imposing safe operating practices. In particular, 4Rs (reduce, reuse, recycle and recover) policies should be implemented, with hazardous or toxic materials that should be the primary targets.

  - **From waste disposal to resource recovery:** A lesson learned from developed countries is that in order to address the root causes, we cannot afford to focus only on end-of-pipe waste management: we do need to consider also upstream issues. Efforts for waste prevention and waste recovery should be encouraged.

8.5 Storm Water Management

8.5.1 Storm Water Drainage Systems

There is an existing common drainage system, which drains the area. Proposed developments in Kikuyu should be designed to provide for internal drains to collect the surface run-off and safely dispose to the area drainage system. Poor integration of stormwater drains adjacent to the roads will encourage flooding of the roads. Flooding will lead to a number of accidents and fatalities. Planning and developing good road designs will ensure that flooding, especially during the long rainy seasons, is mitigated.

8.6 Energy Infrastructure

8.6.1 Sources of Energy

The main sources of energy in Kikuyu include electricity, kerosene, charcoal and firewood. Electricity is supplied by Kenya Power and Lighting Company and approximately 90% of the houses in the planning area are within the gridline and have been connected. The KPLC power station (66/11KV) that services the planning area is located within the neighbourhood. According to the 2019 KNBS Census Report, electricity is the main source of lighting being used by 93.7% of the inhabitants. This indicates that a better section of the planning area is well covered by electricity. Lantern as a source of lighting is used by 2 per cent of the inhabitants while tin lamps are used by 1.2% of the inhabitants in the planning area as shown in Figure 8-8 below.

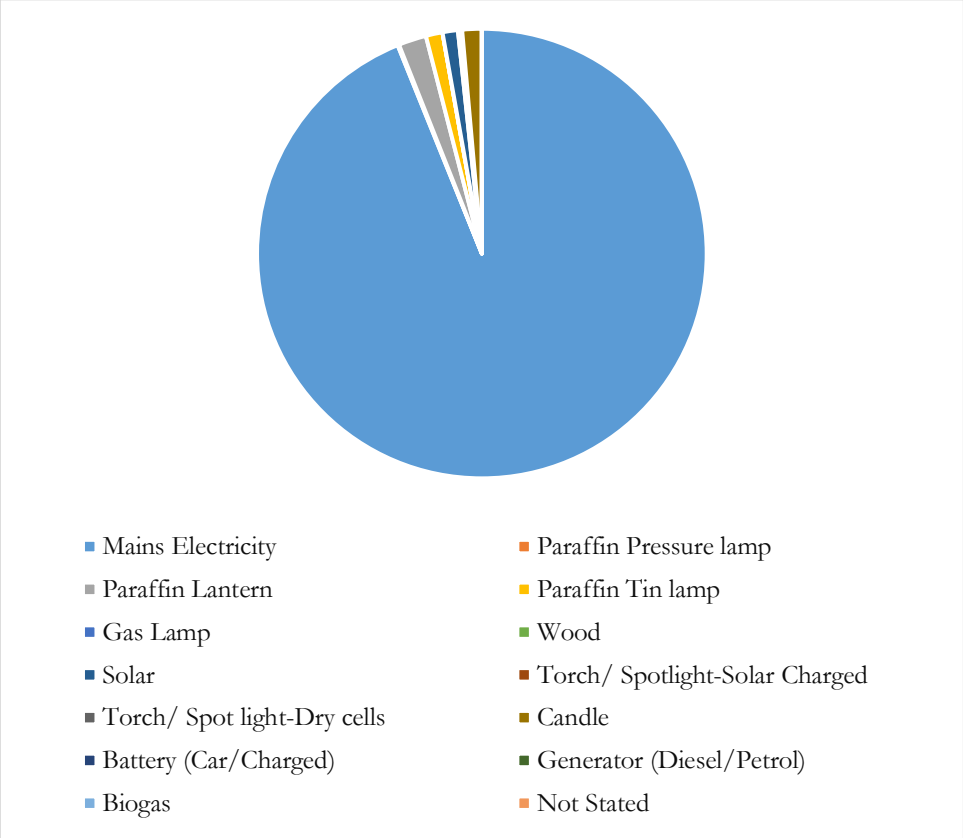


Figure 8-8: Source of Lighting Energy

Source: Based on KNBS, 2019 Census Report

The 2019 KNBS Census report indicates that gas is the main cooking fuel used by Kikuyu residents at 61%, followed by firewood at 18%, Charcoal 12% and paraffin 8%. Electricity and biogas are at 0.7% and 0.4% respectively. The pie chart below illustrates the types of cooking fuel used in Kikuyu Sub-CountySub-County:

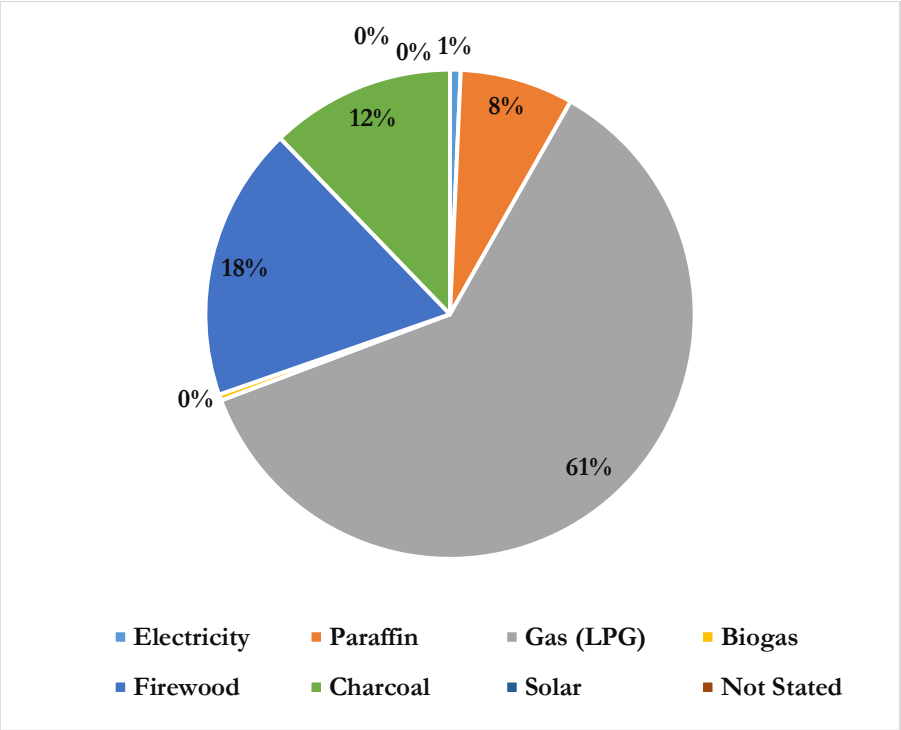


Figure 8-9: Types of Fuel used for Cooking

Source: Based on KNBS, 2019 Census Report

8.7 Information and Communications Technology (ICT)

All mobile phone service providers are in Kikuyu, including Safaricom, Airtel, Orange, Equitel and Yu. Signal reception of all the networks is best within the town while Safaricom signal reception is poor in areas such as Gikambura and Kid Famaco. Mobile Banking is also used in the area and this includes the transfer of money via Mpesa.

Internet use was evident by the numerous cybercafés and local internet service providers. There are numerous cyber cafés and computer learning schools. Mobile internet is also widely used. In addition, fibre optic cables have been laid in all parts of the town.

8.8 Key Planning Issues

Table 8-6: Key planning issues on physical infrastructure

Key Highlights	Opportunities
High cost of water treatment and connection. Water catchment degradation; and Inadequate water due to seepage from water pans especially in Nachu	Financing opportunities from donors etc. Capacity building on water and sanitation; Increased revenue collection; and Irrigation schemes to help improve yields
Street lighting in the town is inadequate because most of these have been vandalised;	Agricultural experts are educating the farmers on how to prepare and use biogas;

Key Highlights	Opportunities
Most of the people use charcoal for cooking implying that more trees have to be cut down every day to provide charcoal; and Frequent power blackouts and surges.	Several learning institutions and health centres are using solar energy; and Firewood stove project by UNEP under implementation. The project encourages the use of wood and solar for lighting.
Disruption of fibre optic cable and other ICT infrastructure during road maintenance and/or upgrading.	Increased private sector investments in ICT; and County Government programme to develop an ICT centre.
Constrained sewerage systems.	County Government involvement in the expansion of the sewerage system.
Poorly designed storm drainage system.	Re-design storm drainage system.
Inadequate waste management system.	

Source: VisionRI

9. SOCIAL INFRASTRUCTURE

9.1 Education Facilities

According to the 2019 Kenya Population and Housing Census, Kikuyu had 59,294 pupils and students at varying levels of education institutions. The largest proportion of these is in primary school. The figure below represents the share of pupils and students in Kikuyu Sub-County.

The Sub-County has a literacy rate of slightly above 95% with over 60% of the population has achieved a secondary school education. The teacher to pupil ratio is 1:40 for ECDE; 1:38 for primary schools; and 1:25 for secondary schools. It has a 92.5% completion rate although there is a lot that needs to be done to maintain and even enhance this. Overall, 34.4% are in an education institution, 47.7% have left school or educational institution and there is a 13.4% dropout rate. Kikuyu is the home of the Alliance High School, the citadel of secondary education in Kiambu County.

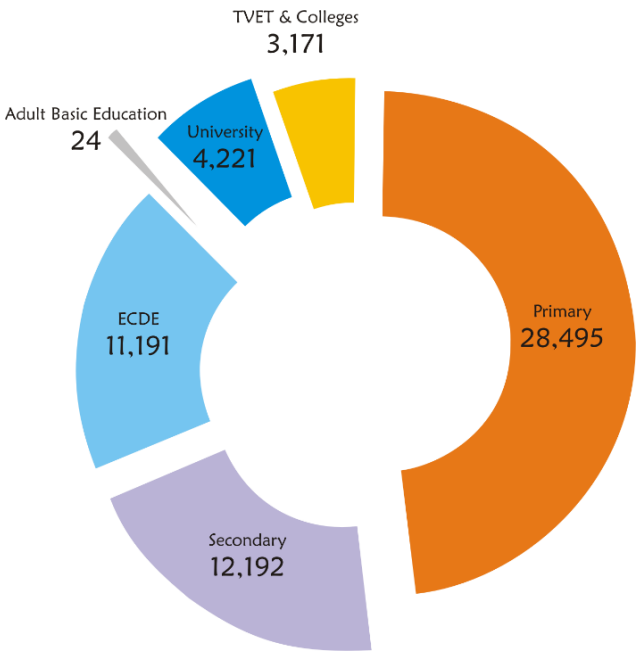


Figure 9-1: Education Facilities

Source: Based on KNBS, 2019 Census Report

The number of female students who have the highest level of education is higher compared to male students, cutting across all levels of learning. The highest education level status in Kikuyu Sub-County is shown in the chart below.

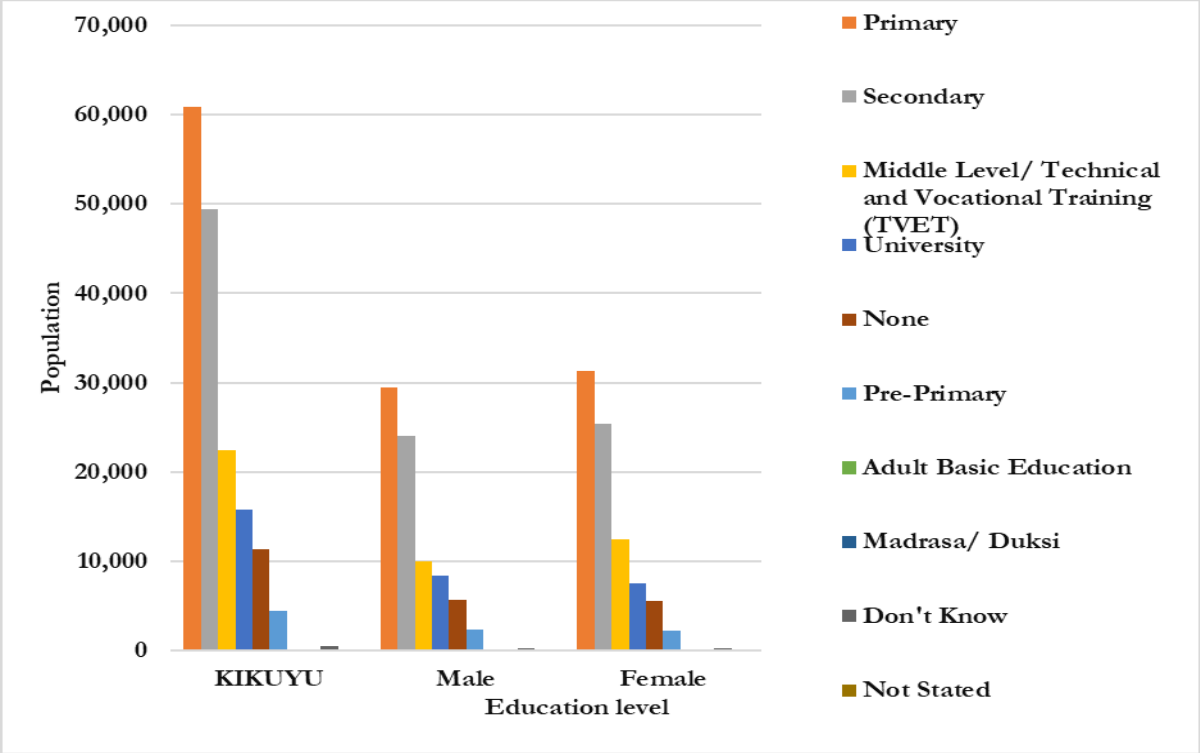


Figure 9-2: Highest Level of Education Completed

Source: Based on KNBS, 2019 Census Report

School enrolment for Kikuyu Sub-County shows that primary school is the highest, followed by secondary, pre-primary, Universities, TVETs, with adult basic education and madrasa being the lowest. The chart below illustrates the enrolment status.

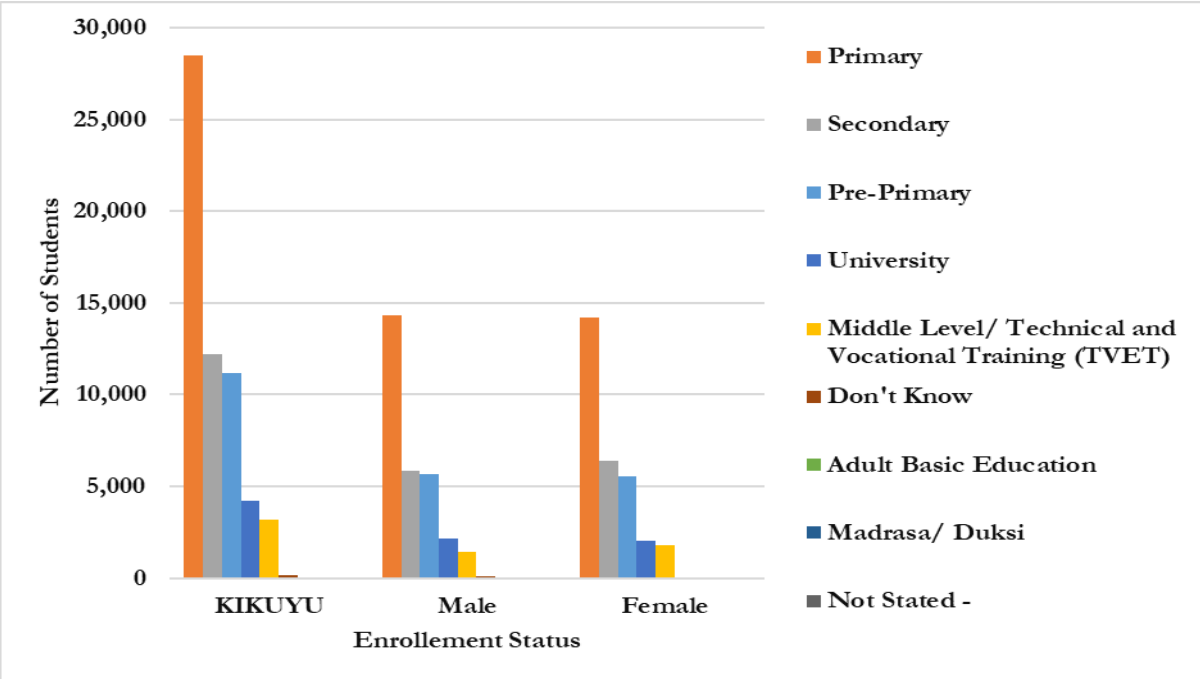


Figure 9-3: School Enrolment Status

Source: Based on KNBS, 2019 Census Report

Approximately 47.7% of students left school/learning institutions after completion, with 13.1% of students leaving school before completing in Kikuyu Sub-CountySub-County and 4.1% have never been to school at all. The school attendance status is shown in the chart below:

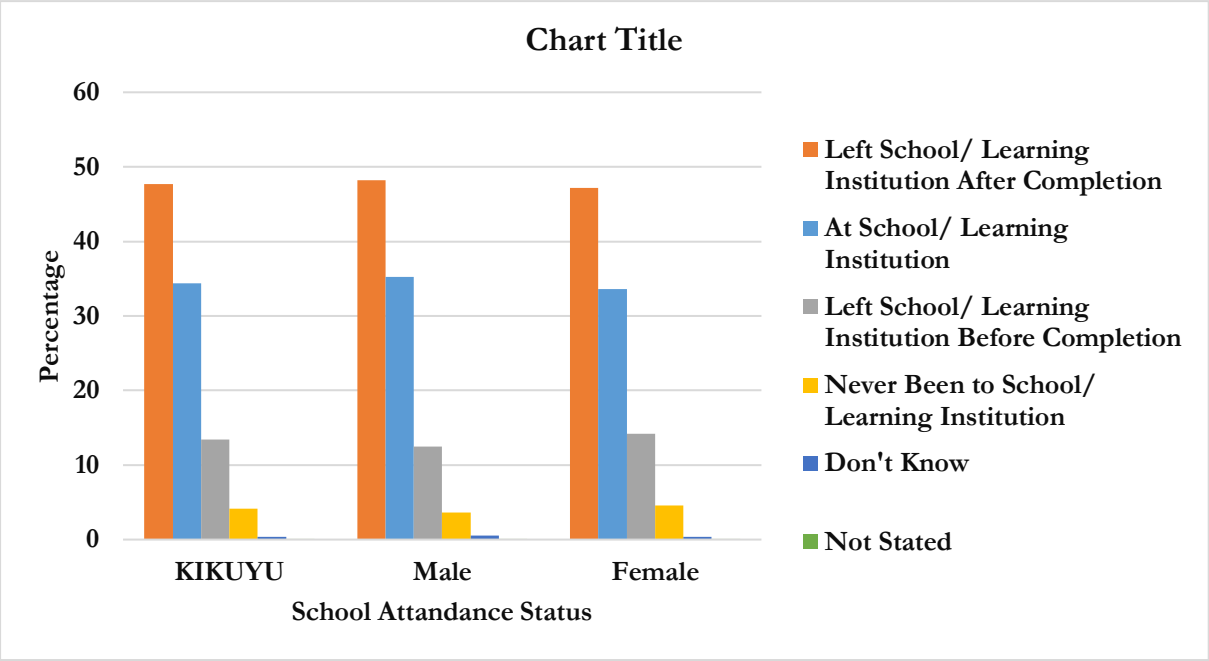


Figure 9-4: School Attendance Status

Source: Based on KNBS, 2019 Census Report

9.1.1 Early Childhood Development Education (ECDE) Facilities

In Kikuyu, there are 57 public ECDE centres with a total enrolment of 11,191 children, which accounts for 5670 boys and 5521 girls. Most of these public ECDEs are located in public primary schools. This poses a challenge to many children accessing them mainly because of the distance covered, with the children being younger and requiring much more attention than those in Primary Schools. This has propelled the growth of private ECDEs in the Sub-County. Currently, there are 203 private ECDE centres.

The government regulations imply the application of public ECDEs at public primary schools, but with the growth of the population, there is a need to review the increase of ECDEs in order to meet the growing demand in Kikuyu. The table below presents the projected number of ECDEs that will be required by the end of the planning period.

Table 9-1: Nursery Schools Projections

ECDE	Year				
	2009	2019	2022	2025	2030
Population projections	125,402	172,833	267,183	316,762	386,413
Total schools required	37	69	107	127	155
Land size (ha)	9.25	17.25	26.72	31.68	38.64
Assumption: 1 nursery school = catchment population of 2500 and requires 0.25 ha of land					

Source: Projections based on the KNBS KPHC 2019 Report Volume 4

9.1.2 Primary School Facilities

The projected number of primary schools needed by 2029 are 97 primary schools based on standards in the 2007 Physical Planning Handbook. Currently, there are 43 primary schools. This implies that there are adequate primary schools in the planning area. However, private primary schools dominate the planning area by 62.8 per cent. The table below illustrates the Sub-County's projections by the end of the planning period.

Table 9-2: Primary Schools Projections

Kikuyu - primary schools	Year				
	2,009	2019	2022	2025	2030
Population projections	125,402	172,833	267,183	316,762	386,413
Total schools	23	43	67	79	97
Land size (ha)	75	140	217	257	314
Assumption: 1 primary school = catchment population of 4000 and requires 3.25 ha of land					

Source: Projections based on the KNBS KPHC 2019 Report Volume 4

9.1.3 Public Secondary Schools

Kikuyu Sub-County has 31 public secondary schools with a total enrolment of 14,240 students including 7,066 boys and 7,174 girls. Therefore, the vacancies for boys and girls in the Sub-County are nearly equal. However, for some reason, there are 28 private secondary schools in the Sub-County with a total enrolment of 3,786 students including 1,531 boys and 2,255 girls. Therefore, about 26% of the secondary school students in Kikuyu planning area attend private secondary schools, that is more than a quarter of the secondary school student population. This calls for a re-examination of the public secondary schools in the planning area in terms of the quality of education and the number of vacancies they offer.

According to projections based on 2007 Physical Planning Handbook, in 2028, only 40 secondary schools will be needed to adequately serve the population. This implies that there is a need to add 9 more secondary schools by 2028. Currently, the secondary schools available exceeds the current demand by 10 schools. The private sector has 47 per cent of secondary schools in the planning area. Factoring in this dynamic, the county government should ensure the provision of affordable secondary education to all in the planning area. Table 9-3 below indicates secondary schools' projections in the planning area.

Table 9-3: Secondary Schools Projections

Kikuyu - secondary schools	Year				
	2,009	2019	2022	2025	2030
Population projections	125,402	172,833	267,183	316,762	386,413
Total schools	11	22	33	40	48
Land size (ha)	76	149	230	273	333
Assumption: 1 secondary school = catchment population of 8,000 and requires 6.9 ha of land					

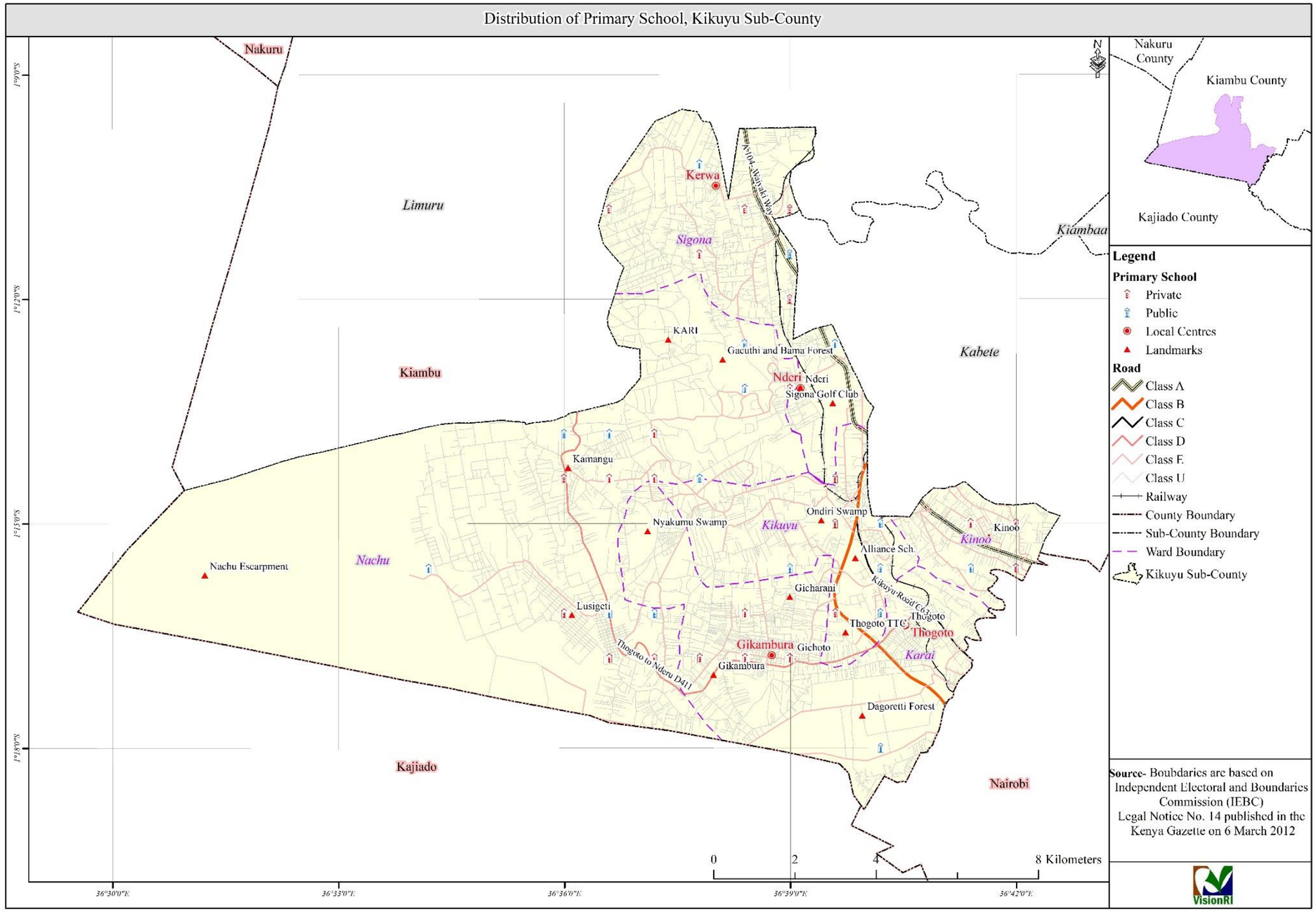
Source: Projections based on the KNBS KPHC 2019 Report Volume 4

9.1.4 Adult Education Centres

Kikuyu has 23 Adult Learning Centres with a total enrolment of 300 learners amongst them 93 men and 207 women. Under the prevailing good-enrolment high-completion rate in the Sub-County, it is envisaged that the number of adult education facilities will drastically reduce, while the literacy levels will increase.

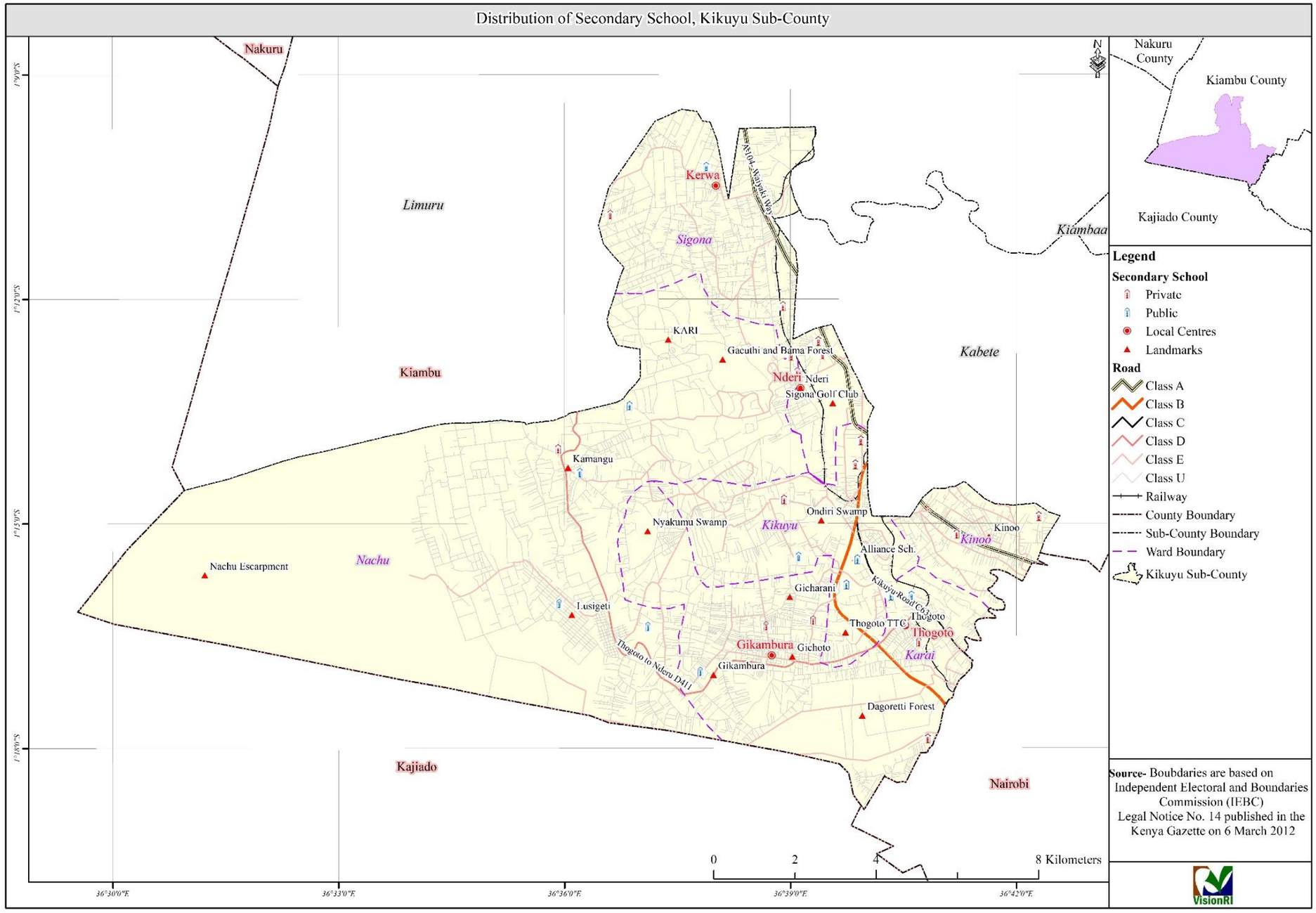
9.1.5 Universities

The University of Nairobi's College of Education and External Studies is in the Sub-County. There is also a privately owned academic institution, namely the Presbyterian University of Eastern Africa. Thogoto Teacher Training College is also domiciled in the Sub-County.



Map 9-1: Location of Primary Schools

Source: VisionRI



Map 9-2: Location of Secondary Schools

Source: VisionRI

9.2 Health Facilities

9.2.1 Available facilities

The population of the planning area and its main concentrations imply that there should be a public hospital for example in Kikuyu Town, but there is none. Gikambura market has a health centre. Kikuyu Ward with a population of 32,422 in 2009 has no public health facility. Nonetheless, the planning area appears to rely heavily on local private health facilities such as the Kikuyu PCEA Hospital and those in Nairobi. There was only one hospital in the planning area and outside the major town of Kikuyu. There were only 3 doctors and 4 clinical officers in the planning area. The only health centre in the planning area has just 2 nurses and no clinical officer, yet staffing requirements dictate that there should be a clinical officer at a designated health centre. The health facilities and staffing outlook is presented in Table 9-4.

Table 9-4: Public Health Facilities and Staff Numbers

No.	Name	Owner	Ward	Nurses	Clinical Officer	Medical Doctors
1	Lusigetti Hospital	GOK	Karai	16	3	2
2	Gicuru Dispensary	GOK	Sigona	9	2	0
3	Nachu Dispensary	GOK	Nachu	2	0	0
4	Gikambura H. Centre	GOK	Karai	2	0	0
	Total			29	4	3

Source: Kikuyu Sub-County Public Health Office, 2015

9.2.2 Hierarchy of Health Facilities

Kikuyu Sub-County has two (2) hospitals namely Kikuyu hospital and PCEA hospital. There are four (4) health centres located in Sigona, Kikuyu town, Karai and Lusigetti. Four (4) dispensaries are found in Kari, Nachu, Gicharani and Wanamed Centre. The planning area has three (3) clinics only. Map 13 shows the location of the different health facilities in Kikuyu Sub-County.

9.2.3 Doctor-patient ratios

According to the World Health Organisation (WHO) standards, the standard set doctor: patient ratio stands at 1: 1,000. This implies that every 1 physician should attend to a maximum catchment population of 1,000. The planning area has only 3 doctors, 4 clinical officers and 29 health professionals. Hence, a ratio of 1:5536 of the health professional, this falls short of WHO standards, which recommends 34.5 skilled health professionals per 10,000 populations that, translates to 1:2899. Currently, the planning area has a 1: 66,442 doctor-patient ratio.

9.2.4 Projections and Needs

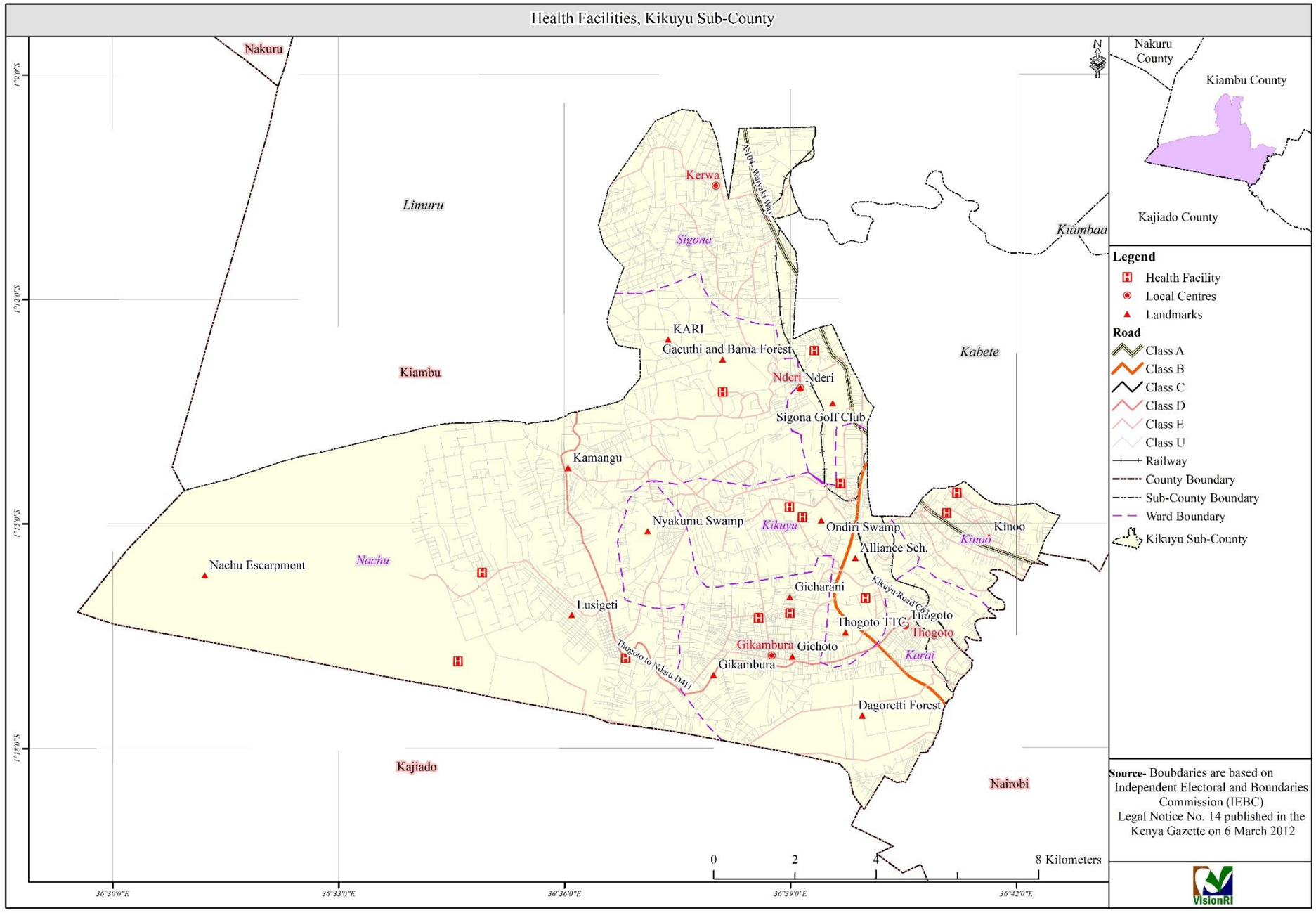
The Kenya Health Policy 2014-2030 requires that residents travel no more than 5km to health facility then the planning area largely falls short especially in Kikuyu Ward where there is no public health facility. The WHO standards state that 1 physician is needed for every 1000 persons. The projected population in 2025 will be 361970 this implies that there will be a need of at least 361 physicians. Currently, there are 36 health professionals in the planning area implying a deficit of 325 health professionals by 2025. If one has to assess the planning area against the WHO (World Health Report, 2010) standard of 34.5 skilled health professionals per 10,000 populations, the

planning area fares very well and surpasses WHO requirements in that front as there is a total 36 health professionals translating to about 1 professional to 3484 populations. According to the physical planning handbook, 1 hospital should serve a catchment population of 5000 people and should occupy 2Ha. The land should be adequate to allow future expansion.

Table 9-5: Projection of Number of Health Facilities

Year	2009	2018	2022	2025	2030
Population projections	125402	168790	220008	268385	327399
Total Hospitals	18	33	44	54	66
Land Size (Ha)	36	66	88	108	132

Source: VisionRI



Map 9-3: Health Facilities Map in the Planning Area

Source: VisionRI

9.5 Social Facilities and Amenities

9.3.1 Urban Safety

The United Nations provides that 1 police post is supposed to serve 4,500 people. A single police post should cover a minimum of 0.1 Ha while a police station in a township should cover 3Ha. The police to citizen ratio is 1:450 (Africa Check, 2017). Each township within the planning area should have a police station. The planning area should have 80 police posts well distributed as indicated by the projections for the year 2025. Table 9-6 shows the police post requirements for the planning area.

Table 9-6: Police Station Requirements

Year	2009	2018	2022	2025	2030
Total Population	125,402	168,790	220,008	268,385	327,399
Number	20	37	48	59	72
Land (Ha.)	2	3.7	4.8	5.9	7.2
Assumption 1 Police Post per 4,500 people covering 0.1Ha					

Source: VisionRI

9.3.2 Community Amenities

Recreation, Public Parks & Playgrounds

The planning area is near Nairobi and there are chances that many of the people who live there and require sports and recreation facilities may be using those in Nairobi. Otherwise, within the planning area, there were no such facilities as stadia and social halls with a capacity to host in-door games. Play and picnic for the family are becoming common practice for the modern family in Kenya's urban areas. For this to happen there is a need for public parks that are clean, secure and spacious. These spaces will be the backbone of social life in urban areas in the coming years and should be included in urban and regional plans. Kikuyu Town has a small park that is usually in use as crusade site and thus defeating its use as a park. There are no playgrounds around the planning area. The planning area currently lacks a playground or any public park. According to standards set by the United Nations, at least 1.5Ha of open space is required for every 5000 catchment population. Table 9-7 shows the land requirement for recreational facilities (public parks and playgrounds) in the planning area.

Table 9-7: Projection of Recreational Needs

Year	2009	2018	2022	2025	2030
Total Population	125402	168790	220008	268385	327399
Number of facilities	18	33	44	54	66
Land (Ha.)	27	49.5	66	81	99
Assumption 1.5Ha per 5000 catchment Population					

Source: VisionRI

9.3.3 Religious Facilities

Religion is very strong in rural and urban Kenya alike. In Kikuyu planning area, there is a lot of religious activity. The Presbyterian Church of East Africa (PCEA) runs a university and a hospital in the outskirts of Kikuyu Town, the Catholic Church, Seventh-day Adventist Church, the Anglican Church and many others have many churches in the planning area. The number of Christian denominations and adherents continues to grow. This calls for more land and services including parking space, water and sewerage, security and regulation to the church facilities in the planning area. The establishment of religious facilities should be such that it allows for future expansion. A minimum of 0.1 hectares' space provision is adequate[8].

9.3.4 Fire Stations

A catchment population of 50,000-100,000 is supposed to be served by 1 fire station having a single fire engine and at least 30 staff members (Physical Planning Handbook, 2007). A single fire station is required to cover an area of 0.4Ha. Proper road networks should be established to ensure ease in movement of fire engines. Kikuyu currently lacks a fire station. The population has been projected to be 431,678 in 2028, this implies that a minimum of 6 fire stations should be provided for in the planning area by 2030. Table 9-8 shows the number of fire stations required as per projection and the size of land they will cover.

Table 9-8: Projections and needs of firefighting stations

Year	2009	2018	2022	2025	2030
Total Population	125402	168790	220008	268385	327399
Number	1	2	4	5	6
Land (Ha.)	0.4	0.8	1. 6	2.0	2.4
Assumption 0.4Ha per 50,000-100,000 catchment Population					

Source: VisionRI

9.3.5 Cemeteries & Crematoriums

Urbanisation drives some kind of social change. In the case of burial ceremonies, burial sites change in most cases from villages to urban spaces set aside by local authorities for that purpose. In Kikuyu planning area, there are three cemeteries one is situated near Thogoto, which is mainly used by Christians. The other two cemeteries are situated in Nachu ward. These include Nyayo cemetery in Lusingetti, which covers 3 acres as well as Nachu Mbomboini cemetery that covers an acre. The cemeteries have poor road connectivity rendering them inaccessible during the rainy seasons. There is a need to fence the cemeteries so as to secure them. Sheds and washrooms should also be planned for within the cemeteries.

[8] Physical Planning Handbook, 2007

9.4 Key Planning Issues

Table 9-9: Key planning issues on social infrastructure

Key Highlights	Opportunities
The entrenchment of private schools at 26% in primary sub-sector; Limited public land for new schools during the planning period; and Inadequate ECDEs and classes for pupils with special needs.	County and national government support to basic education; and Free Basic Education Policy at National Level.
The poor spread of the available public health facilities in the planning area; and Long distances covered by residents to reach health facilities.	County government support to health services in the planning area; and Free Health Care for All Policy being pursued by the National Government.
Lack of public parks, stadium and playgrounds in the planning area; and A weak history and use of public parks, sports, and social halls in the planning area.	Possible funding for sports activities and facilities from the County Government and National Government; and Middle-class influence from Nairobi will increase demand for leisure and play spaces
Lack of public cemeteries and burial grounds for Muslims in the planning area; and Weak support from CDF in setting up cemeteries in the planning area.	Preference by people to bury the remains of their loved ones in public land to free private land for commercial purposes; and Shrinking privately owned land sizes per family.

Source: VisionRI

10 ECONOMIC ANALYSIS

10.1 Overview

Kikuyu has been defined in the 2030 Spatial Plan as an "Agro-based Industrial Town". Furthermore, the Spatial Plan envisions Kikuyu as an "Intermediary town" with key administrative functions and higher-level infrastructure. The planning area is characterised by a strong industrial base and booming secondary and tertiary sector activities, which can make it to efficiently function as headquarter of Kiambu County. The planning area is key in promoting rural development in the region and in achieving a balanced distribution of the urban population. The planning area is under pressure from economic growth and development perspective.

10.1 Local Economy

Kikuyu has gradually developed into industrial area overtime having several factories ranging from the metallic to the medical sector but maintains a high agricultural component in the local economy. Many institutions have developed in Kikuyu, including a major eye unit hospital, a Christian university, and many primary and secondary schools.

As per the Spatial Planning Concept for the Nairobi Metropolitan Region, 32.15% of Kikuyu residents are employed. While 16,574 are formally employed, 61,665 are employed in the informal sector. While the current formal to informal sector employment is projected ratio is 1:4.54, it is projected to reach 1:2.50 by 2030. Qualifying as an agro-industrial town, 36.85% of the employed residents are employed in agriculture, while another 50.35% are in the service (tertiary) sector. The remaining employed people work in the transportation, manufacturing and construction sectors. **Error! Reference source not found.**

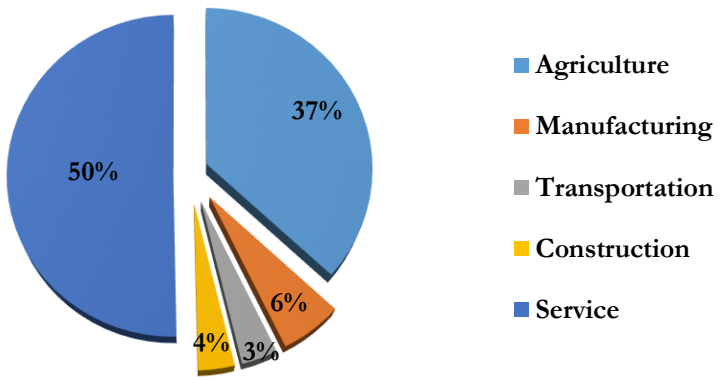


Figure 10-1: Occupation Distribution Analysis

Source: Spatial Planning Concept for Nairobi Metropolitan Region, Govt. of the Republic of Kenya, 2012

The main forms of livelihood in the Kikuyu planning area are discussed below:

- **Industries:** There are a number of industries in Kikuyu that have created employment in the area. Some of these industries are Steel Rolling industry, Poly-pipes and Blue Nile.
- **Transportation:** In the planning area, at least 3% of the inhabitants engage in transportation as an occupation. This entails employment in the motorcycle, matatu and lorry businesses. While motorcycles transport people, mutates transport people as well as goods to and from Kikuyu, lorries are hired for the transportation of heavy goods such as cement, timber and construction stones.
- **Real Estate:** Construction is picking up with plot owners building real estates and commercial apartments having 4% as the inhabitant's occupation. The planning area is highly concentrated with residential houses. There are those who have constructed their own homes and those who have constructed rental residential apartments. People living in these rental residential apartments are those working or doing business; in Kikuyu planning area and those employed in Nairobi but using Kikuyu as a 'dormitory town'.

10.2 Agriculture

As per the Spatial Planning Concept for the Nairobi Metropolitan Region, at least 50% of the inhabitants engage in agricultural activities. This is mainly attributed to its geology and rich soil texture. There is much livestock and crop farming in the Kikuyu planning area. Crop farming entails growth of vegetables, maize, beans and other food crops. Inhabitants within the planning area also practice poultry farming and dairy farming. Agriculture is expected to support and boom the economy of Kikuyu.

Kikuyu Sub-County is generally an arable agricultural area as a mainstay for most households. However, a large proportion of the land remains for subsistence agriculture during the diminishing land sizes. In Karai and Nachu area on the lower sections of the Sub-County, which are drier crop farming is not reliable due to erratic rainfall patterns. Most of the farmers grow maize and beans.

Table 10-1: Distribution of agricultural land by type of farming

Type of Farming	Agricultural Land
Area of Agricultural Land (Hectares)	5,439
Area of Subsistence	4,545
Area of Commercial	809
Not Stated	85

Source: Based on KNBS, 2019 Census Report

10.2.1 Types of Agricultural activities

- **Livestock:** Livestock rearing is practised at the household level. Some of the domestic animals kept in the Sub-County include exotic cattle (dairy, beef), indigenous cattle, sheep, goats, donkeys, pigs, chicken (indigenous, layers, broilers), beekeeping and rabbits.
- **Fish farming:** Fish farming is practised at the individual level and usually consumed within the Sub-County. The total number of ponds is 156. The two main types of fish within the region include; Tilapia and Catfish with 10% being catfish. The fish market consists of a major fish shop in Kikuyu town and the rest are sold by hawkers; most

fish is sold at the pond site. The total fish production in a year is approximately 2 tonnes.

Table 10-2: Distribution of Households Rearing Livestock and Fish

Activities Rearing Livestock and Fish	Households
Farming	17693
Exotic Cattle Dairy	3771
Exotic Cattle Beef	479
Indigenous Cattle	575
Sheep	2447
Goats	1869
Donkeys	957
Pigs	1336
Indigenous Chicken	8393
Exotic Chicken Layers	1066
Exotic Chicken Broilers	321
Beehives	141
Rabbits	416
Fishponds	25
Fish Cages	1

Source: Based on KNBS, 2019 Census Report

- **Crop Farming:** The key crops produced within the planning area include maize, beans, Irish potatoes, and various cash crops described in Table 10-3.

Table 10-3: Distribution of Types of Crops Grown by Households (in Tons)

Crops Grown	Households
Farming	17,693
Maize	13,449
Potatoes	12,438
Beans	12,733
Cassava	338
Sweet Potatoes	782
Bananas	3174
Cabbage	2,178
Tomatoes	1,259
Onions	2,421
Kale	8,210
Sugarcane	1,054

Source: Based on KNBS, 2019 Census Report

The average farm size within the planning area is 0.2 hectares. Below are advantages that collectively make Kikuyu an attractive hub for agricultural activities, which could lead to the development of the planning area as an agro-business hub.

On the upper regions of Kikuyu, where the land and climate favours agriculture, the main agricultural activities include:

- Small scale dairy farming – mainly zero grazing for the domestic and commercial market;
- Poultry farming – for example, Muguku farm, a leading producer of chicken and eggs;
- Greenhouse agriculture – a favourite in regions affected by reduced rainfall and climate changes; and
- Flower farms – such as the Magana Flowers, that produces for the export market in the European Union and China.

10.2.2 Food Security

- **Factor Endowments:** The planning area has availability of arable and fertile land, good climate, and existing pool of farmers in Kikuyu and other important resources will support the development of Kikuyu into an agro hub. Frequent rainfall favours agricultural activities such as crop growing, commercial farming and dairy farming. In addition, an abundance of water from the river for irrigation further supports the farming of water-intensive crops.

- **Demand for Food:** In low and middle-income countries, the demand for food is driven by rapid population growth and high-income elasticity. The NMR is a high growth area characterised by a huge influx of people, businesses and services. Market demand for processed, packaged and value-added food will also rise as incomes rise in the metropolitan region. Kikuyu can exploit these opportunities to cover a substantial portion of this market with a strategically planned production and marketing of its agricultural products.

- **Availability of land for expansion:** The planning area has adequate land for expansion for farming activities and building of warehouses, cold-storage plants, packaging plants, and other establishments for elaborate supply chain management of products in the town provides a key comparative advantage to Kikuyu in its development as an agro-based town.

- **Agricultural Supporting Infrastructure:** Creation of improved road networks within the planning area will ensure proper connectivity between the farms and the markets as well as the industries. This ensures an efficient flow of farm produce. There are educational institutions within the planning area focusing on agriculture in the town. These facilities should be utilised in capacity building amongst the locals. This will result in increased farm produce hence increases profits.

Given the above advantages, there are expected to be substantial backward and forward linkages due to the development of Kikuyu into an Agricultural hub. In addition to the macroeconomic channels through prices for non-tradable agriculture and the foreign exchange for tradable agriculture, growth of agriculture can enhance growth in other sectors through consumption and production links. When agricultural incomes are spent on domestically produced non-tradable goods and services, it stimulates demand for domestic industry and services. Production links proceed forward by fostering growth in agro-processing and food marketing and backward through demand for intermediate inputs and services. The availability of resources, favourable

investment climate and the right set of public policies and government strategies are pre-requisite in allowing a supply response from the non-agricultural sector in order to realise these links.

It is essential that agricultural growth in the region does not lead to environmental degradation, nor does it challenge the ecosystem of the planning area. The negative externalities of expanding agricultural activities could range from the depletion of groundwater, soil erosion, greenhouse gas emissions, and the decline of biodiversity and degradation of natural resources. Techniques such as crop rotation, green manure, compost, and biological pest control may be employed in the area to get hold of these externalities. This will keep ecological balance despite the increased pressure on land in the future, thus leading to sustainable economic development.

Based on inputs from stakeholders during various Focused Group Discussions, one-on-one interactions and comments on preliminary draft reports and Consultant's analysis, strategic development of the planning area as an industrial hub is being analysed. Growth of agricultural products in Kikuyu planning area can help thrive industries, which are dependent on these products, such as warehousing, packaging, transportation and export of food and cash crops. Export and sale of crops and high-value agricultural products in Kikuyu are very modest till date. The following sector-specific and generic comparative advantages that Kikuyu enjoys will support its transformation into an agro-based industrial hub.

10.3 Commerce

10.3.1 Cooperative Societies

The cooperative movement is the bedrock of the Kenyan economy helping pool resources and provide micro-credit at affordable interest rates. The cooperative movement outlook in Kikuyu is presented in Table 10-4.

Table 10-4: Number of Cooperative Societies by Type and Membership Size

Type of Cooperative	Number	Membership
Coffee Societies	1	85
Dairy Cooperatives	4	4,434
Urban SACCO Societies	15	1,503
Housing Cooperatives	4	252
Rural SACCO Societies	17	11,000
Transport SACCO Societies	9	1,000
Total	50	18,274

Source: Kikuyu Sub-County Cooperative Development Office, 2015

10.4 Industry

10.4.1 Existing Agro-Industrial Base

There is already an existing basic supply-side market of agro-industrial goods in Kikuyu, providing a base for the expansion of similar activities. As the industry grows, economies of scale will be realised, costs will decline, and production will become more profitable.

10.4.2 Availability of Raw Materials

As discussed earlier in this chapter, Kikuyu produces a number of food and cash crops, the enhanced output of such crops may feed into agro-based industries as raw material.

10.4.3 Support Services

Support services like storage, warehousing, banking, housing, and a few hotels are in place for initial investors to function in the planning area with comfort. Professional Service Firms are also present, expected to support the growth of industries and flow of investments in Kikuyu's agro-business sector, as well as gain profits.

For some developing countries, the rise in imports of agricultural products by developed countries has constituted an opportunity to upgrade and diversify their agriculture and agro-industry, thus stimulating growth. Fresh agricultural produce in Kikuyu should be made more intensive in knowledge and services; it can have more value-added than some processed industrial goods. Significant trade in fresh fruits and vegetables is a relatively new phenomenon linked to innovations in post-harvest systems and animal traceability, in logistics and marketing.

Besides packaging and export of fresh agricultural produce like fruits and vegetables, manufacturing plants for agro-based products like tomato sauce, fruit juice, fruit pulp, pickles, soft-drink concentrate, alcohol, potato chips, packaged sweet corn and others can be developed in Kikuyu. The industry should try to create differentiated goods to create a long-lasting market for itself and make higher profits in the long run. Research suggests that successful countries build on their comparative advantage in primary commodities through investing in innovation to increase value-added; Kikuyu should add value to its farm-output.

The Sub-County authorities as well as the County Council need to play the lead role in the development of agro-based industry in the planning area. Public investments in Research & Development, post-harvest infrastructure, and overseas market research need to be made initially. Tax incentives for fruit exporters, acquisition of state-of-the-art knowledge in horticulture, and the development of research institutes focused on developing crop varieties adapted to local conditions could be some first steps taken. By substantially reducing both risk and initial investment requirements, the public sector's support would lay the basis for private sector participation. As the interest of private investors starts building up, small credits may be provided to groups of medium to large producers; they may also be trained in agricultural extension and technology transfer.

Investments in logistics infrastructure for perishable exports and in quality and food safety assurance systems will be instrumental in the planning area's growth into an export-hub. Road/rail/air accessibility to and from Kikuyu, as well as a large sub-regional wholesale market, should also be planned. Substantial investments in supply control and traceability systems, upgrading of packinghouse facilities (such as improved water and sanitation and advanced cold treatment and storage systems), staff training and environmental testing will have to be undertaken by the private sector in the fresh produce industry, allowing them to service the demand for premium-quality products such as salads and other semi-prepared vegetable products, particularly for export to the EU.

Apart from developing an agro-based industry, Kikuyu can also provide value-addition to other goods imported into and exported from the country. Kikuyu is situated on the road to Uganda, the Rift Valley and central Africa. Proximity to a major road network should have a positive impact on the organisation of manufacturing activity, and lead to the growth of new manufacturing plants, through industry-level sorting and efficient resource allocation. The planning area could have an

important industrial role on transformation and value-addition to goods imported through Mombasa port, such as processing, packaging, storage and transportation, as well as those produced in other regions and exported from Nairobi. This would provide Kikuyu with a higher-grade industrial potential, eventually leading to higher economic growth and development.

A realistic strategy for sustainable industrial development could be based on finding opportunities for upgrading within the primary and natural resource-based sectors. The potential for generating spill-overs to other sectors and sustaining growth, as well as for poverty reduction, is probably greater in agriculture than in other sectors. While Kikuyu may not be able to compete in the production of sophisticated manufactures in the near future, it can probably compete in the production of some dynamic agricultural products and processed agricultural goods.

Production Yields: It would be expected that the arability of Kikuyu would favour better yields from agriculture. However, this has not been the case owing to climate changes, characterised by reduced rainfall and unpredictable weather patterns. Thus, there has been a gross reduction in the amount of produce coming from rain-fed agriculture practices. Farmers have resorted to practising alternative agriculture with using greenhouses, zero-grazings for dairy animals and irrigation from the limited water sources in the region.

Market Dynamics: Most of the produce from subsistence agriculture is targeted to the local market. However, the influx of cheaper import products has created a regional imbalance in regional supply and demand patterns. Conversely, farmers involved in greenhouse agriculture focus on markets beyond the region in neighbouring towns and cities and for the export market. Floriculture is mainly for the export market.

Value Addition: Kikuyu does not have an exhaustive value chain for the locally produced agricultural products. There are however some cottage products that have resulted in the local sourcing of raw materials. These include milk processed to yoghurt, ghee and cheese; vegetables processed to crisps and dry greens; meat products.

10.4 Tourism and Hospitality

Kikuyu Sub-County is privileged to have two (2) tourism sites. Sigona Golf Club, located in Sigona ward is used for both golfing and swimming activities. On the other hand, the Church of the Torch is a prayer centre for spiritual nourishment and gatherings.

10.5 Key Planning Issues

- Land subdivisions – that are directly impacting on the productive regions of the Sub-County;
- Climate change – affecting the agricultural potential of Kikuyu;
- Reduced water resources – exacerbated by the increased population of the area and demand for domestic water superseding that required for agriculture; and
- Price fluctuations – affected by agricultural imports into the local market e.g. the price of import eggs is cheaper than locally produced ones.

As per the Spatial Planning Concept for the Nairobi Metropolitan Region, at least 37% of economic activities are classified as small and medium enterprises. Within the town, most people are engaged in running small-scale retail shops. Supermarkets such as Satellite, EastMatt and Selfridge have also created employment. Petrol stations (Kenol, Kobil and Shell) and a number of Banks (co-operative, Equity, Barclays, KCB, Jamii Bora, KWFT and K-Unity) have created a rise in demand and supply of tertiary (service) labour. Kikuyu town can currently be seen as a

commercial hub because more than half of the population is engaged in business activities like retail shops, supermarkets, petrol stations, banks, transportation business and Jua Kali. The total Revenue Potential of SMEs in Kikuyu in 2013 was 123.38 Million Kshs.

There are many potential prospects for growth of Economy and Businesses in Kikuyu, particularly in the Agriculture and Industrial sectors. The growth in opportunities can be attributed to several catalysing factors, some of them discussed below:

Table 10-5: Key planning issues on the Local Economy

Key Highlights	Opportunities
The town is congested and characterised by vertical construction. The outskirts of the town are mainly composed of urban agriculture and residential land use.	**Availability of space for expansion** in the outskirts will favour the construction of more establishments such as manufacturing units, industries, farmlands, houses and apartments. The land, as opposed to neighbouring towns, is relatively cheaper. This has led to an influx of construction activities, businesses, people and economic growth.
Kikuyu's annual population growth rate of 4.13%, is due to substantive migration to the planning area as well as the high birth rate.	**Population Growth**: As the population grows rapidly, demand for goods and services will increase leading to the growth of markets, residential space, and services are likely to boost, thus creating market opportunities for the goods and services.
The infrastructural development plans by the County Government are expected to provide support services to the growth of business activities in the planning area.	**Infrastructural Development**: The planning area's proximity to Nairobi capital city will be instrumental in its economic growth. The Southern bypass that connects Mombasa road to Nairobi-Naivasha Highway at Gitaru via Kikuyu favours the growth of economic activities in the area.
Planning in the NMR will lead to high-density development around key mass transit stations, enhancing the economic and financial viability of businesses and commercial activities in the region.	**Transit-Oriented Development (TOD)**: High allocation of resources for infrastructural development of the planning area by the County Government would lead to high standard business infrastructure.
The planning area is characterised by good banking services and a well-developed network of commercial, transport and other services. This could attract huge investments and FDI in the planning area.	**Investment Attractiveness**: The town is located about 20 km northwest of Nairobi, the capital of Kenya. The planning area houses Ministerial department offices like Agriculture, Immigrations and Registration of Persons, Health, Lands and Gender amongst others as well as a railway station on the Mombasa-Malaba Railway Line. All these factors are likely to boost investors' confidence and investment favourability in the planning area.

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 in the County at the Sub-County, ward and village levels. Kikuyu Sub-County consists of five wards, namely: Karai, Nachu, Sigona, Kikuyu and Kinoo.

11.2 Institutional Framework/Administrative Structure

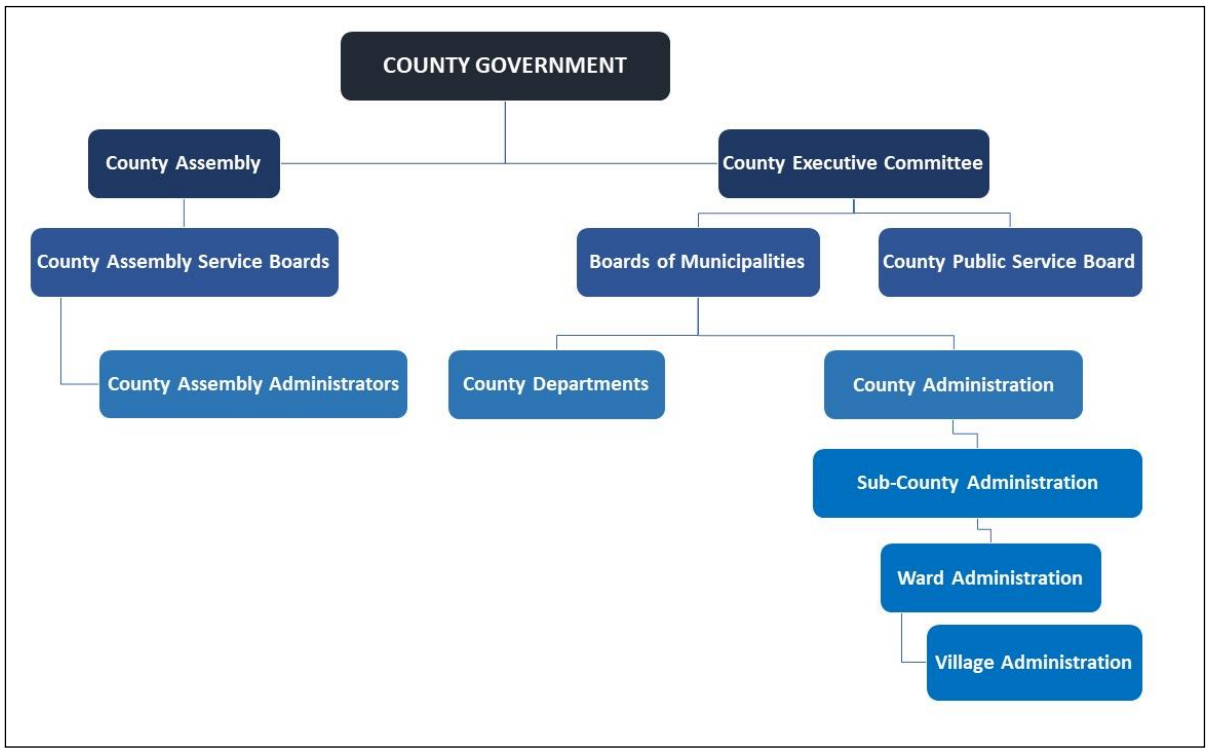


Figure 11-1: County Government Administrative Structure

Source: VisionRI

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

The Kikuyu 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.

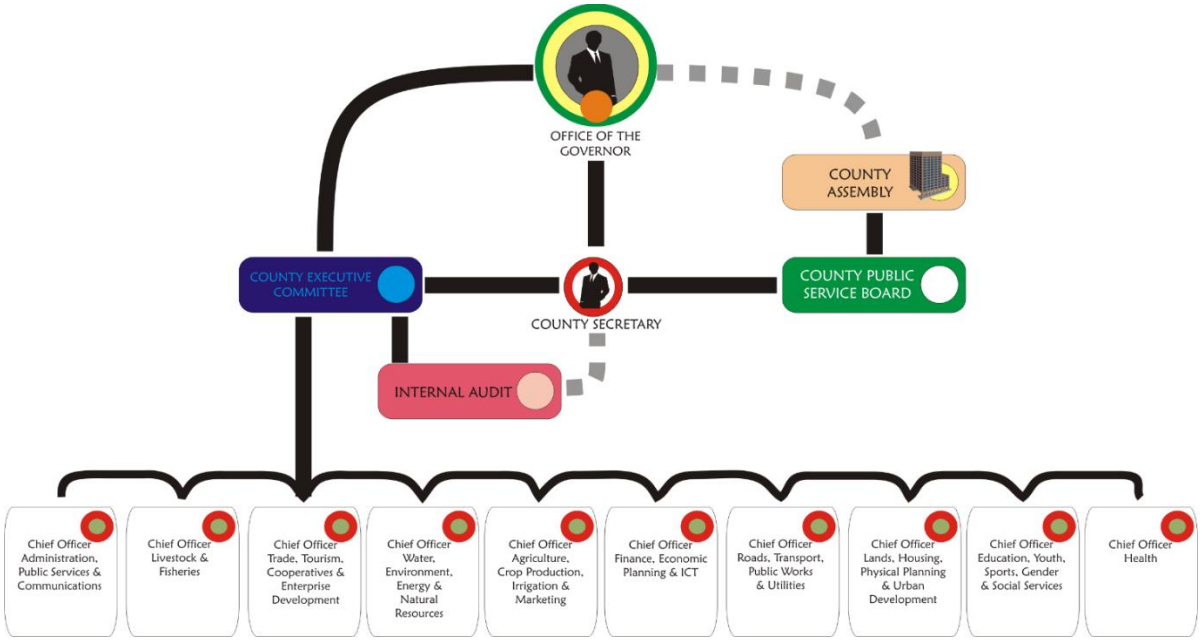


Figure 11-2: Kiambu County Government Organisation Structure

Source: Kiambu County Integrated Development Plan, 2018-2022

11.2.1 Legislations and enforcement mechanisms

Constitution of Kenya (2010) distributes planning functions across a two-tier 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 of Kenya 2010 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 Governments Act 2012 prescribes the powers, functions and responsibilities of the 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 Governments 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.

11.2.2 Mechanisms of Participation

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

- Information communication technology-based platforms;
- Townhall meetings;
- Budget preparation and validation fora;
- Notice boards: announcing jobs, appointments, procurement, wards 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; or
- 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 the following ways:

Planning clinics within the Sub-County 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 notifications through print media and on-site advertisements. Anyone with objections is invited to avail their comments to the county planning authority.

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; and
- Non-Governmental Organisations (NGOs) and Community Based Organisations (CBOs) – religious centres.

Use of communication technology through the county websites, television and radio channels, social media and daily newspapers.

Public participation through the above mechanisms ensures inclusivity of the minority and marginalised groups, people with disabilities, youth and women, in accordance with the County Government Act 2012 Section 97.

11.2.3 Resource Capacity (human, technical)

The high-level Kiambu County staff establishment is as follows:

Table 11-1: Kiambu county staff establishment

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

Office/department	In post
Department of Agriculture, Livestock and Fisheries	605
Department of Roads, Transport, Public Works and Utilities	133
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

11.3 Stakeholders Profiling

The table below represents a sample of stakeholders involved in the formulation of the Plan:

Table 11-2: Stakeholders Profiling

National & County Government	Other Stakeholders
Ministry of Land, Housing and Urban Development	Business community
National Land Commission	Informal businesses
National Environment Management Authority	Residential Associations
Office of the County Commissioner	Non-Governmental Organisations
Urban, Rural Roads and Highways Authorities	Professionals from the private sector
Deputy County Commissioner	Community- Based Organisations
Sub-County Departments	Religious Institutions
Sub-County Administrator	Local Community
Area Member of Parliament	Farmers
Utility Service providers (Water & Sanitation, Electricity)	Traditional & cultural centres
Ward Administrator	Minority and marginalised groups
MCAs	Youth

National & County Government	Other Stakeholders
Area Chiefs	Women

Source: VisionRI

11.4 Key Planning Issues

Table 11-3: key planning issues on governance

Key Highlights	Opportunities
Duplication of roles by the Sub-CountySub-County and Municipal Board thus causing conflicts.	Delegation of relevant roles to the Sub-CountySub-County and Municipal Board.
No representation of the Sub-County in municipal board meetings that touch Kikuyu's urban development matters.	Proposal to include the Sub-County administrator and planner on the municipal board committee to steer Sub-CountySub-County development matters.
Inadequate personnel in the Sub-CountySub-County offices to enforce development control.	The County to hire relevant and qualified personnel for efficient development control in Kikuyu Sub-County.
Key stakeholders hardly attend public participation meetings.	Sensitisation of the key stakeholders and the general public on matters planning and development control.

Source: VisionRI

12 SYNTHESIS OF PLANNING ISSUES

12.1 Overview

This chapter provides an initial identification of the key sectoral challenges facing Kikuyu Sub-County that are addressed by the Plan as well as its potentials that could serve as platforms of growth. These challenges and potentials are then synthesised to identify the planning area's cross-cutting strengths and opportunities that may be capitalised upon to sustain its development over the planning period. The weaknesses and possible threats to such sustainable development are also identified. The chapter also encompasses strategic development directions as well as evaluation of spatial development models to come up with the preferred development model.

12.1.1 Strategic Development Directions

- **Significance of Kikuyu in Metropolitan Region:** Kikuyu Sub-County is situated 20km from Nairobi city. Due to its proximity to the city, it acts as a dormitory town to Nairobi. The major urban areas within the Sub-County that are linked to Nairobi are Kikuyu, Kinoo and Thogoto.

- **Growth Nodes:** Growth nodes can be largely viewed as focal centres that ensure socio-economic balance for its population and has a direct impact on the development of surrounding centres and vice-versa. The growth nodes within the Sub-County include; Kikuyu, Kinoo and Thogoto. The low order goods and service centres include Gikambura, Nderi, Kamangu, Kanyayo, Rengutti, Lusingetti and Nachu.

  Kikuyu town is situated 20km from Nairobi City CBD. The town is characterised by strategic transportation networks, which include southern bypass, Kikuyu road and Nairobi-Nakuru Highway. The urban centre is characterised by mixed land use, which includes mainly public purpose land use dominated by administrative offices, commercial land use, residential land uses, and industrial land use. Kinoo is located to the southeast of Kikuyu approximately 14km from Nairobi Capital City situated along Nairobi-Nakuru highway and mainly consists of residential land use. The centre also has educational facilities as well as low order goods and services stops to serve the residents within the centre.

  Thogoto urban centre is situated to the south-western side of Kikuyu located between Kikuyu road, Southern bypass and Dagoretti Road. The town is characterised by educational and public purpose land uses. The key educational facilities within the centre include; Alliance boys and Girls High school, U.O.N Kikuyu Campus, amongst others. Some of the key hospitals include Kikuyu hospital eye unit and P.C.E.A Kikuyu Mission hospital. Planning for these centres will ensure steering development towards ensuring the planning area becomes a sustainable agro-industrial and residential centre. This will be done by planning for compact centres with mixed land use within the nodes to control development and leaving the hinterlands for agricultural use.

  Strengthening the nodes will ensure the development of the centres. Improving the urban environment will strengthen them to become viable centres. Along with encouraging mixed-use developments, the urban design shall be considered in the formulation of the Kikuyu plan. Development of these growth nodes will also include expansion of roads paving way for improvement projects to such as drainage and

sewerage systems, pedestrian sidewalks and amenities, public landscaping, and street lighting within the way leaves. An iconic landmark, signifying entry to the Kikuyu CBD, may be constructed at the bus park where it will be highly visible as one enters and exits the Kikuyu CBD. Good landmarks do not only provide aesthetic qualities to urban areas, they are also a source of civic pride.

- **Protect Environmentally Sensitive Areas:** Environmentally sensitive areas include all areas that require special protection due to its natural characteristics, landscape form, historical value as well as wildlife component. Policies and strategies are often well laid out to ensure adequate protection of environmentally sensitive areas in varied zones. Urban growth should be planned and guided to safeguard the environment. This calls for the protection of environmentally-sensitive locations such as the Nyakumu swamp in Karai, Ondiri swamp and Kikuyu springs in Kikuyu as well as Dagoretti and Kari forests. The riparian reserves should entail a 30m buffer on both sides of the rivers. The buffer zones should be provided to create physical distances between environmentally sensitive areas and high-density urban developments. This could be achieved by modelling the planning area to have high-density areas within the growth nodes, which graduate into lesser densities towards environmentally-sensitive areas. It is also important to establish "urban limits" such that urban sprawl will not fully overrun the remaining open agricultural areas thus losing valuable urban open space. Urban growth should, as much as practicable, be confined to strategic and suitable locations.

- **Enhancement of comparative advantage of ecological zones:** The planning area is endowed with Kikuyu springs which extend over an area of 161 square kilometres, from Bathi springs to the north to just beyond Nyakumu Swamp. The main Kikuyu Springs recharge rock is in Limuru. The groundwater infiltrates way down into the Karura and Kabete areas, which form the second of the two main aquifers. The springs are a vital source of water for Nairobi capital city. Nachu ward is characterised by the hot and dry climate which is favourable for the growth of sunflower and castor. The ward is also endowed with escarpments, which if properly planned for can be used as a tourist attraction site which will, in turn, generate income for the Sub-County. The Sub-County also has Ondiri wetland, a swamp with bog-like characteristics. It is an important source of water for farming activities, horticulture and livestock rearing as well as the being the source of Nairobi River. This huge environmental asset adjoins Kikuyu Town and is almost at the border of the Southern Bypass Road. However, there are already encroachments to the swamp as it is affected by market-driven urban growth.

- **Transit-Oriented Development (TOD):** This is a form of development that maximizes the amount of commercial, residential and recreational space within walking distance of public transport. This aims at promoting sustainable urban growth by increasing public transport ridership by reducing private car usage. The key transport intersection nodes include; Kikuyu, Kinoo and Thogoto. Kikuyu urban centre has strategic transport linkages which include; southern bypass, Nairobi-Uganda railway, Kikuyu road as well as Dagoretti-Karen road. Thogoto urban centre is served by the southern bypass, Kikuyu-Ondiri road and Dagoretti-Karen road. Kinoo urban centre is traversed by Nairobi- Nakuru highway. Planning for compact centres will ensure controlled development within the nodes and preservation of the agricultural lands. The existing Nairobi-Uganda railway line that is underutilized should be revived. The urban centres should have intensive mixed-use development to ensure that there is the ease in accessing public purpose facilities such as schools

and health centres. Planning shall consider TOD modalities such as encouraging mixed-use high-density developments, ample landscaped public open spaces, enhanced motorised and non-motorised transportation as well as adequate parking facilities.

- **Control of urban sprawl:** Urban sprawl is viewed as the uncontrolled spreading of urban development especially on undeveloped lands neighbouring a city/urban centre. It is because of uncontrolled planning within an area resulting in informality leading to pressure on available resources, physical and social infrastructure facilities. Within Kikuyu planning area, uncontrolled growth of settlements will cause conversion of valuable agricultural land, strain the government in providing the requisite public infrastructure and services, linear sprawl that threatens to cause traffic congestion along the major roads, and causes widespread land speculation and idling of erstwhile productive lands as owner wait for prices to further increase, amongst others. The long-term effects will be the loss of the aesthetic quality of Kikuyu. Uncontrolled development is evident in Kinoo town. It is therefore important to control urban sprawl through proper land use planning and ensuring timely implementation of the approved plans. This will ensure that the effects of urban sprawl are mitigated.

- **Conservation of agricultural land:** Kikuyu has factors and comparative advantages to make it a hub of agricultural activities that could lead to the development of an agro-industrial hub. These advantages could be exploited to meet the huge demand for food, to include processed, packaged and value-added food, from NMR and other countries. These include the following: frequent rainfall and abundance of water from the river for irrigation; availability of land for expansion of farming activities and building of warehouses, cold storage plants, packaging plants and other establishments for the elaborate supply chain of products; and presence of agricultural supporting infrastructure such as improved road networks as well agriculture-oriented educational institutions. The proposed land-use plan should be implemented as a measure of conserving agricultural fields.

12.1 Summary of Key Planning Issues

The table below summarises the key planning issues identified in the situational analysis above.

Table 12-1: Summary of Key Planning Issues

Sector	Key Highlights	Opportunities
Physiography	Planning area lies within the Kikuyu Highlands and has rich, well-drained volcanic loam soils.	Good soil for crop farming.
	The planning area is characterised by volcanic rocks underlain by Kapiti phenolate.	Adequate water recharge.
	Soil erosion prevalent in the planning area.	
	Location of Ondiri Swamp, Nyakumu swamp and Kikuyu springs in the planning area.	Conservation of the wetlands and use for tourist attraction.
Environment	Endangered natural resources such as Ondiri Swamp and Nachu escarpment, whose potential has	The natural resources to tap into the tourism industry hence promotion of the local economy.

Sector	Key Highlights	Opportunities
	been underestimated and under-exploited.	Sustainable exploitation of natural resources such as building stones and sand.
	Encroachment of human activities on riparian and open spaces.	Protection of riparian reserves through the creation of buffer zones
	Rivers are also prone to pollution due to lack of sewer infrastructure that leads to the discharge of wastewater into the rivers.	Provision of a sewer line in the planning area.
Population & Demography	High population growth rate thus encroachment into public land by inhabitants; and Poverty and inadequate housing Youthful unemployed population.	Youthful and educated population
	Diverse population due to proximity to Nairobi.	Economic linkages to Nairobi City.
	High educational achievement.	Good human resource base.
Land Analysis	Land TENURE SYSTEM of the Sub-CountySub-County is not documented.	The Sub-CountySub-County to document the land tenure status of all the wards.
	The land use pattern shows an urban sprawl trend of Kikuyu town, hence congestion of the CBD.	Kikuyu CBD to be decongested through planning and improvement of the other towns like Thogoto, Kinoo and Nderi.
	Inadequate awareness of the importance of planning by the Kikuyu Sub-County residents.	Organising community-planning clinics to create awareness to the public on the importance of planning.
	Land subdivision and development without approved planning schemes Incongruous developments due to lack of development control.	Enforcement of development control measures.
	Environmental pressure in Ondiri swamp, Muguga Forest and Dagoretti Forest due to urban expansion.	Protection of open spaces, riparian and forest reserves.
Urban Development	Congestion of Kikuyu Central Business District.	Decongestion of Kikuyu town by planning and upgrading of the market centres and upcoming local centres.
	The planning area's development is defined by two major cross spines namely the Nairobi-Nakuru Highway and the southern bypass.	The cross spines are major linkages of the planning area to other counties.
	The planning area has two informal settlements, namely, Muthiga and Kiamburi which lack	International support for slum upgrading programs around the country and region;

Sector	Key Highlights	Opportunities
	public facilities such as roads and lighting.	National and county government commitments to increasing decent housing for residents.
	Ample land for housing development especially for owner-occupied housing in the rural areas.	Ample supply of sand and quarry stones from neighbouring counties at affordable prices.
	High standards of housing set by about 35% of households who have permanent housing.	Close proximity to the steel works in Nairobi's industrial areas.
Physical Infrastructure	The high cost of water treatment and connection; Water catchment degradation; and Inadequate water due to seepage from water pans, especially in Nachu,	Financing opportunities from donors etc.; Capacity building on water and sanitation; Increased revenue collection; and Irrigation schemes to help improve yields.
	Street lighting in the town is inadequate because most of these have been vandalised; and Most of the people use charcoal for cooking implying that more trees have to be cut down every day to provide charcoal, and Frequent power blackouts and surges.	Agricultural experts are educating the farmers on how to prepare and use biogas; and Several learning institutions and health centres are using solar energy, Firewood stove project by UNEP under implementation. The project encourages the use of wood and solar for lighting.
	Disruption of fibre optic cable and other ICT infrastructure during road maintenance and/or upgrading.	Increased private sector investments in ICT; and County Government programme to develop an ICT centre.
	Constrained sewerage systems.	County Government involvement in the expansion of the sewerage system.
	The poorly designed storm drainage system.	Re-design storm drainage system.
	Inadequate waste management system.	
Social Infrastructure	The entrenchment of private schools at 26% in primary sub-sector, Limited public land for new schools during the planning period, and Inadequate ECDEs and classes for pupils with special needs.	County and national government support to basic education, and Free Basic Education Policy at National Level.
	The poor spread of the available public health facilities in the planning area, and	County government support to health services in the planning area

Sector	Key Highlights	Opportunities
	Long distances covered by residents to reach health facilities.	Free Health Care for All Policy being pursued by the National Government.
	Lack of public parks, stadium and playgrounds in the planning area A weak history and use of public parks, sports, and social halls in the planning area.	Possible funding for sports activities and facilities from the County Government and National Government; and Middle-class influence from Nairobi will increase the demand for leisure and play spaces.
	Lack of public cemeteries and burial grounds for Muslims in the planning area; and Weak support from Constituencies Development Fund (CDF) in setting up cemeteries in the planning area.	Preference by people to bury the remains of their loved ones in public land to free private land for commercial purposes Shrinking privately owned land sizes per family.
Economic Analysis	The town is congested and characterised by vertical construction.	Availability of space for expansion in the outskirts will favour the construction of more establishments such as manufacturing units, industries, farmlands, houses and apartments.
	Kikuyu's annual population growth rate of 4.13%, is due to substantive migration to the planning area as well as the high birth rate.	Population growth: As the population grows rapidly, demand for goods and services will increase leading to the growth of markets, residential space, and services are likely to boost, thus creating market opportunities for the goods and services.
	The infrastructural development plans by the County Government are expected to provide support services to the growth of business activities in the planning area.	Infrastructural development: Proximity to Nairobi capital city instrumental in economic growth. The Southern bypass that connects Mombasa road to Nairobi-Naivasha Highway at Gitaru via Kikuyu favours the growth of economic activities in the area.
	Planning in the NMR will lead to high-density development around key mass transit stations, enhancing the economic and financial viability of businesses and commercial activities in the region.	Transit-Oriented Development (TOD): High allocation of resources for infrastructural development of the planning area by the County Government would lead to high standard business infrastructure.
	The planning area is characterised by good banking services and a well-developed network of commercial, transport and other	Investment attractiveness of the planning area.

Sector	Key Highlights	Opportunities
	services. This could attract huge investments and FDI in the planning area.	
Governance	Duplication of roles by the Sub-County and municipal board, thus conflict of the two; and	Delegation of relevant roles to the Sub-County and municipal board
	No representation of the Sub-County in municipal board meetings that touch Kikuyu's urban development matters.	Proposal to include the Sub-County administrator and planner on the municipal board committee to steer Sub-County development matters.
	Inadequate personnel in the Sub-County offices to enforce development control.	The county to hire relevant and qualified personnel for efficient development control in Kikuyu Sub-County.
	Key stakeholders hardly attend public participation meetings.	Sensitization of the key stakeholders and the general public on matters planning and development control.

Source: VisionRI

12.3 Development Opportunities

12.3.1 Opportunity Map Analysis

The planning area is characterised by a good human resource base. This is generally due to high numbers of learned individuals in the population of the planning area. According to KNBS 2013, at least 40 per cent of the residents in Kikuyu Sub County have attained secondary education.

Kikuyu planning area has an advantage of its location due to proximity to Nairobi capital City. The planning area is located 20km northwest of Nairobi along Nairobi-Nauru highway. The planning area acts as a dormitory town to those working in Nairobi City. This has led to massive real estate developments in the planning area, which has had a direct impact on economic dynamics. Agriculture is a dominant land use in the planning area.

The planning area has high-value farming such as horticulture which if invested in would boost the overall economy in the area. There are current tanning and workshops mainly towards increasing agricultural yields within the planning area. Nachu ward is characterised by large tracts of land, which can be used for large-scale agriculture for drought-resistant crops. This would lead to increased yields production both in livestock and crop husbandry sectors in the planning area. The planning area is mainly an agricultural node, due to this reason; improvement in agricultural production would imply an improvement in the livelihoods of inhabitants within the planning area and economic growth within the area. The proximity of the planning area, to Nairobi City, provides a sustainable market for manufacturing of the produce.

The Sub-County is characterised by strategic transportation linkages, which ensures proper connectivity to neighbouring towns. This includes the Nairobi-Nakuru highway, Southern bypass, Kikuyu railway line, Dagoretti-Karen Road as well as the SGR. It is, therefore, a key transportation corridor having roads such as the southern bypass trespassing through it. The planning area has the potential of developing into a multimodal transport hub characterised by green corridors. This would lead to the development of nodes such as Kikuyu, Kinoo, Thogoto, Gikambura as well as Sigona since they are located along one of the main transportation corridors in the planning area.

The growth of these nodes would in turn attract further developments that would result in the growth of the planning area. As the nodes grow, there will be infrastructural developments, economic growth as well as improvement of livelihoods. Dagoretti and KARI forests act as buffer hence controlling urban sprawl. The forests also provide high value for urban open space. The swamps and the rivers provide zones for recreational parks within the riparian buffers. The Sub-County is also designated as a Level II Sub-regional Centre in NMR. The sub-regional growth centres are envisaged in the SPC to be characterised as having; administrative functions, higher-level infrastructure and secondary and tertiary activities as well as a strong industrial base. The planning area has enhanced accessibility due to planned major transport projects such as the southern bypass. Figure 31 is the spatial representation of the opportunities in the planning area

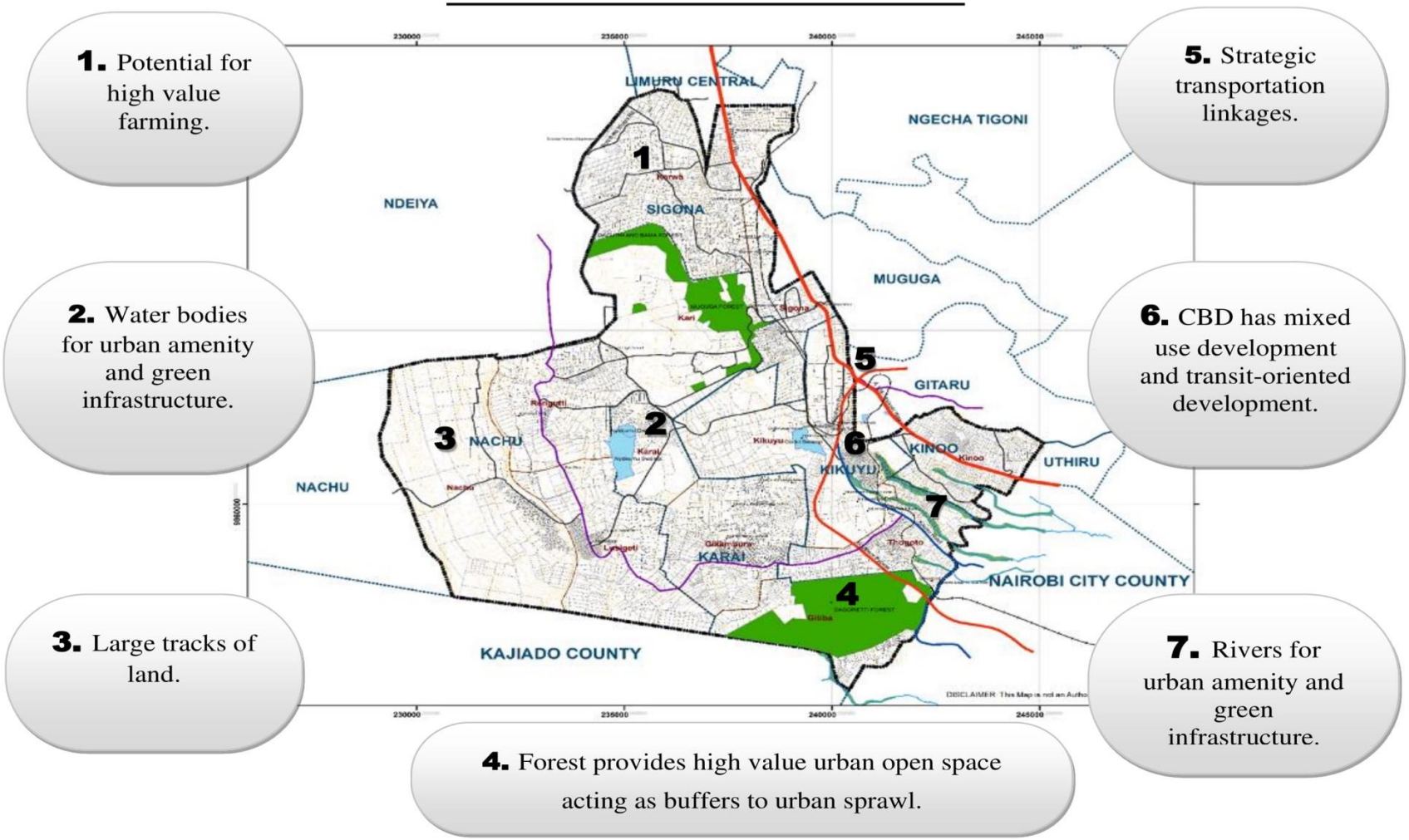


Figure 12-1: Opportunities Map

Source: VisionRI

12.4 Development Challenges/Gaps

The main challenge constricting sustainable development in Kikuyu Sub-County is inefficient land use planning and implementation. This has resulted in uncontrolled growth within the planning area. Inefficient land use planning and implementation in Kikuyu is mainly because of a weak institutional framework, mismanagement of available natural resources as well as rural-urban disconnection.

The Sub-County has a growth rate of 4.13%, with the population expected to grow from 125,402 in 2009 to 327,399 in 2028. The relatively high growth rate in the planning area is mainly attributed to rural-urban migration as well as rapid urbanisation trends as the Kikuyu town serves as a dormitory to Nairobi city residents. This has led to over-exploitation of resources leading to excessive pressure on limited available resources. Overexploitation of the available limited resources is also caused by lack of proper planning. For example, Ondiri swamp in Kikuyu is characterised by encroachment by farming activities. This has led to siltation in the swamp thus reducing its water volume. Encroachment into the swamp has also resulted in water pollution mainly from the inorganic fertilizers used in the farms. In Nachu ward, there is the availability of stones and soils for construction, which has not yet been tapped into.

There is also a manifestation of slow economic growth within the rural areas such as Nachu, which is characterised by inaccessible roads. There is evidence of a massive subdivision of land because of the growing population, which has led to the conversion of agricultural lands into residential land uses. The Sub-County is characterised by inadequate social and physical infrastructure. There is also evidence of encroachment into the road reserves resulting in traffic congestion and accidents along the roads. The area is also characterised by poor drainage systems, which lead to seasonal flooding during the rainy seasons.

There is also poor solid and liquid waste disposal because of lack of proper planning resulting in poor sanitation. Kikuyu has inadequate health facilities having a few health centres within the planning area understaffed. The inhabitants have to seek alternative means from private health centres, which is costly. Figure 12-2 summarises all the causes of poor land-use planning and plan implementation and their effects, while Figure 12-3 illustrates some of these challenges within each ward in the Sub-County.

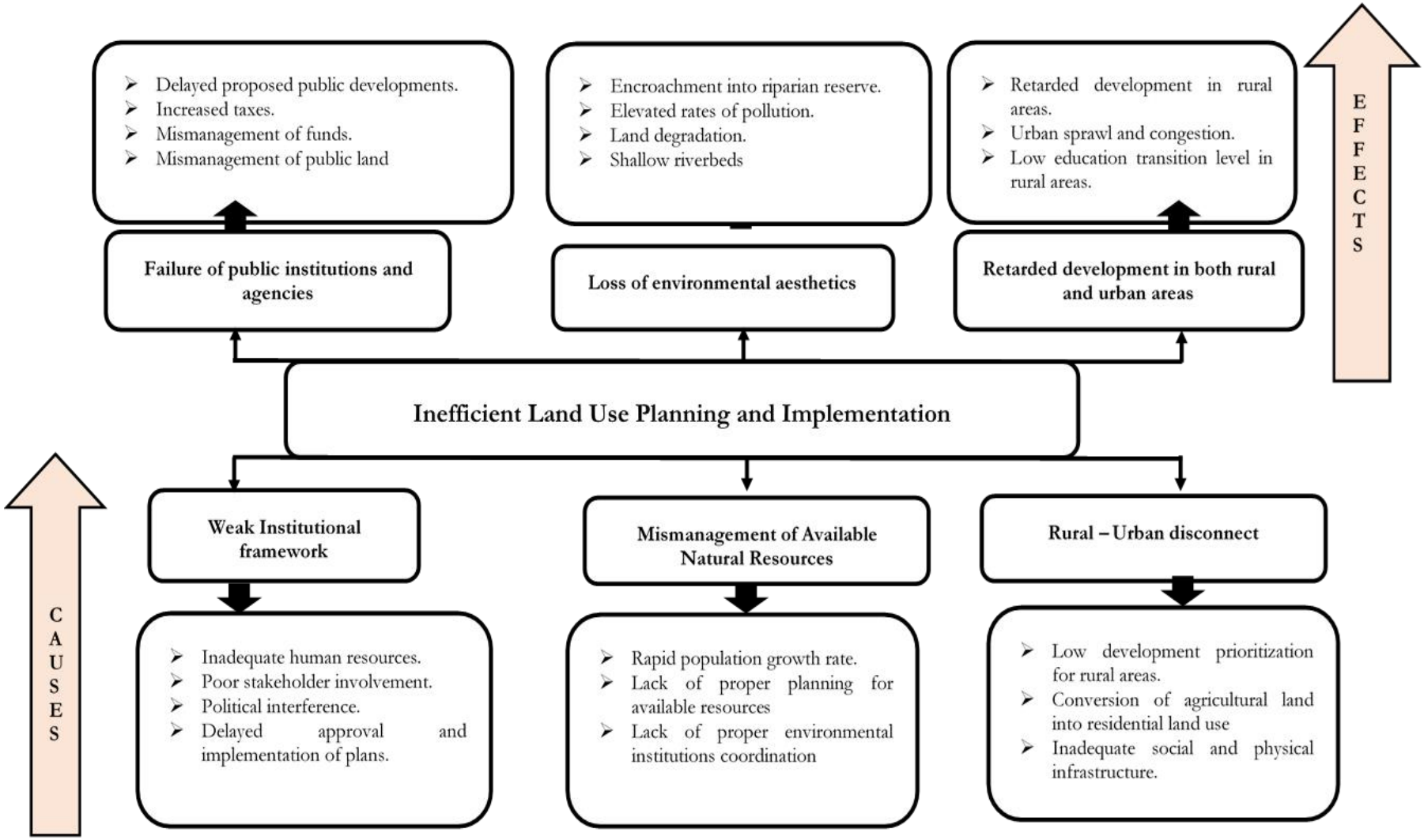


Figure 12-2: Problem tree analysis, Kikuyu Planning Area

Source: VisionRI

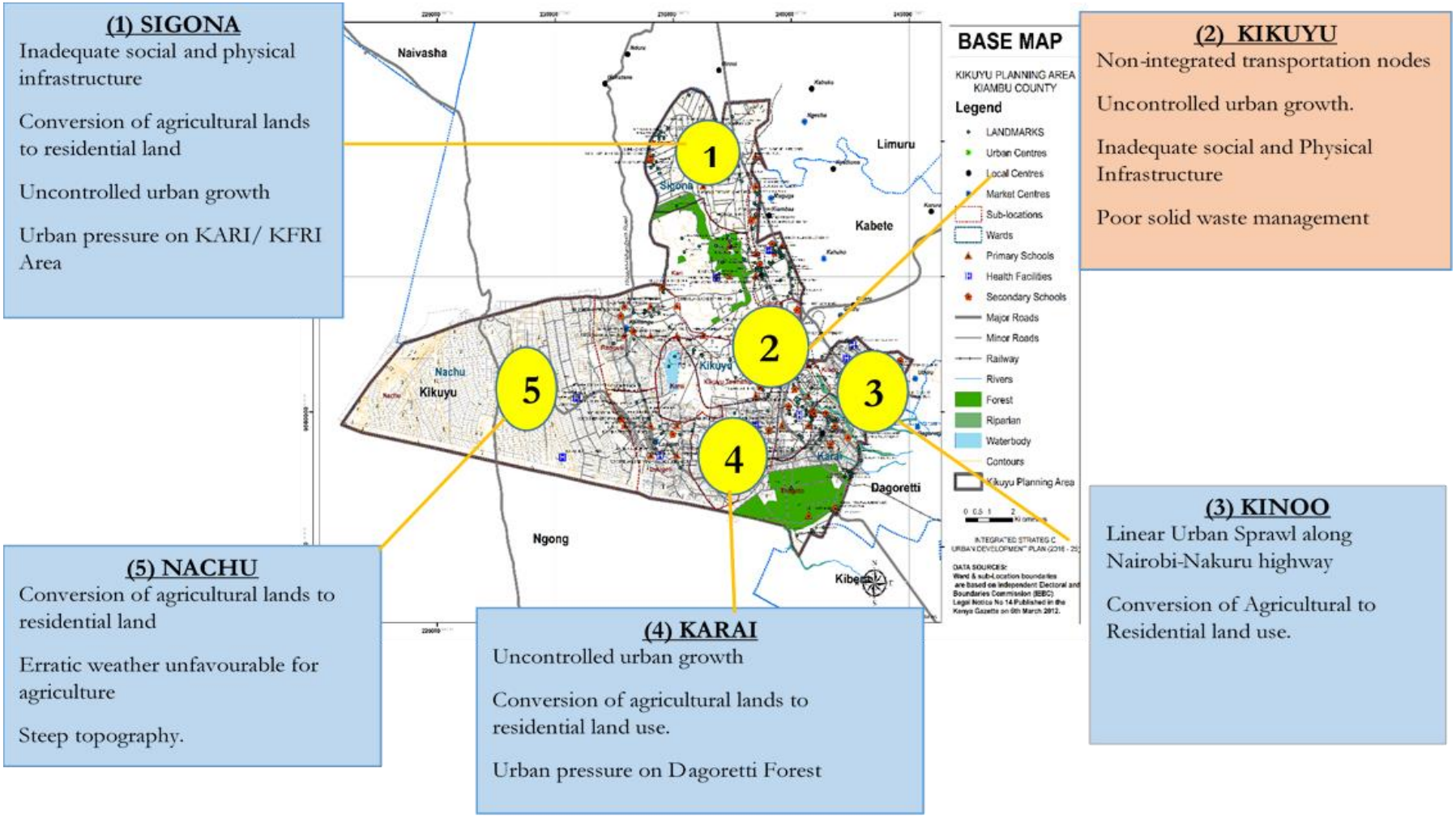


Figure 12-3: Constraints Map

Source: VisionRI

PART III: PLAN FORMULATION

13 SCENARIO BUILDING AND CONCEPTUAL FRAMEWORK

13.1 Vision, Mission and Goal

Vision: To make Kikuyu a sustainable agro-based industrial and residential Sub-County.

Mission: To transform Kikuyu into a vibrant, economically developed and liveable place having high standards of living while ensuring optimal utilisation of available resources.

Goals: The goals of the Plan include:

- Ensuring agricultural land preservation by promoting compact mixed land use development within the built-up areas;
- Ensuring adequate and efficient transport system within the Sub-County;
- Ensuring delivery of quality, sustainable, accessible and affordable social services and infrastructure;
- Ensuring sound environmental management system for sustainable development;
- Promoting proper rural-urban linkages so as to ensure growth and development of the rural areas; and
- Facilitating adequate and effective public participation.

13.2 Alternative Development Models

i. **Nil Scenario** curbs the challenges and threats that currently face the Sub-County. Some of the impacts will include inequitable distribution of social infrastructure, overexploitation of limited available resources, urban sprawl, inadequate physical infrastructure, intensive land subdivision and encroachment into the riparian reserve. These are discussed below.

ii. **Unequitable distribution of social infrastructure:** For instance, currently, there are 57 ECDEs, implying a deficit of 10 ECDEs according to the physical planning handbook. If no intervention is taken to curb the situation, by 2030, there will be a deficit of 73 ECDEs. Currently, the primary schools are 57, and 32 secondary schools. The demand by 2030 is 81 primary schools and 40 secondary schools if more schools are not set up there will be a deficit of 24 primary schools and 9 secondary schools. The planning area has 4 health facilities against the projected 33 facilities by 2028. If no intervention is taken there will be continued disparity and inadequate health service delivery.

iii. **Exploitation of limited available resources:** Population within the planning area is rapidly growing at a rate of 4.23 per cent. Lack of a planning tool to ensure optimal utilization of resources will lead to overexploitation of the available resources.

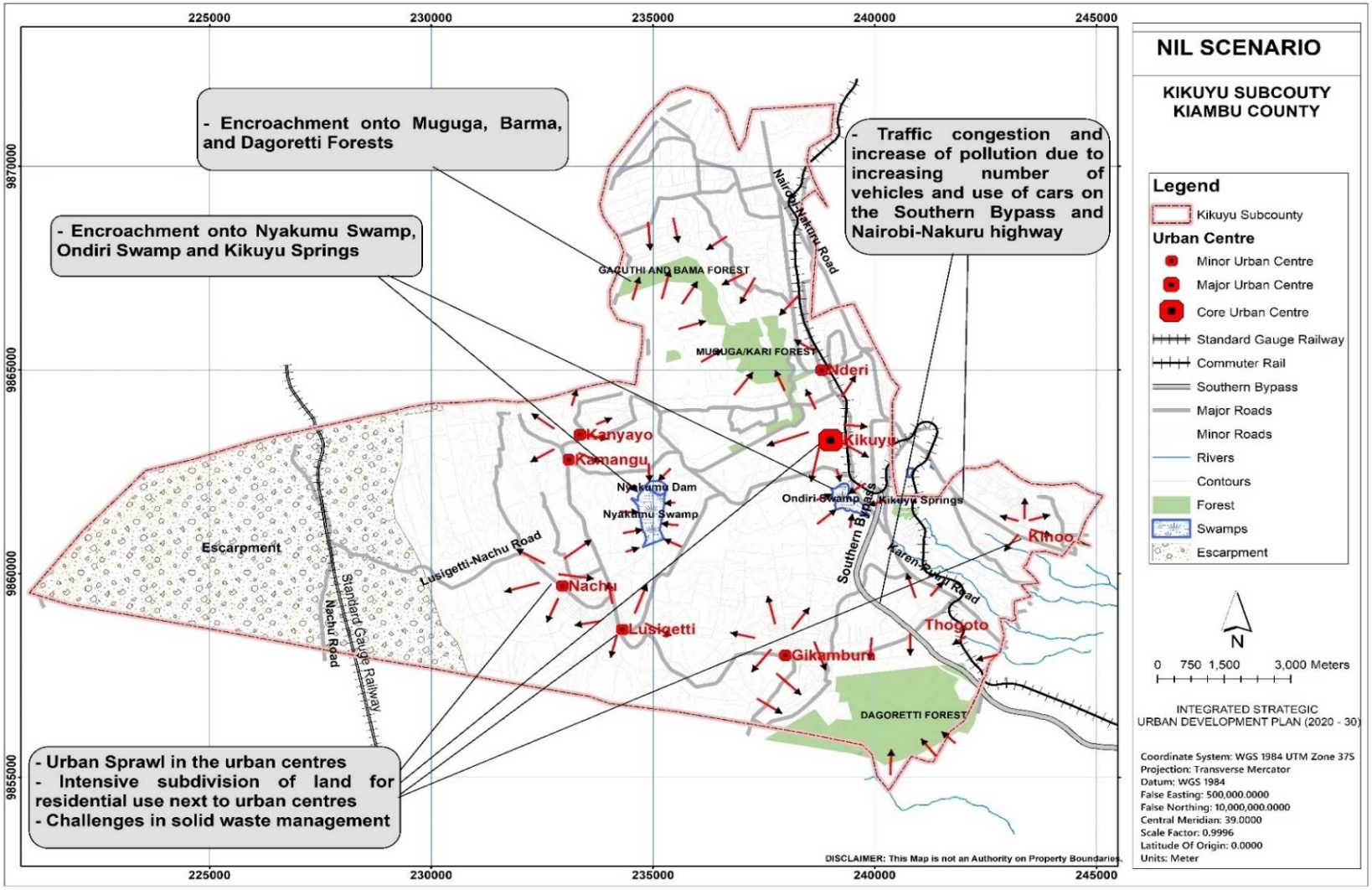
iv. **Urban sprawl:** the planning area is fast urbanizing making it to act mainly as a dormitory town for Nairobi city. The town centres within the planning area are rapidly expanding and encroaching into agricultural fields uncontrollably. There has been the emergence of informal settlements within the planning area. This include; Muthiga and Kiamburi informal centres. Under this scenario, the informal centres will keep on expanding and the situation will keep worsening. With nil intervention, agricultural

yields will continuously decrease because of encroachment into the agricultural parcels.

v. **Inadequate physical infrastructure:** the planning area is characterised by inadequate physical infrastructure. For instance, the road networks are laid out but the standards are relatively poor, the town also experiences traffic congestion especially during peak hours. There is inadequacy in provision for wastewater drainage channels and inadequate water connections. This implies that the residents lack adequate portable water.

vi. **Intensive land subdivision:** the population within the planning area is rapidly growing at a rate of 4.13 per cent. This has resulted in a massive subdivision of land parcels. Failure to have a plan will lead to further uncontrolled subdivision within the planning area, which will affect its agricultural productivity greatly.

vii. **Encroachment** into riparian reserve: presently in the planning area, the set 30m riparian reserve standard is not observed within the planning area because of encroachment. Thus, the water levels in the rivers will keep on dropping due to siltation and the rivers will eventually dry up.



Map 13-1: Nil Scenario

Source: VisionRI

i. **Multi Nodal T.O.D Model:** This is a type of urban development that maximizes compatible mixed land uses within walking distance of public transport means. This in turn reduces the private car usage hence sustainable urban growth. The TOD consists of a central transit stop that has a bus stop, BRT station, train or light rail station. The central transit stop is surrounded by high density- compact- mixed land use within a radius of 400m to 800m where NMT usage is maximized. The outlying zones are composed of low-density residential settlements. The key principles that guide a multi-nodal TOD model include compact development within a radius of 400m to 800m from the central transit stop; quality public transport that is affordable and convenient; promoting NMT usage; adequate provision of social and physical infrastructure; compatible mixed land use densification within walkable distance; provision of residential facilities and public spaces this will ensure collective identity as well as promoting proper community interaction.

In the planning area, this model would involve increasing development density mainly in the transport intersection zones which are classified as key centres and lower order goods and services centres. The key focal centres include; Kikuyu, Kinoo, Gikambura and Thogoto. The lower-order goods and service centres include Nderu, Lusingetti, Kanyayo, Kamangu and Nachu. Kikuyu town is characterised by mixed land uses, which entails commercial land use, residential land uses, industrial land use as well as public purpose land use dominated by administrative offices. In the model, Kikuyu is a primary node for intensification of commercial, industrial, administrative functions as well as residential land uses.

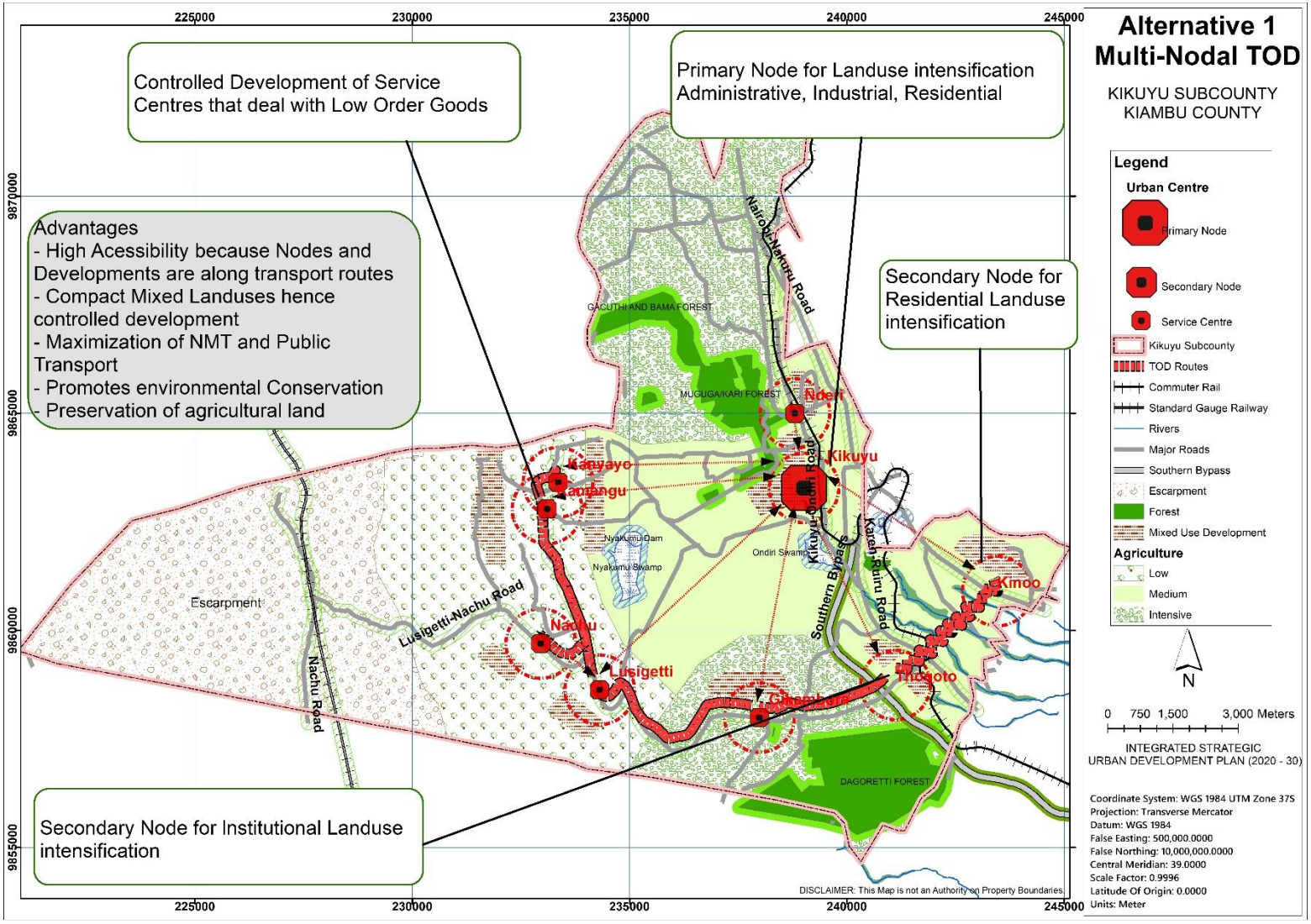
Below are the advantages and disadvantages of the model.

Advantages of the Model

- The model is associated with high accessibility since the nodes and developments are along the transport routes;
- The model ensures controlled development because of the compact mixed land uses, which are compatible;
- The model is characterised by maximization of NMT and public transport since it endeavours to ensure walkability as a result of promoting a healthy lifestyle;
- The model promotes environmental conservation through buffering of the environmentally sensitive areas; and
- Controlled development ensures the preservation of agricultural land.

Disadvantages of the Model

- If the model is not planned for well, it may lead to future traffic congestion due to encroachment into road reserve;
- The model is associated with impaired mobility since the access route is the main corridor that is used to connect different centres. The model might lead to linear sprawl along the corridors if not well planned for; and
- The model is associated with land prices inflation due to land speculation especially for the areas within and bordering the compact mixed land use zones. This is mainly due to the provision of adequate social and physical infrastructure.



Map 13-2: Alternative 1: Multi-Nodal Model

Source: VisionRI

ii. **Core-Periphery Model:** The core-periphery model concentrates economic and administrative functions in one zone while leaving out the other zones for agricultural and residential uses. The model is divided into the core region the transition zone, which is the semi-periphery zone, and the resource frontier, which is the periphery zone. The model seeks to structure urban growth by designating a core urban Centre; Kikuyu town having concentrated development while the periphery being left for agricultural development. Within the planning area:

The core will encompass Kikuyu, Thogoto and Kinoo, which will be characterised by densification of compact - mixed land use (commercial, administrative, residential, and agro-industries); high-density residential units within the compact centres; low-density residential in the outliers of the centre; and adequate social and physical and social infrastructure.

The semi-Periphery will entail Nderi, Gikambura, this will be characterised by small-scale agriculture, residential land use and low order goods and services centres; high-density residential land use within the compact centres; low-density residential in the outliers of the centre.

The Periphery will entail; Lusingetti, Nachu, Kamangu, Kanyayo this will be characterised by Agricultural, Industries and Tourism zones as well as residential land use and low order goods and services centres; high-density residential land use within the compact centres; low-density residential in the outliers of the centre.

Advantages of Core-Periphery Model

The model will ensure improved urban-rural linkage. The model focuses on ensuring proper transportation linkages between the core urban centres (Kikuyu, Kinoo, Thogoto) and the low order goods and services centres to ensure economic growth as well as the development of the rural areas.

The model entails compact centres that ensure controlled development and provision of adequate social and physical infrastructure.

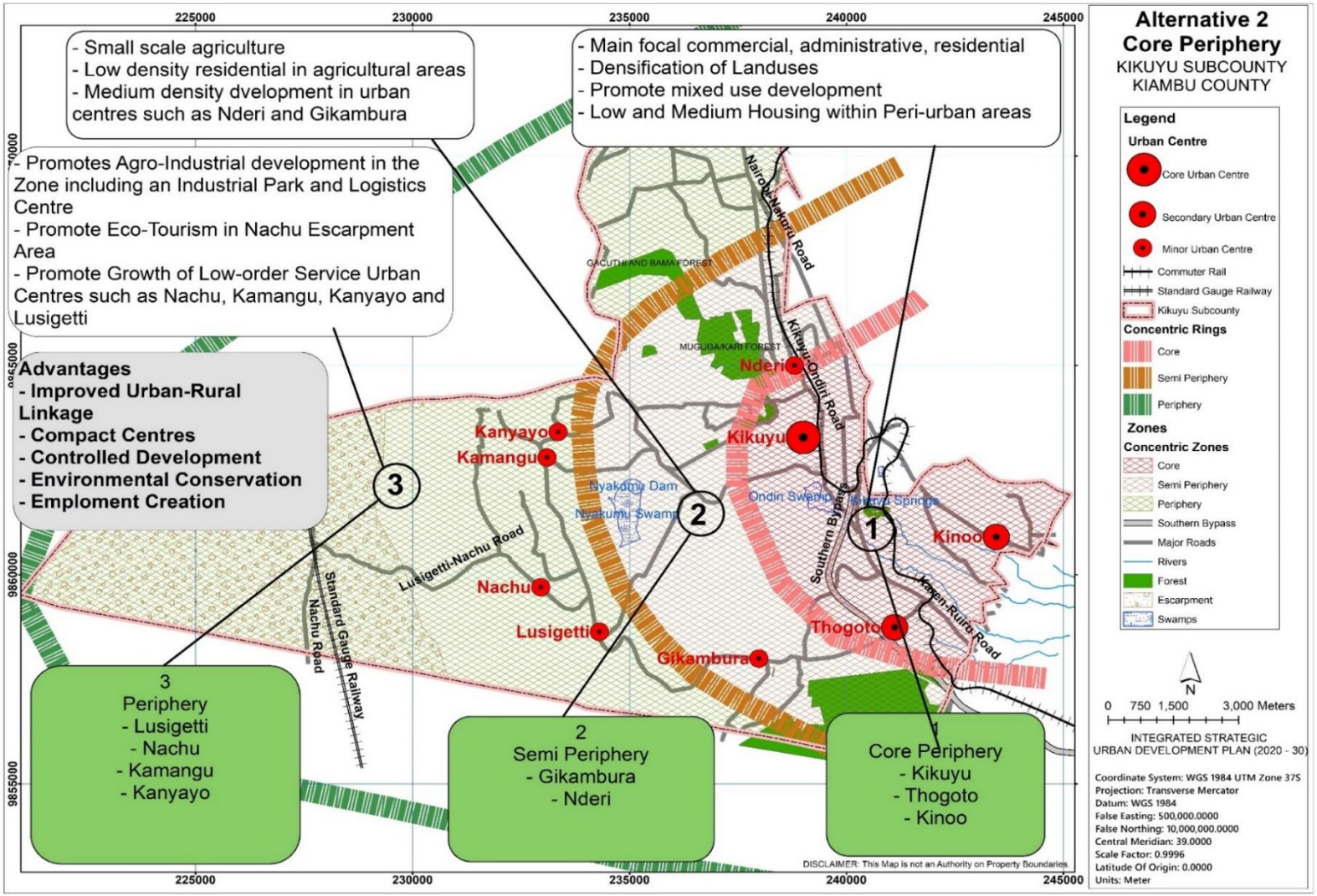
Environmental conservation is a key element of the model since compact development curbs urban sprawl hence ensuring zero encroachment to the environmentally sensitive areas. The model will also control the encroachment of the Ondiri and Nyakumu swamp by farming activities through buffering of the wetlands.

The model ensures the creation of employment from the agro-based industries and the agricultural farmlands within the periphery and the semi-periphery zones. This will in turn steer development of the rural areas in the periphery area. This includes all the low order goods and service centres that include; Nachu, Lusingetti, Renguti, Kanyayo, Kamangu and Nderi as well as Gikambura.

This model leads to the preservation of agricultural lands especially in the periphery and the semi-periphery zones. This will lead to increased agricultural productivity within the planning area. This included towns such as Nachu, Lusingetti, Renguti, Kanyayo, Kamangu and Nderi as well as Gikambura. This is mainly because the low order centres are characterised by compact development as a result of controlled development. The zoning guidelines are also key in indicating the minimum acreage and the land uses for specified areas.

Disadvantages of Core-Periphery Model

If not well planned for there could be a massive movement of people from the periphery to the core in search of employment opportunities. This could result into polarization effect making the centres within the core zone (Kikuyu, Kinoo, Thogoto) more dominant while they continuously grow as the low order goods and services centres in the periphery lag behind development-wise.



Map 13-3: Core Periphery Model

Source: VisionRI

13.2.1 Evaluation of Alternative Models

Evaluation of the alternative models (multi-nodal TOD and the core-periphery) was done by evaluating the benefits and drawbacks of each model to identify which model supersedes the other. The evaluation factored in the social, economic and environmental factors considered for each alternative. The development concepts and visions were used as the reference for evaluation. The aspects of evaluation included environmental issues, land compatibility, transportation, economic activity opportunities, community facilities, sanitation, waste and wastewater management.

Below Table indicates the evaluation of the models to identify the preferred model. Integrated land-use model scores highest with 22 marks hence the proffered model. The other two models, multi-nodal TOD model and Core Periphery model scores 2.042 and 1.5417, respectively.

Table 13-1: Evaluation of Alternative models

Goals		Assigned Weight	Alternative Development Proposals			
			Alternative 1		Alternative 2	
			Multi Nodal TOD Model	Sub-Total	Core Periphery Model	Sub-Total
1	To put in place a sound environmental management system for sustainable development.	0.17	1.25	0.21	3	0.5
2	To ensure delivery of quality, sustainable, accessible and affordable social services and infrastructure.	0.17	2.25	0.38	0.75	0.12
3	To promote the local economy through the provision of environmentally sustainable infrastructure for the promotion of investment and entrepreneurship.	0.17	2.25	0.38	1	0.17
4	To provide, efficient & reliable connectivity to all areas through a better road & railway system.	0.17	1.75	0.29	2	0.33
5	Adequate and efficient transport system.	0.17	2	0.33	1.5	0.25
6	Public Participation to ensure proper policy implementation and zero tolerance to corruption.	0.17	2.75	0.46	1	0.17
	Total Score	1.00		2.04		1.54
	Rank		1		2	

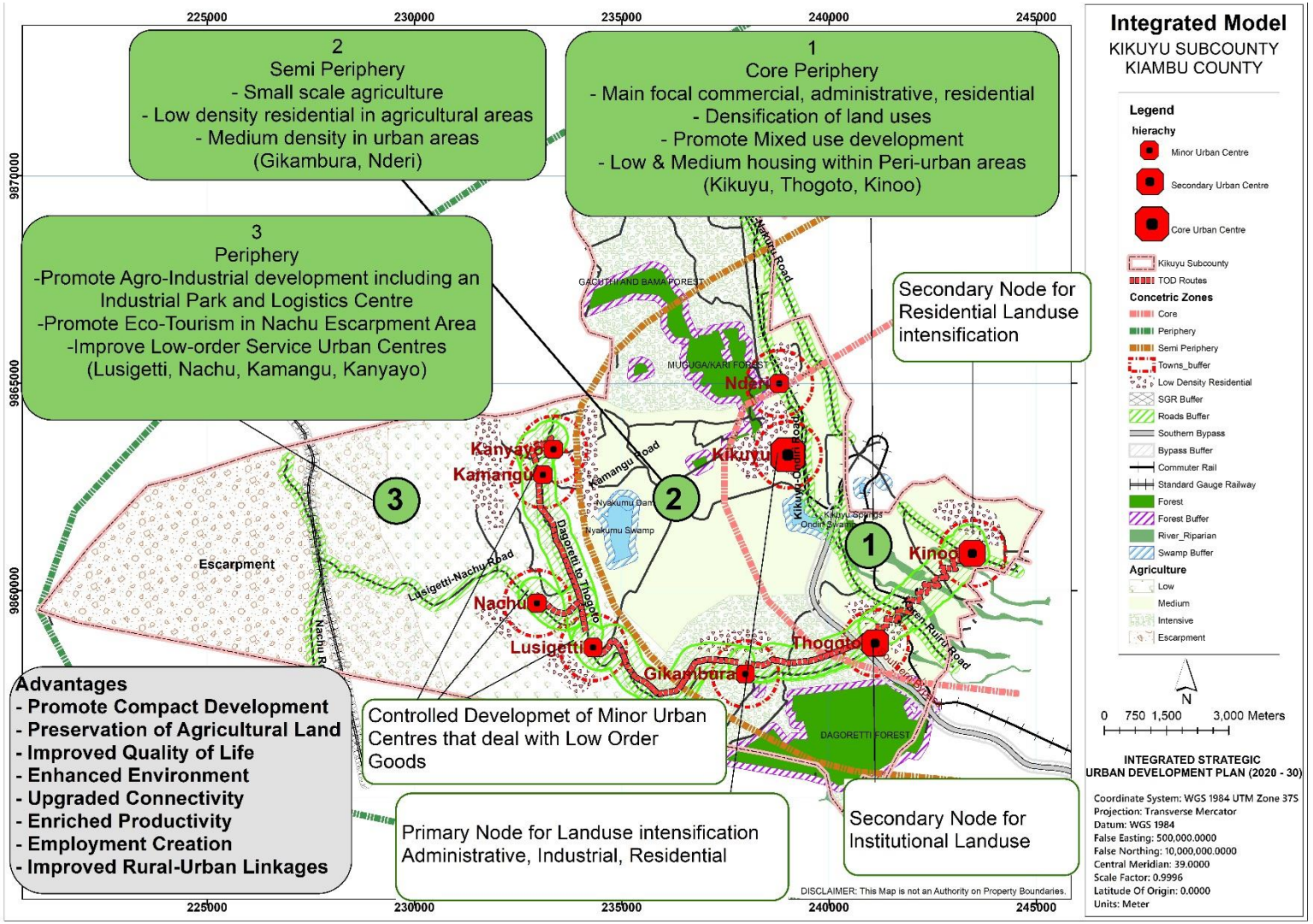
Source: VisionRI

13.2.2 Preferred Model

Preferred Model: After evaluation of the Multi Nodal TOD and Core Periphery Models, the preferred model was attained through a combination of the two alternatives, comprising the characteristics of both alternatives, hence the integrated model.

Advantages of Integrated Model: The integrated model will promote compact development, lead to preservation of agricultural lands, improve the quality of life of Kikuyu sub-county residents, enhance environmental conservation, lead to upgraded connectivity of the Sub-County, enriched productivity leading to economic growth, creation of employment for both skilled and unskilled labour, and improved rural-urban linkages.

However, in the case of poor planning, the integrated model will lead to a massive movement of population from the periphery to the core urban areas.



Map 13-4: Preferred Model - Integrated Model

Source: VisionRI

14 PHYSICAL DEVELOPMENT PLAN

14.1 Land Use Plan

14.1.1 Land Requirements

Land use is mainly determined by the economic, institutional and physical structure and can broadly be classified into built-up areas, agricultural and conservation areas. The proposed land-use plan ensures sustainable and equitable distribution of resources while observing the conservation of ecologically sensitive areas. The land use structure plan ensures interlinked compact and mixed land use centres with green transportation networks, protection of sensitive ecological areas and adequate provision of social infrastructure. The Plan entails a multimodal TOD model having a primary node, secondary nodes and lower order goods and service centres. The compact mixed land use within the centres is key, as it will help promote walkability and public transport hence reducing private car usage. The multimodal TOD model is the preferred model because it will facilitate the transformation of Kikuyu into a vibrant, economically developed and liveable place by 2030.

Within the planning area, this model proposes intense developments mainly in the transport intersection zones, which are classified as main urban centres and lower order goods and services centres. The main urban centres include Kikuyu, Kinoo and Thogoto. These centres are classified to lie within the core. The main urban centres will entail compact mixed land uses, which will promote walkability as well as ease in access to social infrastructure and community facilities. Figure 32 indicates the hierarchy of the growth nodes in Kikuyu Sub-County.

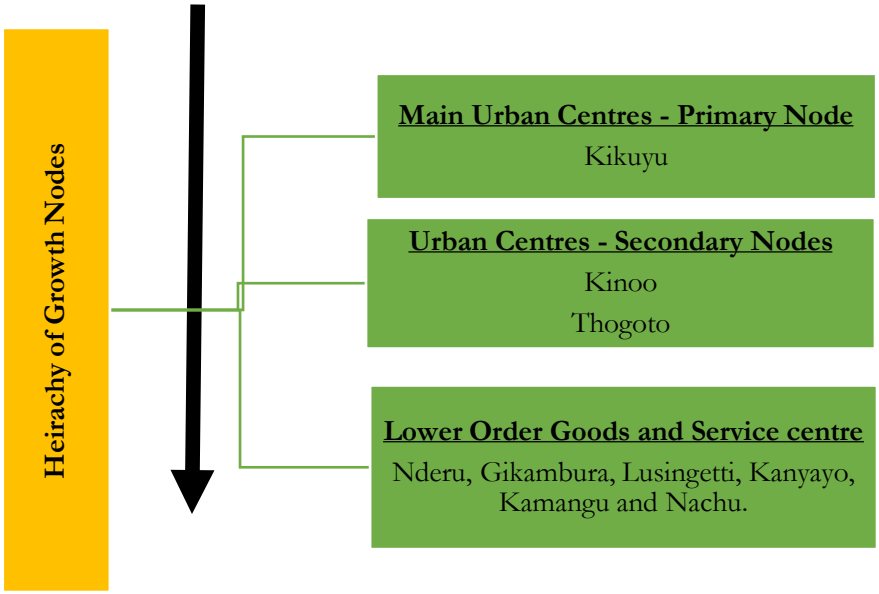


Figure 14-1: Hierarchy of Growth Nodes in Kikuyu

Source: VisionRI

Kikuyu town is the major urban centre within the planning area (Kikuyu Sub-County). The town is characterised by mixed land uses, which entails public purpose land use dominated by administrative offices, commercial land use, and residential land uses a well as industrial land use. Kikuyu town has relatively adequate transportation linkages since it has a southern bypass, Kikuyu

road and Nairobi-Nakuru Highway crossing through the centre. The old Nairobi-Uganda railway line crosses through the town. The railway line could be revitaliSed to serve as a light rail transit within the Sub-County. This would result in integrated transportation modes within the Sub-County. Kikuyu is a primary node for intensification of commercial, industrial, administrative functions as well as residential land uses.

Kinoo is a key urban centre located within the Sub-County along Nairobi-Nakuru highway mainly consisting of residential land use. The centre is situated to the south-eastern side of Kikuyu approximately 14km from Nairobi Capital City. Kinoo urban centre also houses educational facilities such as Muthiga academy, Uthiru Genesis as well as low order goods and services stops to serve the residents within the centre. The Plan designates Kinoo to be a secondary node targeted for intensified residential land use characterised by high-density residential land use within the compact centre.

Thogoto is characterised by educational and public purpose land uses. The key educational facilities within the centre include Alliance boys and Girls High school, U.O.N Kikuyu Campus, the Presbyterian University of East Africa amongst others. Some of the key hospitals include Kikuyu hospital eye unit and P.C.E.A Kikuyu Mission hospital. Thogoto is also designated to be a secondary node and targeted to have intensified institutional functions.

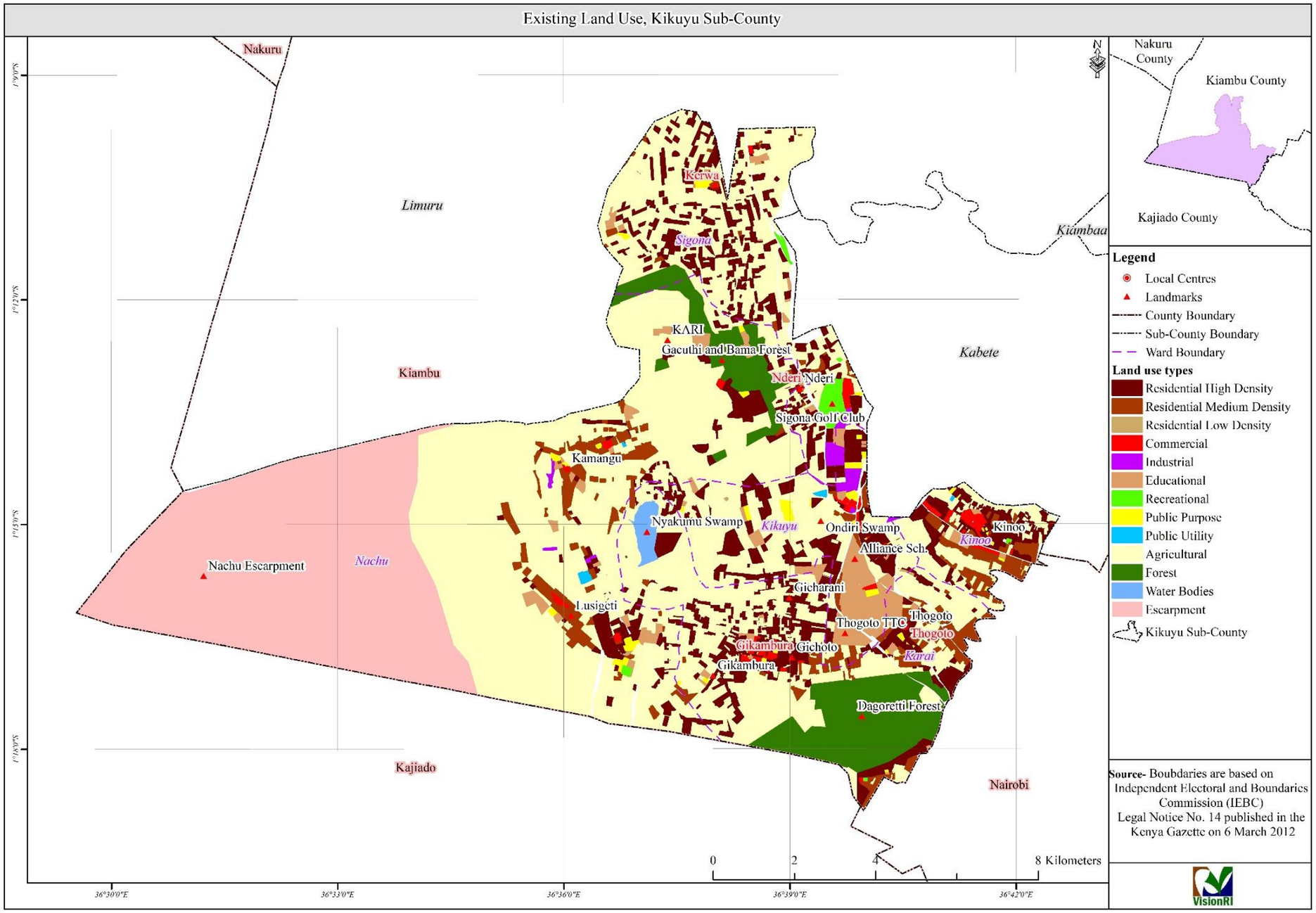
The lower-order goods and service centres include Nderu, Gikambura, Lusingetti, Kanyayo, Kamangu and Nachu. These centres are characterised by kiosks, small market centres as well as bodaboda sheds. They lack proper road networks and are characterised by inadequate social infrastructure. These areas are zoned for intensive mixed-use development to ensure that there is the ease in accessing public purpose facilities, educational facilities as well as recreational facilities.

Table 14-1: Land Use Budget

Kikuyu Land Use Distribution					
		Existing		Proposed	
No.	User	Area in Hectares (Ha)	Percentages (%)	Area in Hectares (Ha)	Percentages (%)
0	Residential				
	Residential - High	2149.52	12.53%	1,856.43	10.82%
	Residential - Medium			286.91	1.67%
	Residential cum commercial			18.01	0.11%
	Total	2,149.52	12.53%	2,161.35	12.60%
1	Industrial	16.22	0.09%	75.53	0.44%
2	Educational	337.02	1.97%	337.02	1.97%
3	Recreational	69.27	0.40%	111.73	0.65%
4	Public Purpose	752.27	4.39%	737.86	4.30%
5	Commercial	71.77	0.42%	26.74	0.16%

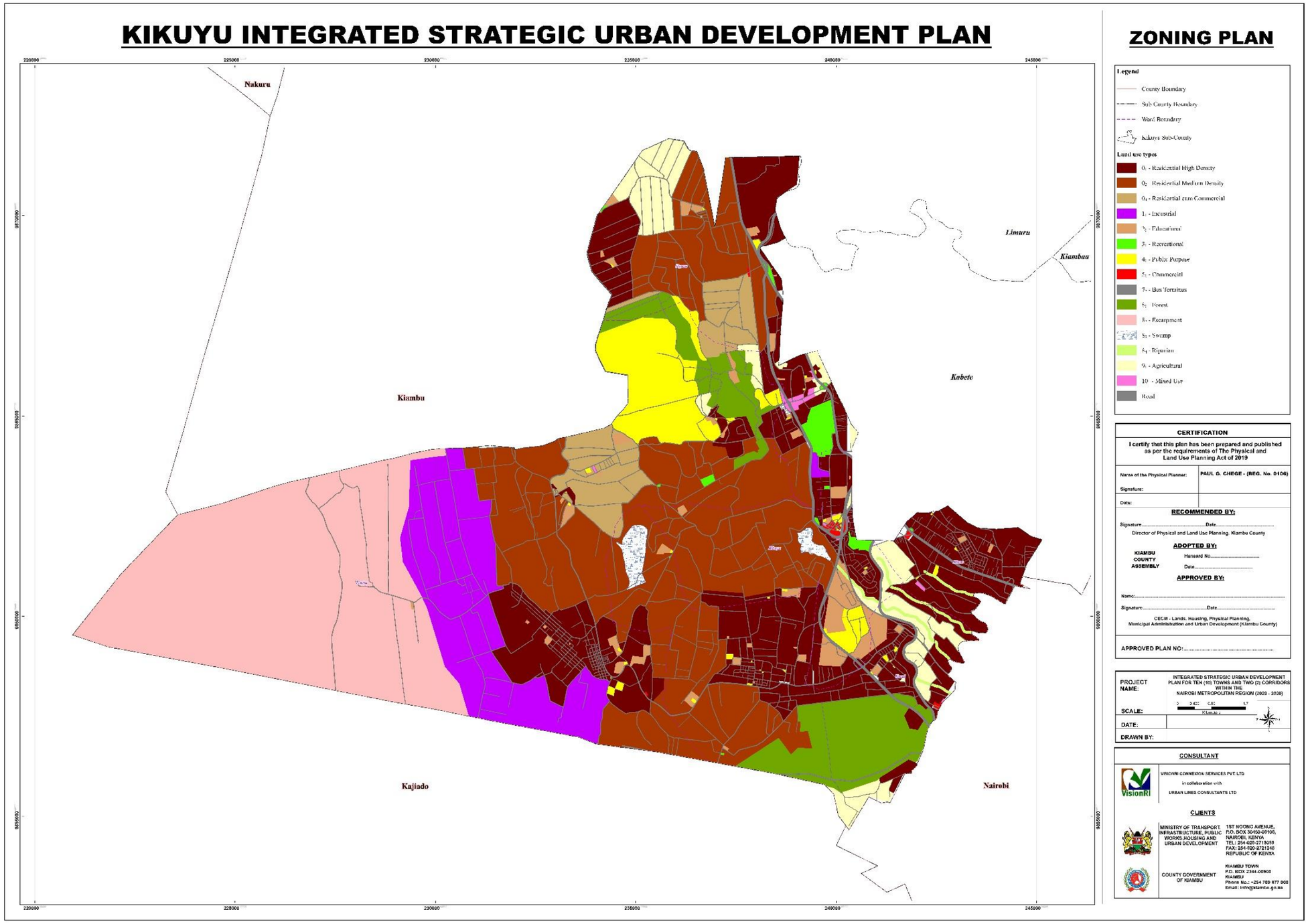
Kikuyu Land Use Distribution					
6	Public Utility	3.54	0.02%	31.23	0.18%
7	Transportation	961.32	5.61%	1,170.44	6.82%
8	Conservation Areas				
	Escarpment	3588.68	20.93%	3588.68	20.93%
	Forest	1003.95	5.85%	1003.95	5.85%
	Riparian	25.72	0.15%	71.7	0.42%
	Water bodies	134.02	0.78%	134.02	0.78%
	Total	4752.37	27.71%	4798.35	27.98%
9	Agriculture	8,036.45	46.86%	7,676.96	44.76%
10	Mixed-Use	0	0.00%	22.52	0.13%
Total		17,149.75	100%	17,149.72	100%

Source: VisionRI



Map 14-1: Proposed Land Use Structure Plan

Source: VisionRI



Map 14-2: Proposed Land Use Structure Plan

Source: VisionRI

14.2 Land Use Zoning

14.2.1 Detailed 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 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 Kikuyu to achieve the desired built urban environment.

Table 14-2: Land Use Zones

Zone	Area	Sub-Zone	Permitted Uses
1.	Nachu Escarpment		Recreation
	Environmental Fragile areas (rivers, forests, escarpment, deep valleys, wetlands and swamps)		Recreation
	Nyakumu swamp		Recreation
	Ondiri swamp		Recreation
2.	Kikuyu Town CBD		Supermarkets, Retail shops, Hotels, Offices/banks/ICT, Public facilities, Serviced apartments/Hostels, Petrol filling Stations (PFS), Petrol serving stations (PSS), Light Industry/ Showrooms, Transportation (a) Parking yard (b) Parking silo
3.	Kinoo	A	High-density settlements
		B	Low-density settlements
		C	Commercial - Supermarkets, Retail shops, Hotels, Offices/banks/ICT, Public facilities, Serviced apartments/Hostels, Petrol filling Stations (PFS), Petrol serving stations (PSS)
4.	Thogoto	A	High-Density Residential
		B	Medium Density Residential
		C	Commercial - Supermarkets, Retail shops, Hotels, Offices/banks/ICT, Public facilities, Serviced apartments/Hostels, Petrol filling Stations (PFS), Petrol serving stations (PSS)
5.	Gikambura	A	High-Density Residential
		B	Medium Density Residential
		C	Low-Density Residential
6.	Nderi	A	High-Density Residential
		B	Medium Density Residential
		C	Low-Density Residential

Zone	Area	Sub-Zone	Permitted Uses
7.	Sigona		Medium-density residential
8.	Muguga Jet Settlement/Kerwa		Agriculture
9.	Kamangu	A	Commercial - Supermarkets, Retail shops, Hotels, Offices/banks/ICT, Public facilities, Serviced apartments/Hostels, Petrol filling Stations (PFS), Petrol serving stations (PSS)
		B	Medium and Low-density Residential
		C	Agricultural
10.	Karai	A	Medium Density Residential
	Karai	B	Low-Density Residential
11.	Lusingetti		Residential
12.	Nachu		Agricultural Single dwelling

Source: VisionRI

14.2.2 Development Control Ordinances

Dwelling Units Size

RU1: The residential areas shall be developed either as (a) plotted development or (b) group housing/flatted development. The density pattern (high density, high medium density, low medium density or low density) shall be followed for working out the pattern of development with respect to the size of plot to the number of dwelling units on each plot, setbacks, plot ratio and the number of storeys/height of the building.

Table 14-3: Indicative dwelling unit sizes.

Number of Rooms	Dwelling Units Size (sqm)
One Bedroom	40-50 (45)
Two Bedroom	60-70 (65)
Three Bedroom	80-120 (100)
Four Bedroom	130-180 (160)
Five Bedroom	190-240 (220)

Density of Development

RU2: Density in the development shall be defined by population size, plot coverage and the number of dwelling units. The level of Density shall be determined by the availability of services such as water, sewerage, size of roads, etc., and the zoning recommended. In recommending gross residential densities care shall be taken that they create in spatial and functional meaning an independent system of the built-up area (both multi-family and one-family dwelling units) well provided with day-to-day services, recreation and communication network.

Table 14-4: Types of dwelling

Type of Dwelling	Density	No of Dwellings per Ha	Space Allocation Per Dwelling Unit in sqm
		Recommended	Recommended
Bungalow detached	Low density	10	1000
	Medium-density	30	350
	High density	40	250
Semi-detached and row housing	Low density	35	300
	Medium-density	50	200
	High density	80	150
Multi-Family dwellings	Low density	70	150
	Medium-density	80	125
	High density	100	100
	Special Density (Rental Housing)	160	60

RU3: The plot size shall be generally determined by the type of housing in the given scheme whether consisting of row housing, detached or semi-detached units. These shall vary depending on the level and adequacy of the above-mentioned factors and recommended plot coverage. The residential areas will have both the plotted and group housing developments. Keeping in view the cost of the land and the construction of a building with the affordability and the subsidy, which would be extended to the category of low-income groups, and indicative minimum plot size is given in below in Table 14-5.

Table 14-5: Recommended Minimum Plot Size for Different Housing Schemes

Type of Residential Development	Minimum Plot Sizes in Square metres		
	Detached	Semi-Detached	Row Housing
Slum rehabilitation and upgrading schemes	80-100	60-80	50-70
Low cost housing	100-200	100-150	70-100
Normal housing development	200-300	150-250	100-200

RU4: The County shall make a variation of up to 5% on plot size to grant the norms applicable to the lower category of plot size in accordance with the following requirements:

- The minimum size of the residential plot shall be 50 square metres unless reduced further with the approval of the County;
- 100 % ground coverage shall be eligible for regularization of construction already existing on payment of charges as notified;
- Permissible plot ratio shall not be more than prescribed;

- The number of dwelling units shall depend upon their size and pot ratio for a particular size of the plot;
- Basement, if constructed, shall not be counted into plot ratio provided space is used for parking and storage; and
- If the building is constructed with stilts, the areas of non-habitable height used for parking shall not be counted into plot ratio but would be counted towards the height of the building.

Building Lines (set back lines)

RU5: This is shall be the minimum distance of a house or an ancillary structure from the plot boundary. The principle value of building lines is either to achieve a visual effect or reserve certain access of area of ground. It is not necessary to set uniform lines, they may be flexibly drawn to produce spatial coherence and variegated character. The recommended minimum setback of dwelling from the plot line is presented in Table 14-6.

Table 14-6: Recommended Minimum Setback from Plot Line

Type of Residential Development	Minimum Set back of Dwelling from Plot Line (m)		
	Front	Side	Rear
Slum rehabilitation and upgrading schemes	1.5	1.5	1.5
Low cost housing	2	1.5	1.5
Normal housing development	3	1.5	3.0

RU6: Where necessary, the following shall apply:

- In case the permissible coverage is not achieved with the above-mentioned setbacks in a plot, the setbacks of the preceding category may be allowed;
- Plot owners or allottees seeking extra coverage, additional floor or built-up space shall have to pay a penalty and compounding charges as decided by the County;
- The amount so collected be deposited in a development account by the County, to be utilized for developing parking sites, augmentation of amenities and environmental improvement;
- The encroachment on public land and within the right of way shall not be regularized; and
- Every applicant seeking sanction or regularisation of additional plot ratio and/or height shall submit a certificate of structural safety obtained from the competent government agency.

RU7: The Physical Planning (Building and Development Control) Rules, 1998 provides for a building line of 9m for roads above 18m wide and 6m for roads between 6m and 18m. However, if the road is less than 6m, the building line shall be the width of that road plus the difference between 6m and the road.

RU8: No buildings shall be constructed on the open space, in front of the building, created by the building line, except for a fence or boundary wall.

Distance between Buildings

RU9: The distance between any two dwellings, front to front, across a street, walk or common area shall be not less than equal to the total height of the taller building.

RU10: It is recommended that the width of streets or access lane in a residential area be determined by the number of dwelling units or plots to be served. The minimum street width for a given number of plots may be indicated as shown in Table 14-7 It is further recommended that the street network be hierarchical so that in the future urban areas will have a high-rise urban morphology even in residential areas.

Table 14-7: Minimum Street Width Per Given Number of Plots

Number of Plots	Street Width
1 to 30	9m
31 to 60	12m
Or	
up to 500 m length	9m
501 to 750 m length	12m
751 to 1000 m length	18m
1001 m or more length	24/30m

Plot Coverage and Plot Ratios

RU11: The essence of fixing plot coverage is to ensure a healthy environment and allow for expansion and improvement of infrastructural facilities and social amenities. The recommended plot size, coverage and ratio are shown in Table 14-8.

Table 14-8: Plot Ratios and Plot Coverage

	Minimum Plot size (Ha)	Maximum Plot Coverage %	Plot Ratio
Low density bungalow	0.1	40	1.1
Medium density bungalow	0.030	60	1:2
High density	0.015	70	1:3
Multi-family dwelling	0.02	60	1:2.5

Residential Plots (Group Housing)

RU12: The minimum requirements shall be as follows:

- Minimum plot size for Group Housing shall not be less than 4000 sq. m (about 1 acre);
- The Ground coverage shall not be more than 30%;
- The density may vary according to the area of dwelling unit size and the number of dwelling units within each permissible plot ratio of 1: 1.5 - 2.0;
- Plots for group housing should be located on roads facing a minimum width of 18 metres (12 metres in case of existing built-up areas and 9 metres in informal settlements);
- The developer shall ensure that 10 % of plot ratio or 10-15 % of dwelling units, whichever is more, are constructed for community service personnel or servants. Such an area should have area between15 to 25 square metres per dwelling unit;

- If the building is constructed with stilts, the area of non-habitable height, and is proposed for parking, landscaping etc., such floor space shall not be counted into plot ratio;
- The basement constructed and used for parking, storage, utilities and services shall not be counted into plot ratio;
- The maximum height of the building shall not be more than 26 metres; and
- Special housing for urban poor to cover the majority of the population considering their affordability should be the dwelling unit in range of 45-50 square metres per dwelling unit.

Residential Apartment Scheme

RU13: A scheme for development for the construction of apartments on a plot having five or more in number with common services shall be permitted on the following conditions:

- The minimum plot size shall be 1500 square metres;
- The road shall not be less than 12 metres abutting the plot and in case of existing plot in built-up areas 9-meter road shall be the minimum requirement; and
- The minimum coverage of the plot shall not be more than 40%.

14.2.3 Mixed Use Regulations

MU1: In the absence of adequate provisions to meet certain demand for space for a particular activity, the available built-up space shall be used (for other than normally permitted use) due to the demand and better economic return.

MU2: Mixed-use shall aim to balance the socio-economic need for such activity and the environmental impact of the said activity in residential areas; allow access to commercial activities in the proximity of residences and reduce the need for commuting across the zones in the Sub-County; manage and mitigate impact related to congestion, increased traffic and increased pressure on civic amenities.

MU3: Types of Mixed Uses shall include:

- Commercial activity in the form of retail shops along minimum 12 m wide road;
- Other activities broadly in the nature of public and semi-public facilities in plots abutting minimum 18 m wide road; and
- Professional activity in plots abutting 40 m wide road.

MU4: The following activities shall not be allowed under mixed-use:

- Retail shops of building materials (timber and timber products except for furniture), marble, iron and steel, firewood, coal and any fire hazards and other bulky materials;
- Repair shops, workshops of automobiles, tyre resoling and re-trading and battery charging etc.;
- Storage, go-downs and warehousing;
- Junk shops;
- Printing, dyeing and varnishing; and
- Any other activity that may be notified from time to time by the Government.

MU5: Registration of mixed-use premises and payment of charges:

- In respect of residential premises, if already under mixed-use or intended to be put to mixed-use, the owner/allottee/resident of plot/dwelling unit in the case of group housing shall be required to declare such mixed-use and deposit the charges as prescribed by the County;
- No modifications to the building for using residential premises for non-residential activities shall be permitted unless the allottee/owner obtains sanction of revised building plan and has paid the necessary charges or fees;
- Consultation with the Residential Welfare Association (RWA) shall be done for the purpose of declaring mixed-use streets.

MU6: The commercial streets/stretches of streets of areas shall be declared and may be notified as commercial streets or commercial areas by the County:

- Where more than 70 % of the plots abutting road of 18 m or more, in a stretch of at least 200 m length in regular plotted development which are under commercial use, provided that no street in residential area shall be notified as a commercial street;
- Where more than 70 % of the properties abutting roads of less than 18 m widths, in a stretch of at least 100 m in length in informal settlements shall be declared as a commercial street;
- Any street less than 6 m widths in informal settlements and if declared commercial streets shall be only a pedestrian street and no vehicular traffic be allowed; and
- There should be a separate Vendor's Policy to regulate this activity as it provides self-employment opportunity to the urban poor to earn their livelihood.

Industrial Development

ID1: The subdivision of Industrial Use Zone into plots for development of industrial estates/parks shall be governed by the following norms:

- The development of industrial area may have plotted development for non-polluting individual industrial units. Some part of the industrial estate may be used for flatted group industry and service industries. The industrial area should have an access/approach from major roads.
- The industrial estate shall have minimum 20-25 % of the area reserved for the following facilities:
  - Sub Fire Station, Banks, Petrol Pump, Restaurants;
  - Police Station, Waste Disposal Dumping Yard, Truck Terminal, parking area, Taxi stand etc.;
  - Industrial Area Centre (Commercial Centre) to accommodate commercial and other facilities, showrooms etc.;
  - Electric Sub-station, Water Supply Tank, Common effluent Treatment Plant etc., and
  - Other facilities such as Recreational Club, Associations, Community Hall, Medical Centre, Administrative Block and other allied common facilities.
- New Industrial Estate should be located on the main roads or secondary roads;
- No road within the industrial estate shall be less than 9 to11.5 m wide (collector road);
- There should be a minimum 10-15 % of the area for landscaping and developed as park and buffers (organized open space). Minimum 10 m wide buffer should be provided all along the industrial area with tree plantation; and
- One ECS parking per 100 square metres floor area be provided.

ID2: The size of plots, plot ratio and setbacks permissible in industrial estates are given in 14-9.

Table 14-9 14-9.

Table 14-9: Requirements of Industrial Plots

Type	Existing Development	Min Plot Size (Ha)	Max. Ground Coverage %	Plot Ratio	Maximum no. of floors allowed	Minimum Setback		
						Front	Side	Rear
Light Industry	Light industries and/or vacant	0.05	75	1:1	2.00	6	3	3
Medium Industry	Medium industries and/or vacant	2	50	1:1	2.00	9	6	4.5
Heavy Industry	Large industries and/or vacant	10	30	1:0.6	2.00	12	6	9
Slaughter-house	Existing slaughter - house and/or vacant	2	40	1:0.8	2.00	9	9	4.5

Educational Use

EU1: The size of plots, plot ratio and setbacks permissible in educational plots are given below.

Table 14-10: Requirements of Educational Plots

Type of use proposed	Min. Plot Size (Ha)	Max. Ground Coverage %	Plot Ratio	Maximum no. of floors allowed
Primary schools	1.2	25	1: 0.5	Ground Plus1
Secondary schools	3.4	30	1: 0.9	Ground Plus2
Special schools	3.5	30	1: 0.6	Ground Plus1
Youth polytechnic	3.5	30	1: 0.6	Ground Plus1
Research institute	10	20	1: 0.8	Ground Plus3
University	50	10	1: 0.4	Ground Plus3
Engineering College, National Polytechnic	10	20	1: 0.8	Ground Plus3

Type of use proposed	Min. Plot Size (Ha)	Max. Ground Coverage %	Plot Ratio	Maximum no. of floors allowed
Medical training college	10	20	1: 0.8	Ground Plus3
Management training/ teachers training institute	5	30	1: 1.2	Ground Plus3

14.2.4 Health Facilities

HF1: The size of plots, plot ratio and setbacks permissible in plots under health facilities are given in below.

Table 14-11: Requirements of Plots under Health Services

Type of use proposed	Min. Plot Size (Ha)	Max. Ground Coverage %	Plot Ratio	Max No. of floors allowed
Sub-County Level -Referral Hospital	8	25	1: 1	4
District level hospital	4	25	1: 0.75	3
Health Centre	2	30	1:0.9	3
Basic health sub-centre/nursing home	1	30	1:0.9	3
Communicable disease hospital	4	25	1:1	4
Dispensary	0.5	40	1:0.8	2
Veterinary hospital	5	30	1:0.6	2

Proposed Public Purpose

PPP1: The size of plots, plot ratio and setbacks permissible in plots under public purpose use are given below.

Table 14-12: Plot sizes, Plot ratio and Setbacks

Public Purpose Facility	Min. Plot Size (Ha)	Max. Ground Coverage %	Plot Ratio	Max no. of floors allowed
Integrated office complex	20	25	1:1.5	4-8
Convention centre	10	20	1: 0.8	4
Socio – Cultural centre/ Exhibition cum fair ground	15	10	1:0.2	2
Fire station	0.5	20	1:0.4	2
Prison	16	10	1:0.3	3

Public Purpose Facility	Min. Plot Size (Ha)	Max. Ground Coverage %	Plot Ratio	Max no. of floors allowed
Juvenile home	2	25	1:0.75	3
Police station	2	30	1:1.2	4
Rehabilitation centre	0.5	25	1:0.75	3
Sub- Sector level community centre	1	25	1:1.0	4
Community hall	0.3	25	1:1.0	4
Orphanage	1	25	1:0.5	2

Recreational Facilities

RF1: The size of plots, plot ratio and setbacks permissible in plots under recreational facilities are given below.

Table 14-13: Requirements of Plots in Recreational Use

Public Purpose Facility	Min. Plot Size (Ha)	Max. Ground Coverage %	Plot Ratio	Maximum no. of floors allowed
City park	10	1.5	1:0.015	1 (Ground)
Amusement park	10	10	1: 0.2	2 (Ground Plus One)
Zoo	10	5	1:0.5	1 (Ground)
Integrated sports centre – City Level	30	10	1:0.2	2 (Ground Plus One)
Integrated sports centre –Sector Level	10	10	1:0.2	2 (Ground Plus One)
Sector park	5	1.0	1:0.01	1 (Ground)
Sector playground	5	1.0	1:1.01	1 (Ground)
Stadium	5	10	1:0.2	2 (Ground Plus One)
Cluster park	1	1.0	1:1.01	1 (Ground)
Sub-Sector park hall	2	1.0	1:1.01	1 (Ground)
Sub-Sec playground	2	1.0	1:0.01	1 (Ground)
Cluster playground	1	1.0	1:0.01	1 (Ground)

Fire Safety - Buildings Construction Materials

FS1: The type of building materials or methods used for construction shall be in a position to resist fire for the recommended minutes in order to minimize the spread and intensity of the fire as shown in Table 14-14: This also ensures safe evacuation of occupants or users.

FS2: Where any combustible roof covering material including thatch, shingles and bituminized felt onboarding is used and the plan area of such roof is more than $20m^2$, the distance between the building so covered and any boundary of the site on which such building is situated should be not less than 4.5m. If the slope of a building roof does not exceed 60 degrees, a minimum distance of 1.0m between any two such areas should be provided whereas if the roof is in excess of 60 degrees, a minimum distance of 1.0m measured horizontally and 3.0m measured along the slope of such roof between any two such areas should be provided.

Table 14-14: Type of Building Occupancy and Fire Resistance Minutes for Materials

Occupancy type	Fire resistance (Minutes)
Entertainment & public assembly, Theatrical & indoor sport, Places of instruction, Worship, Outdoor sport, Moderate & Low-risk commercial service & industrial, Museum, Plant room, Offices, Hotels, Dormitory, Domestic residence, Detached dwelling house, Moderate & Low-risk storage, Parking garage.	60
High-Risk Commercial Service, Exhibition halls, High-Risk Industrial, Places of Detention, Hospitals, Large Shops, Wholesaler Stores, High-Risk Storage.	120

Source: Kenya National Planning & Building Code, 2009

Emergency Routes

FS3: Any building of a height of more than three storeys should be provided with not less than two escape routes. No emergency routes are required if the travel distance from the farthest point in any room, measured along the escape route, to the nearest escape door is less than 30m or in any building of not more than three storeys in height.

Table 14-15: Minimum Width Standards for Escape Routes

Maximum number of persons	Minimum width (mm)
120	1100
130	1200
140	1300
150	1400
160	1500
170	1600
180	1700
190	1800
200	1900

Source: Kenya National Planning & Building Code, 2009

Exit Doors

FS4: Where the population of any room is not more than 25 persons, the width of any exit door should be at least 900mm. Any classroom, lecture room or boardroom that has a population of more than 50 persons or any other room that has a population of more than 25 persons should have not less than two exit doors. One such door should open in the direction of travel along the escape route. Where the population is more than 240 persons, three or more exit doors should be provided.

Fire detection and alarm systems

FS5: All occupied areas within any building, which exceeds 30m in height or contains any storey exceeding 5,000 m^2 in floor area, should be equipped with fire detection, and manually activated fire alarm system and an emergency evacuation communication system.

Fire hydrants

FS6: Any building exceeding 12 m in height or with a total floor area exceeding 1,000 m^2 should be provided with fire hydrants on the basis of not less than one per 1,000 m^2 or not less than one per storey. Hydrants provided should have a 24 m or 30 m long fire hose together with couplings and a 16 mm internal diameter nozzle.

FS7: In any permanent amusement park or exhibition ground, shopping centre or group housing, cluster housing, or townhouse complex ground or raised hydrants should be installed. They should be placed at a distance not greater than 90m from these facilities.

FS8: Public fire protection in cities and major towns is crucial. Thus, fire hydrants should be installed in public rights-of-way, City-owned property, or City-approved easement and connected to local authority water mains. Public fire hydrants should be located in streets or roads dedicated to public use. Locations these hydrants should be approved by the relevant authority prior to installation.

FS9: The hydrant bonnets should be colour coded in accordance with Kenya Bureau of Standards to show the amount of water that can be discharged out of them as shown in Table 14-1659 Red banding on hydrants mainly show that they are out of service.

Table 14-16: Fire Hydrants Colour Coding and Meaning

Marking of Fire Hydrants Bonnets and caps	
Bonnet colour	Litres per minute
Green	4,000 or greater
Orange	2,000-4000
Red	Less than 2000

Source: Kenya National Planning & Building Code, 2009

FS10: Hydrants shall not be used for any other purpose other than fire protection without express permission from the County.

14.2.5 Electricity Sub-Stations

ESS1: In order to have an electricity connection, a person has to make an application to Kenya Power requesting for the same. Application procedure entails 4 steps:

Step 1 – Filling and submitting the application form to the nearest Kenya Power office. This can also be done online.

Step 2 - Upon receipt of the application, Kenya Power technician visits the applicant's site to assess the requirements for preparation of cost estimates after which a quotation is sent to the applicant.

Step 3 – Customer pays connection fee.

Step 4 – Construction and metering.

Table 14-17: Substation location

Capacity of line	Wayleave
11 KV	10
33 KV	20
40 KV	20
66 KV	30
132 KV Single circuit towers	50
11 KV Double Circuit towers	60

14.2.6 Street Lights

SS1: Street lighting steel poles are placed at an interval distance of between 30m – 35m depending on the wattage used and height of the poles. Wattages used are 70 and 150 watts. The higher the wattage the greater the interval distance between the poles. The poles go as high as 8m from the ground for standalone steel poles and at a maximum of 7m when the lights are fixed on the electricity poles running along a road.

Table 14-18: Summary of Development Control Regulations

Zones	Area Name	Sub-zone	Land Use	Minimum land Size	Ground Coverage	Plot ratio	Remarks/Notes
1	Nyakumu swamp		Recreation	-	-	-	Recreation Conservation.
	Ondiri swamp		Recreation	-	-	-	Recreation Conservation.
	Nachu Escarpment		Recreational	-	-	-	Conservation.
2	Kikuyu CBD	A	Commercial	0.05Ha	75		Commercial 18-metre road reserve.

Zones	Area Name	Sub-zone	Land Use	Minimum land Size	Ground Coverage	Plot ratio	Remarks/Notes
	Kikuyu peri-urban	B	Residential	0.05Ha	60		12m road reserve.
3	Kinoo	A	High-Density Residential	0.1Ha	75	2.0	12-18m road reserve Avoid direct access to A104.
		B	Low-Density Residential	0.1Ha	40	1.0	9-15m road reserve.
		C	Commercial	0.5Ha	80	2.0	12-15m road reserve.
4	Thogoto	A	High-Density Residential	0.05Ha	75	2.0	12-18m road reserve.
		B	Medium Density Residential	0.05Ha	50	1.0	9-15m road reserve.
		C	Commercial	0.05Ha	80	2.0	12-15metre road reserve.
5	Gikambura	A	High-Density Residential	0.1Ha	75	2.0	12-18m road reserve.
		B	Medium Density Residential	0.1Ha	50	1.0	9-15m road reserve.
		C	Low-Density Residential	0.1Ha	25	1.0	9-15m road reserve.
6	Nderi	A	High-Density Residential	0.1Ha	75	1.5	12-18m road reserve.
		B	Medium Density Residential	0.1Ha	50	1.0	9-15m road reserve.
		C	Low-Density Residential	0.1Ha	25	1.0	9-15m road reserve.
7	Sigona		Residential	0.1Ha	75	1.0	9-15m road reserve.
8	Muguga Jet Settlement/Kerwa		Agricultural	0.1Ha	-	-	9-15 metre road reserve.
9	Kamangu	A	Commercial	0.05Ha	40	2.0	Retail shops, supermarkets, 9-15m road reserve.
		B	Residential	0.1Ha	50	1.0	Single dwelling 9-15m road reserve.
		C	Agricultural	0.1Ha	-	-	High rates for change of users

Zones	Area Name	Sub-zone	Land Use	Minimum land Size	Ground Coverage	Plot ratio	Remarks/Notes
							9-15m road reserve.
10	Karai	A	Medium Density Residential	0.05Ha	50	1.0	Single dwelling 9-15 metre road reserve.
		B	Low-Density Residential	0.1	30	1.0	Single dwelling 9-15m road reserve.
11	Lusigetti		Residential	0.1Ha	50	1.0	Single dwelling 9-15m road reserve.
12	Nachu		Agricultural	0.2Ha	-	-	9-15m road reserve.

14.3 Action Plans

14.3.1 Kikuyu CBD Action Plan

Kikuyu Town is the traditional CBD of the Kikuyu Sub-county. The town is wedged between the railway line and the Southern bypass road at its eastern side. It is also defined by two axes; Nairobi-Nakuru Highway on the northwest axis while the Southern Bypass road represents the southwest axis. The town has its origins from the railway station, which is located at its western side, just above Ondiri swamp.

14.3.2 Kikuyu CBD Situation Analysis

The CBD is the only distinct mixed-use activity node in the sub-county with the predominant land use being commercial housing over 95% of commercial activities in Kikuyu. The CBD is laid out in rectangular grid fashion, with longitudinal roads laid out on a northeast-southwest axis. The CBD has a highly compact, dense and robust character. There are many 4 to 5 storey buildings that were built in close proximity to each other.

Significant landmarks include the Town Hall, Railway Station, and Law Courts Building, shopping centre, Equity Bank and the bus park, amongst others. The main street is called Post Office Road whose entry is at its junction with the Southern Bypass Road and ends at the railroad tracks. This road is flanked on both sides by 3 street blocks.

There are notable large Open Spaces, such as Ondiri swamp abutting the CBD, one park/open space at the heart of the CBD and pocket opens spaces found in the low-density residential development zones surrounding the CBD.

The table below highlights objectives and viable design interventions proposed to mitigate the existing spatial challenges in the Kikuyu CBD action area plans.

Table 14-19: Objectives and viable design interventions proposed to mitigate the existing spatial challenges in Kikuyu

Existing challenges	Objectives	Design strategies
1. Transportation		
• The streetscape is vehicle-oriented and not pedestrians friendly; • Space contestations between motorized and non-motorized road users cause congestion; • Encroachment and spillover of trade activities e.g. hawkers onto the streets; • Spillover activities of bus park activities onto the streets. The existing bus park is unable to accommodate all the public service vehicles and taxis; • Undesignated and limited parking spots within the CBD leading to haphazard parking; and • The railway line has also created an enclave separating the town from the Ondiri side.	• Decongestion of the CBD can be improved by the renovation of the existing roads and proposed ring roads that will provide alternative linkages; and • Create pedestrian-friendly streets with adequate sidewalks, cycle paths and street furniture that will encourage walkability.	• New Bus Terminus. • Proposed NMT facilities. • Redevelopment of Post office road(30m). • Pedestrianisation of adjacent roads. • Roads upgrade. • Modernization of Railway station in Kikuyu. • Development of multi-storey parking within the CBD.
2. Local Economy		
• The high demand for commercial space in the market has led to congestion and commotion along the designated access routes; and • Fragmented infrastructural development.	• To Creation of compact and densified CBD. This will create employment opportunities within Kikuyu where people can live and work from; • Encourage the provision of services within walkable distances of not more than one-kilometre radius; and • Encourage commercial businesses to create active frontages to attract road users.	• New Market. • Redevelopment of the old market. • Densification of the CBD.
3. Green Open Spaces		

Existing challenges	Objectives	Design strategies
• The town lacks well planned and designed open social spaces that are fundamental for the everyday associations of the individuals of the community.	• Provide public spaces for recreation purposes; • Environmental purification by acting as carbon sinks to rid the air of carbon emitted by vehicles, as well as residential, commercial and industrial activities; • Enhancing town aesthetics through landscaping along streets, public waterways and along building verandas'; and • Stress management and Population health management among the urban population by providing places of new experiences and relaxation.	• Provision of Green open spaces within the CBD that provide a breakaway space for recreation and help to sequester the carbon for a cleaner atmosphere.
		• Tree-lined streets are important to greening and improving the aesthetics of the CBD.

Figure 12-2 shows the location and Kikuyu, illustrating its strategic position and transportation links as described.

Figure 12-3 represents the current land uses, while Figure 14-4 illustrates the current challenges and the proposed interventions along Posta Road in Kikuyu Town. Figure 14-5 presents a cross-section of the redevelopment plan for Posta road.

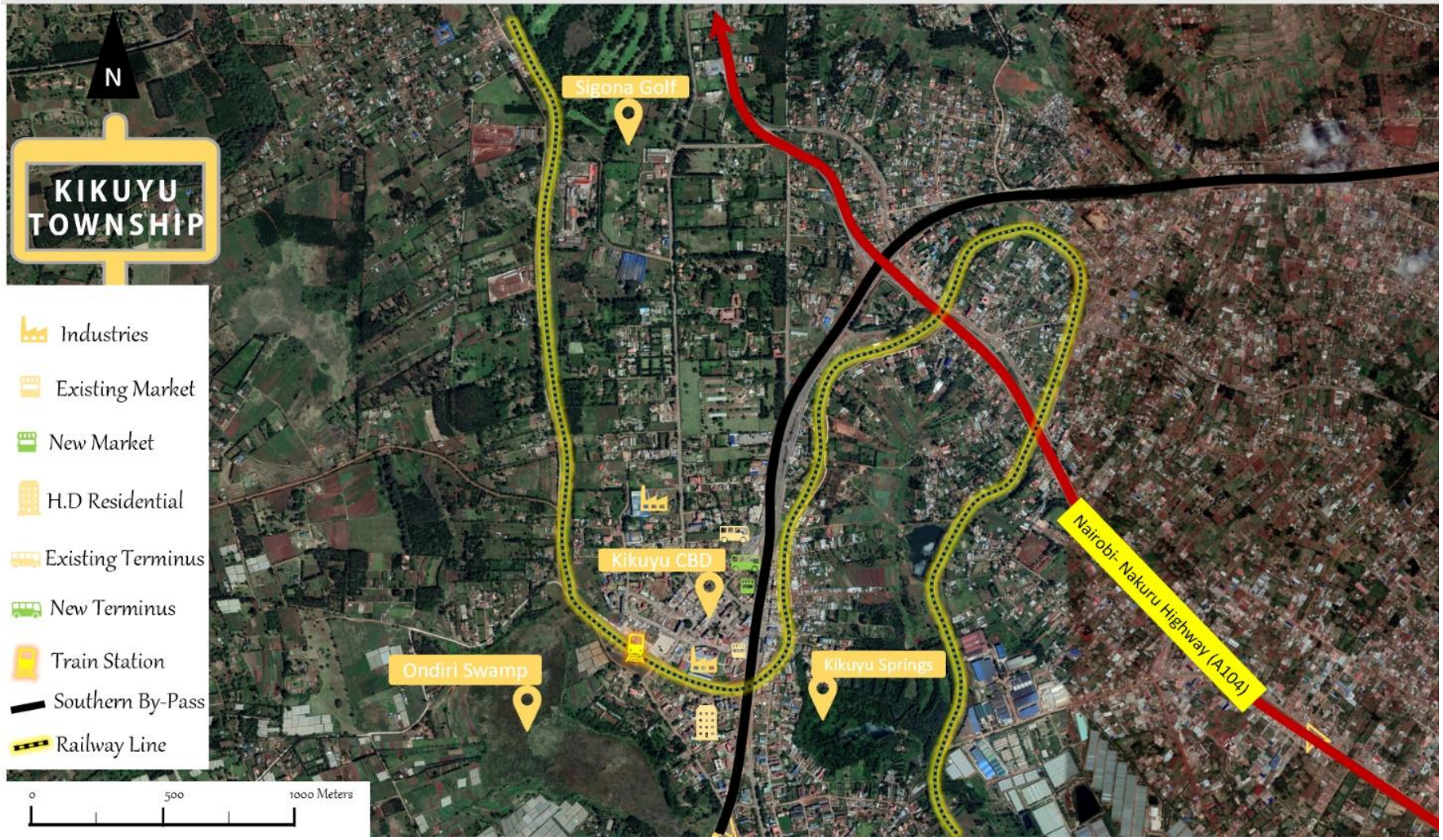


Figure 14-2: Location & Context of Kikuyu Township

Source: VisionRI

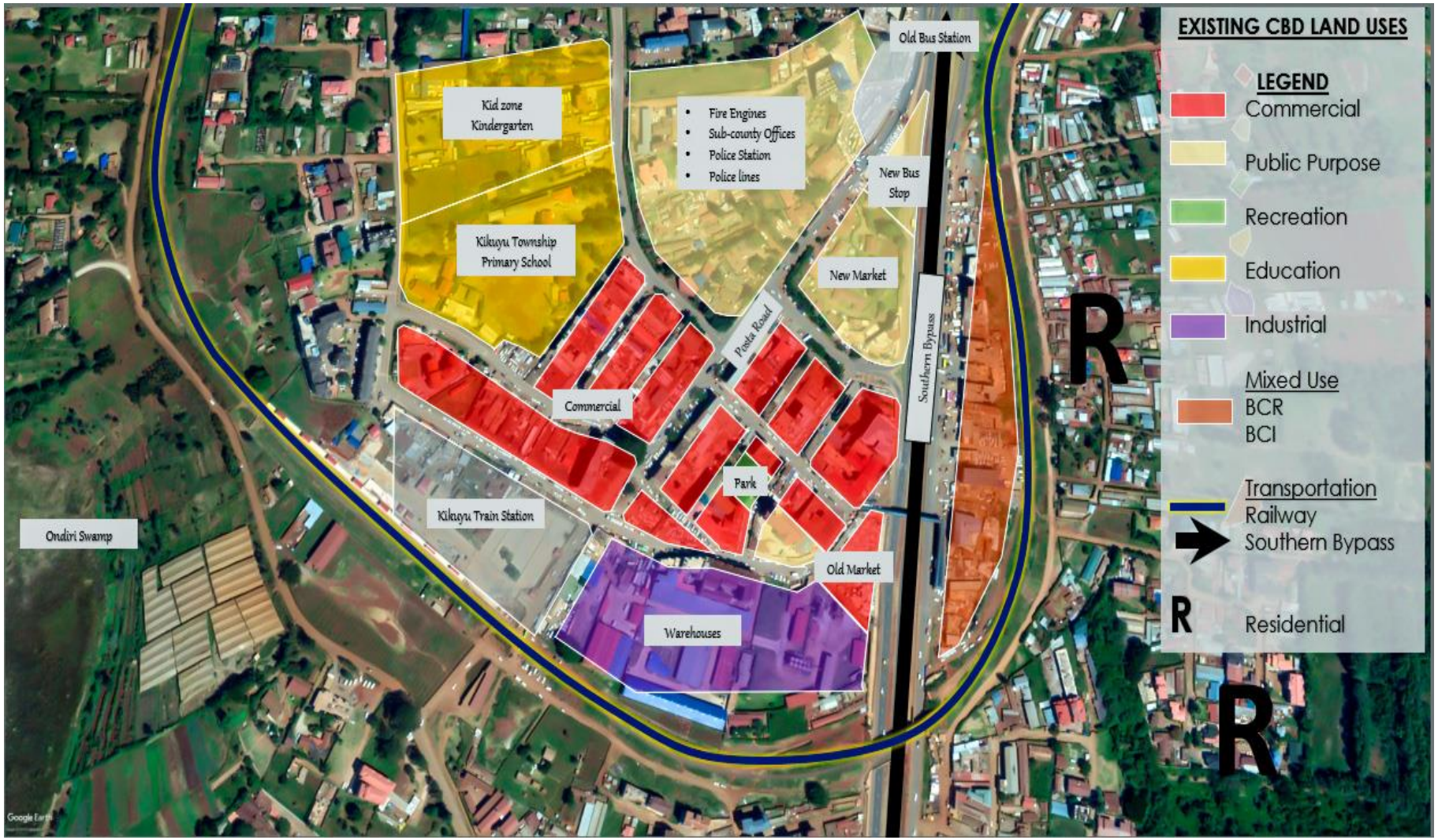


Figure 14-3: Existing CBD Land Uses

Source: VisionRI

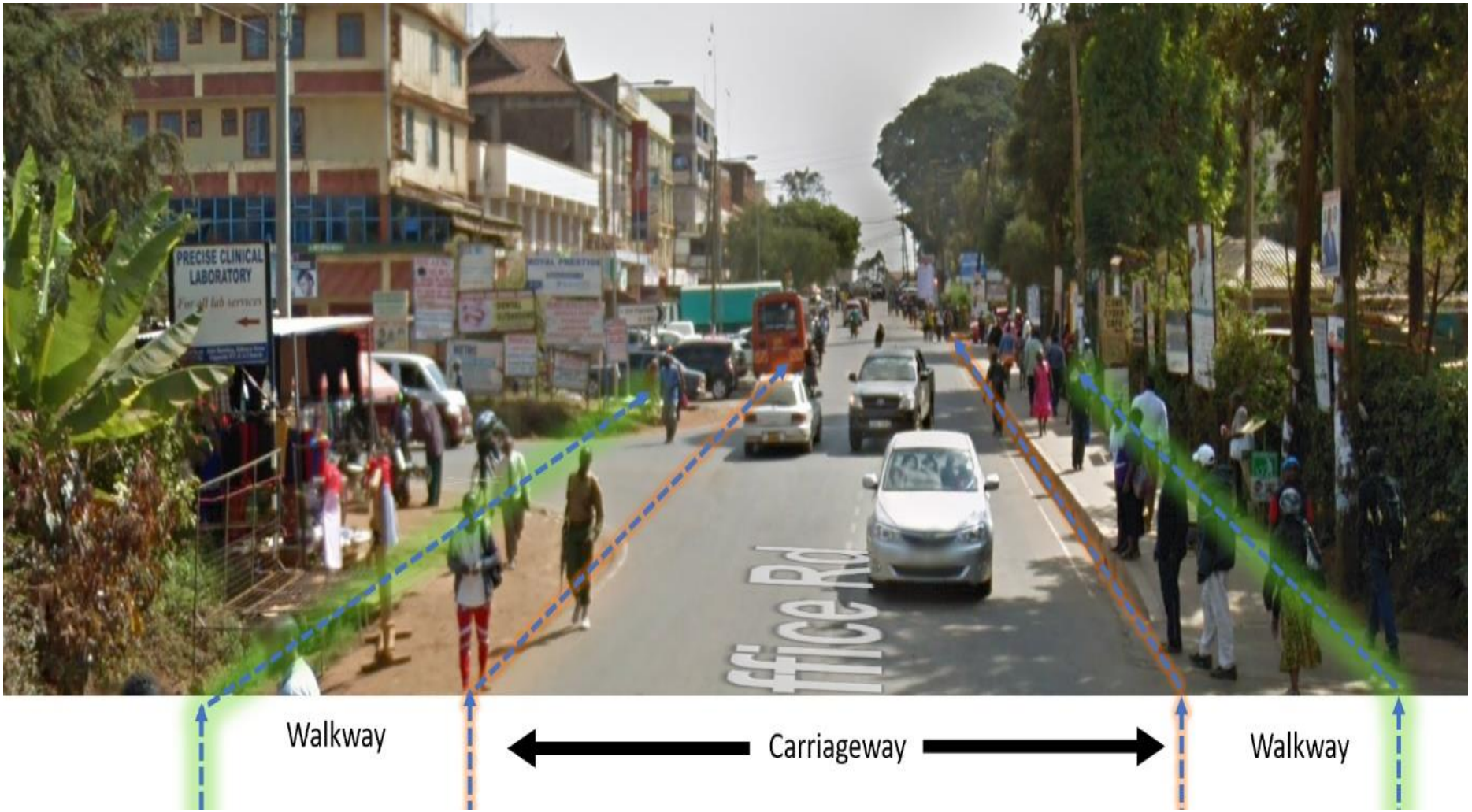


Figure 14-4: Challenges along Posta Road

Source: VisionRI Graphics

14.3.2 Planned and On-Going Projects by NaMSIP in Kikuyu CBD

NaMSIP is currently undertaking several projects in Kikuyu:

i. **Modernization of Railway station in Kikuyu:** NaMSIP is in the final phase of modernizing the commuter rail services on the rail that runs from Nairobi Central Park to Limuru. Among the improvements being undertaken are:

- Park and ride facilities to allow potential passengers to park their vehicles and board the train to and from Nairobi;
- Ticketing stations;
- Bus interchange station for dropping passengers; and
- Construction of a grade-separated crossing level for train and vehicles to Ondiri Side.

Others facilities include waiting area, turnstile rack, administrative office, paid toilets, police office, security gate, enclosure and lighting, pedestrian walkway, access roads, parking area, landscaping, utilities and access facilities.[9]

Upon completion, the Kikuyu Station is expected to handle between 2,000 and 5,000 passengers per hour. This is according to an ESIA report[10] commissioned on this project. Some of the benefits that will be realized from this project include:

- Creation of employment opportunities;
- Increase of economic activity in the area;
- Improved connectivity into and out of Kikuyu town; and
- Ease of congestion in the Nairobi CBD and reduced travel time.

ii. **Construction of a new three (3) storey market:** NaMSIP together with World Bank is undertaking the construction of the multi-storey market which is set to house 700 stalls. This is one of the 15 markets within the Nairobi Metropolitan Region that the agency is upgrading. The partnership seeks to provide enabling physical spaces for organized markets, market linkages for products, enhancing access while improving livelihoods especially for the urban poor who will be vending.

For Kikuyu, the new market is designed to accommodate existing and future vendors. Other considerations included in the design are spacious stalls, adequate and basement parking, water supply and reticulation and sanitary facilities. The market will also be properly ventilated and secure.

An Environmental and Social Impact Assessment (ESIA) report[11] commissioned to inform the project identified potential positive and negative impacts. The report further proposes remedial actions to remedy the negative impacts. Some of the positive impacts the new market is expected to bring forth include the following:

- The presence of the market is expected to create employment both directly and indirectly to many people;

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[9] Interdisciplinary Land-Use and Transport Metropolitan Analysis within the Nairobi Metropolitan Region (ILUT)
[10] Environmental and Social Impact Assessment Project Report (Esia) for the Proposed Construction Of Kikuyu Railway Station
[11] Environmental and Social Impact Assessment of The Proposed New Kikuyu Market, Kiambu County

- The market will be a source of revenue to the government through the collection of levies and cess;
- The market will also spur economic growth in the town;
- The traders in the market will have the security of tenure and will have shelter against adverse weather condition;
- However, like any other project, there are some anticipated negative impacts.
- Existing vegetation will be cleared to pave way for the construction of the market. This will lead to the loss of vegetation. To remedy this, the contractor is expected to carry out landscaping works on the site by planting additional trees, flowers and other aesthetic plants;
- During construction, the air quality is expected to be degraded due to dust. However, the application of prevention measures such as soil dampening through the sprinkling of water will keep the dust at bay;
- The water resources in the area are expected to be during construction and operationalization of the new market. The ESIA report proposes the contractor installs water storage tanks and other water-saving technologies;
- Noise and vibration during the construction phase. To manage noise this, the construction activities should only be carried out only during the day and avoid unnecessary noise pollutants e.g. hooting;
- The market will generate considerable solid and liquid waste. The project proposes coordination between the proponent of the project, Kiambu County Government and private waste collectors towards waste management on a regular basis; and
- Traffic snarl-up and congestion: The contractor is expected to come up with a traffic management plan showing main access and exits.

iii. **Construction of an additional Bus terminus:** There is a proposal to construct a new Bus terminus adjacent to the new market to supplement the old one, which is directly opposite. The old terminus is unable to accommodate all the public service vehicles plying routes to or from Kikuyu. The additional terminus is expected to accommodate 120 buses.

14.3.4 Challenges being anticipated from the above-mentioned projects

Congestion in the CBD is expected to get worse with the new developments coming up unless serious interventions are to be implemented. Over 7,000 buyers are anticipated to visit the market every day on average. The train station is also likely to be a key attraction with the planned improvements to make it user friendly. These developments are likely to trigger an increased influx of vehicular and pedestrian traffic causing the following:

i Increased demand for parking spaces.
ii Increased waste generation in the town.
iii Space contestation between vehicles and pedestrians.

Now, the town is ill-prepared for the above-mentioned eventualities due to the narrow roads, inadequate parking slots and inadequate pedestrian-friendly streets. This report proposes planning interventions to decongest the CBD as captured in the next section.

14.3.5 Planning Interventions to Decongest Kikuyu CBD

i. **Synthesis & Proposals:** As the town continues to grow and rapidly urbanize, there is the need to rectify the constraints presenting themselves in the CBD and the town at large. This action plan, therefore, makes proposals geared towards ensuring the functionality and efficiency of the Kikuyu CBD. Provision of walkways/footpaths, Cyclist integration, sustainable parking and multimodal transport system will ensure that traffic is eased within the CBD. This will help decongest the CBD ensuring reduced travel time and increased accrued profits. Sustainable environment management will ensure proper solid and liquid waste management as well as protection of environmentally sensitive areas. Below are the objectives of the Kikuyu CBD action plan. To provide a strategy for renewal of the degraded parts of the CBD:

   iv To ensure proper connectivity and circulation in Kikuyu CBD.
   v To provide a strategy for environmental management and conservation.
   vi To provide strategies for sustainable infill densification within the CBD.

ii. **TOD as an Approach to Decongest CBD:** This study identifies Transit-Oriented Development model as the most viable and appropriate solution to ease congestion in Kikuyu CBD. This model encourages the creation of compact, walkable and pedestrian-oriented neighbourhoods defined by compatible mixed-use land uses with reduced dependence on cars for mobility. The model can be used to manage the town and reduce congestion.

   Components of transit-oriented development include:

   - Development of an efficient public transport system. In the case of Kikuyu, the existing railway line can be integrated with the matatu transport to discourage private vehicles in the town. If efforts were made to ensure that the public transport system is safe, cheap and efficient, it would encourage people to leave their vehicles at home at use this option;
   - Creation of compact and densified CBD. This will create employment opportunities within Kikuyu where people can work from hence reducing the need to leave the place to look for employment opportunities elsewhere. Densification in the CBD can be achieved by permitting developers to increase plot ratios, which will encourage high-rise between 7 and 10 floors. Denser cities are said to be more sustainable, easy to service and helps to free land that can be used for other uses[12]. Densification also controls urban sprawl;
   - Create complementary, compatible mixed land uses to allow people to live and work within the area and minimize movement outwards. Compatible land uses may include commercial, public purpose, residential;
   - Create pedestrian-friendly streets with adequate sidewalks, cycle paths and street furniture. This will encourage walking and people will feel safe using the streets;
   - Incorporate public spaces e.g. open spaces within the CBD. This will create places for relaxation and recreation;
   - Encourage the provision of services within walkable distances of not more than the one-kilometre radius; and

[12] https://www.designingbuildings.co.uk/wiki/Densification

- Encourage commercial businesses to create active frontages to attract road users.

The proposed interventions to ensure the fulfilment of the objectives include:

i. **Improve Circulation within the CBD:** Decongestion of the CBD can be achieved through improved circulation and rehabilitation of the existing roads. It will also involve widening of roads within the CBD. Circulation can be improved through the provision of more routes. This is arrived at by proposing important through-roads that are inexistent but need to be developed, expanding various road and surface improvement for both Motorised and Non-motorised traffic. Main proposals include; the missing links between the southern bypass and post office road loop, pedestrian-only boardwalk over Ondiri swamp and a circuit track around it. The proposed circulation plan is shown below in Figure 14-5.

   Figure 14-5 represents the proposed transport circulation plan within Kikuyu's CBD. This will incorporate pedestrianized streets (Figure 14-6) which this plan proposes to pedestrianize as well as a proposed Kikuyu CBD development activity; and traffic calming measures as presented in the Traffic Management Plan (Figure 14-7). There is a proposal to rejuvenate of the operations of the Railway Station (Figure 14-8) and within the proposed redevelopment plan, integration of parking silos with complete with rail and export cargo handling facilities (Figure 14-9).

   This plan provides proposals for densification and mixed-use development segments within the CBD (Figure 14-10); and provision for open and green spaces (Figure 14-12). The overall proposed Action Area has been presented in Figure 14-13.

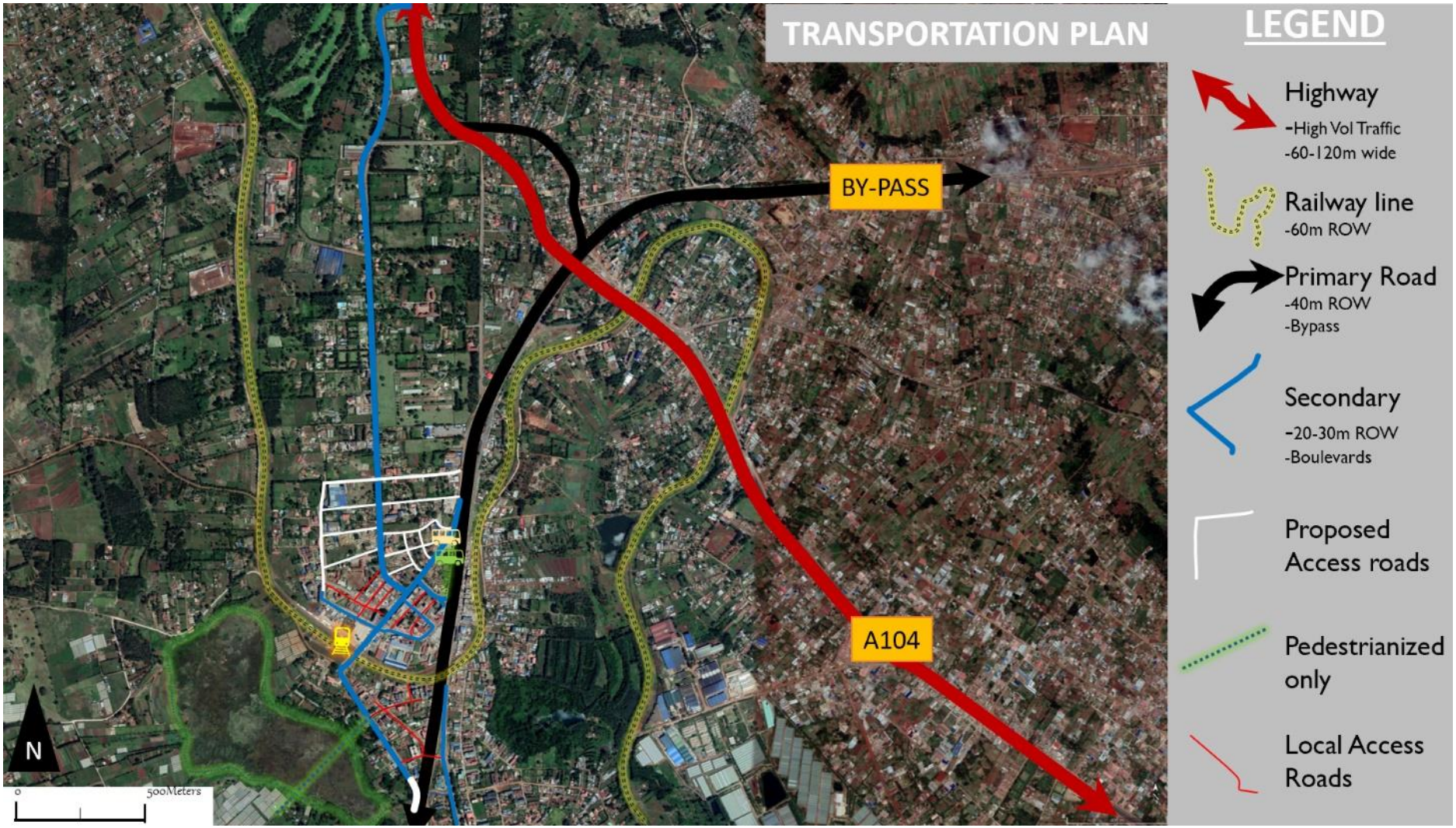


Figure 14-5: Circulation plan for Public Service Vehicles

Source: Adapted from Google Image 2019

ii. **Creation of pedestrian-friendly blocks and streets within the CBD. Introduce pedestrian sidewalks, street furniture:** The proposals take into cognisance the need to facilitate better and efficient mobility for all modes; pedestrian, vehicular, and transit. There is a great need to shorten the block sizes to ensure and facilitate walkability. This makes the distance travelled shorter, which encourages people to walk rather than using any other available modes.

Pedestrianisation of streets with adequate walkways and provision of crossing levels at appropriate areas is important in ensuring efficiency in the mobility of the town. The walkways/pedestrian paths need to be continuous with minimal breaks.

Provision of street furniture such as parklet gardens, street lighting, and bus waiting areas, benches, trees bollards, and vendor zones are important elements to facilitate a good walking experience.

iii. **Construction of an integrated transport terminus next to the commuter railway station.** This will ease the congestion at the current public vehicle terminus and also link commuter railway station with bus/matatus transport system as shown in Figure 14-6 below.

Figure 14-6: Pedestrianized streets

Source: Adapted from Google Image 2019

iv. **Traffic management Strategy -** Provision of interchange stations within the CBD. There is provision for an interchange transit station for the bus and train transportation modes at the Kikuyu railway terminus. This intervention seeks to facilitate seamless linkages and reduction in traffic (vehicular and pedestrian) by cutting off unnecessary trips generated by the modes.

The circulation plan indicates that vehicles from Nairobi will use the new terminus, have a 5-10-minute waiting time, exit into the southern bypass or proceed to the interchange station to drop or pick passengers then continue straight past the old terminus and back to Nairobi. For PSV traffic coming from Gikambura through the southern bypass, they will slide right onto new market/k-unity road then turn right to the old terminus have a 10-15min waiting time then proceed straight to the overpass roundabout and back to Gikambura and Thogoto areas, or turns left and into the interchange station then to the old terminus then back to Gikabura. This will ensure the smooth flow of all types of traffic as well as attracting people to using PSVs for commutes and NMT facilities shorter distances.

Effective mobility within Kikuyu CBD necessitates redevelopment of post office road (ROW=30m) into an urban street will facilitate efficient mobility through provision of ample walkaways, greenery, on-street parking, Cycle lanes, Street lighting, a dual carriageway with the provision of turning lanes and bus shelters (Figure 14-7).

v. **Revitalization of the old railway line:** The provision of an interchange station will help revitalise the old railway. This will in turn rejuvenate the economy and the industrial export function of Kikuyu. The Kenya railways and abutting landowners can put up exports handling facilities for packaging and value addition of product (Figure 14-9).

vi. **Development of multi-storey parking within railway commuter station:** This will help reduce on-street parking thereby improving the mobility of vehicles. Parking spaces need to be organised to ensure proper use of available land and to alleviate congestion as motorist goes by looking for available parking spaces. The implementation of basement and silo parking spaces within the CBD will alleviate instances of congestion and invasion of walkways by parked vehicles. Such parking silos shall display the number of parking spaces available on a LED display board.

vii. **Revitalisation Strategy:** Densification as stated previously, is a principle of efficient space use in urban areas. Therefore, in order to make the town more vibrant, developers need to utilise the vertical spatial space. The buildings can go up to 8-10-15 floors offering parking spaces on the lower floors. The government offices ought to be densified as well so that they may leave more green open spaces.

Mixed-use is an important development principle that ensures that people can access services and goods within short and walkable distances. Such mixed-uses can incorporate commercial and residential buildings, public purpose and residential, some educational facilities with the commercial user as well as commercial and low impact industrial uses such as craft, printers, bakeries among others.

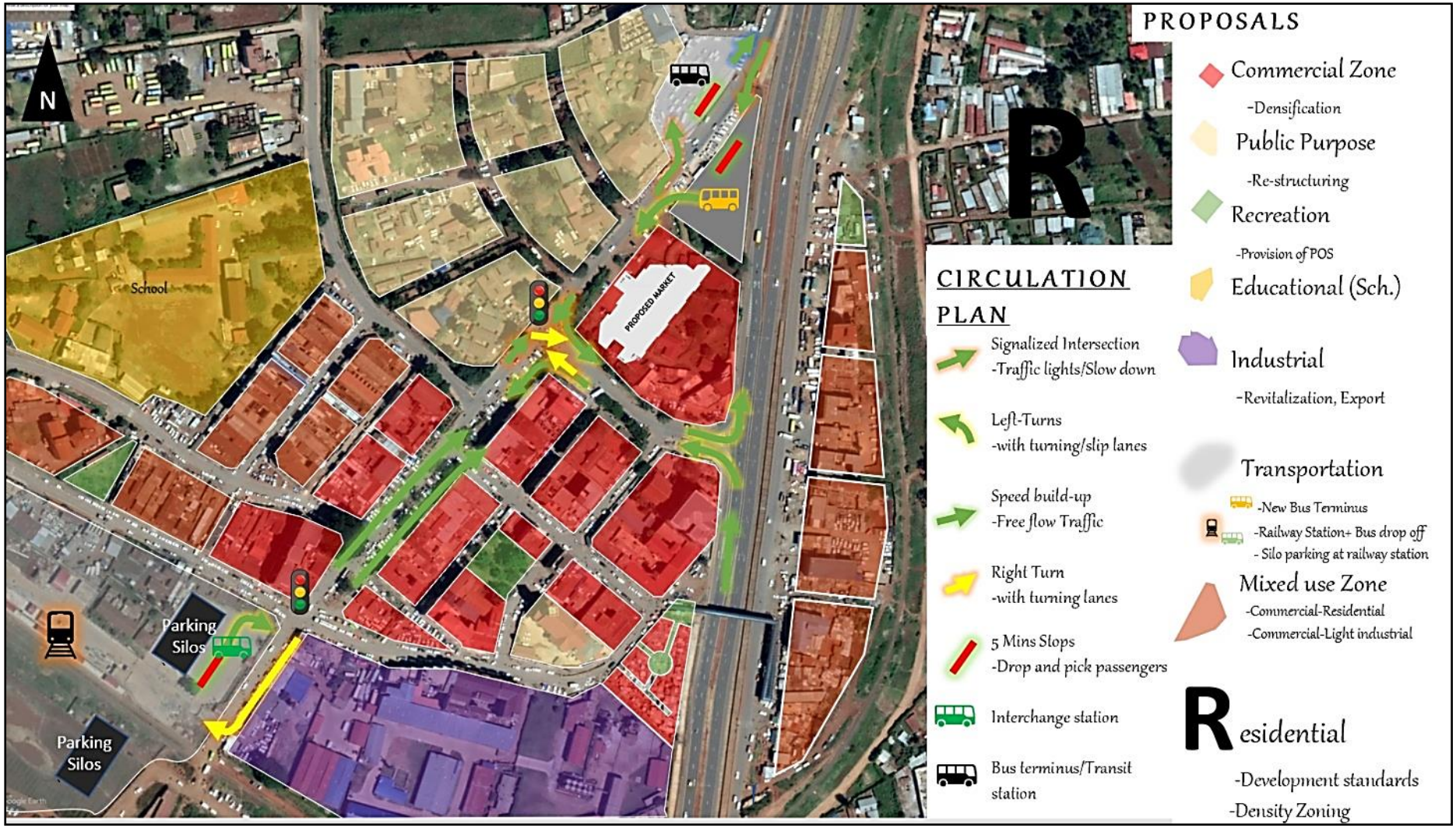


Figure 14-7: Traffic Management Plan

Source: VisionRI Graphics

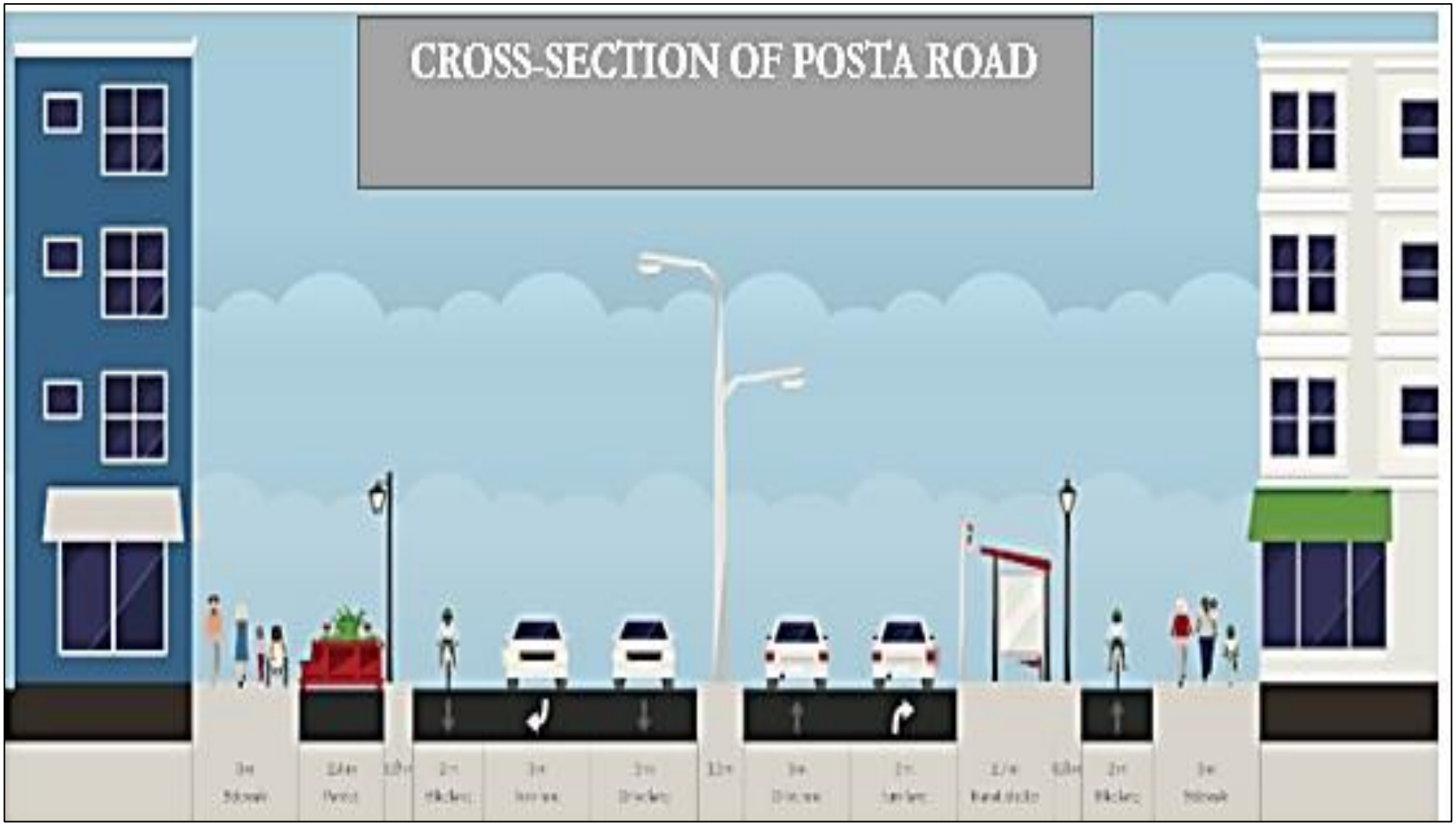


Figure 14-8: Cross-section for Posta Road Redevelopment

Source: VisionRI Graphics

Figure 14-9: Revitalization of Railway Station

Source: VisionRI Graphics

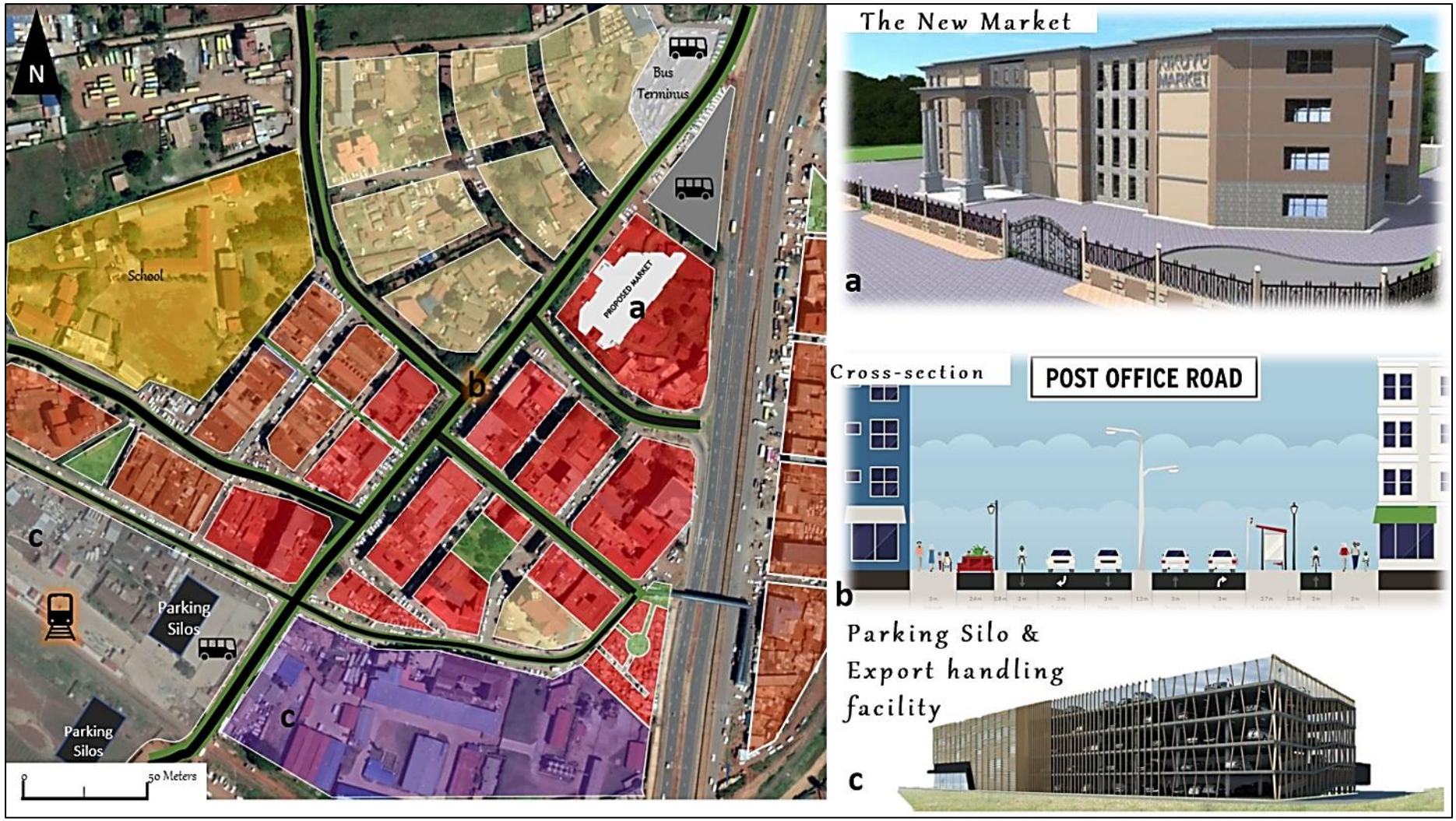


Figure 14-10: Integration of Parking Silos with Rail and Export handling facilities

Source: Author 2019

Figure 14-11: Densified and Mixed-Use Developments

Source: Authors, 2019

viii. **Provision of Open spaces:** Green open spaces are important elements of the built environment. Such spaces provide a breakaway space for recreation/leisure and help to sequester the carbon for a cleaner atmosphere. This plan proposes additional open spaces within the CBD as indicated. Tree-lined streets are important to greening and improving the aesthetics of the CBD. Streets will be ornamented with plants, grounded treelines and other forms of green infrastructure on buildings.

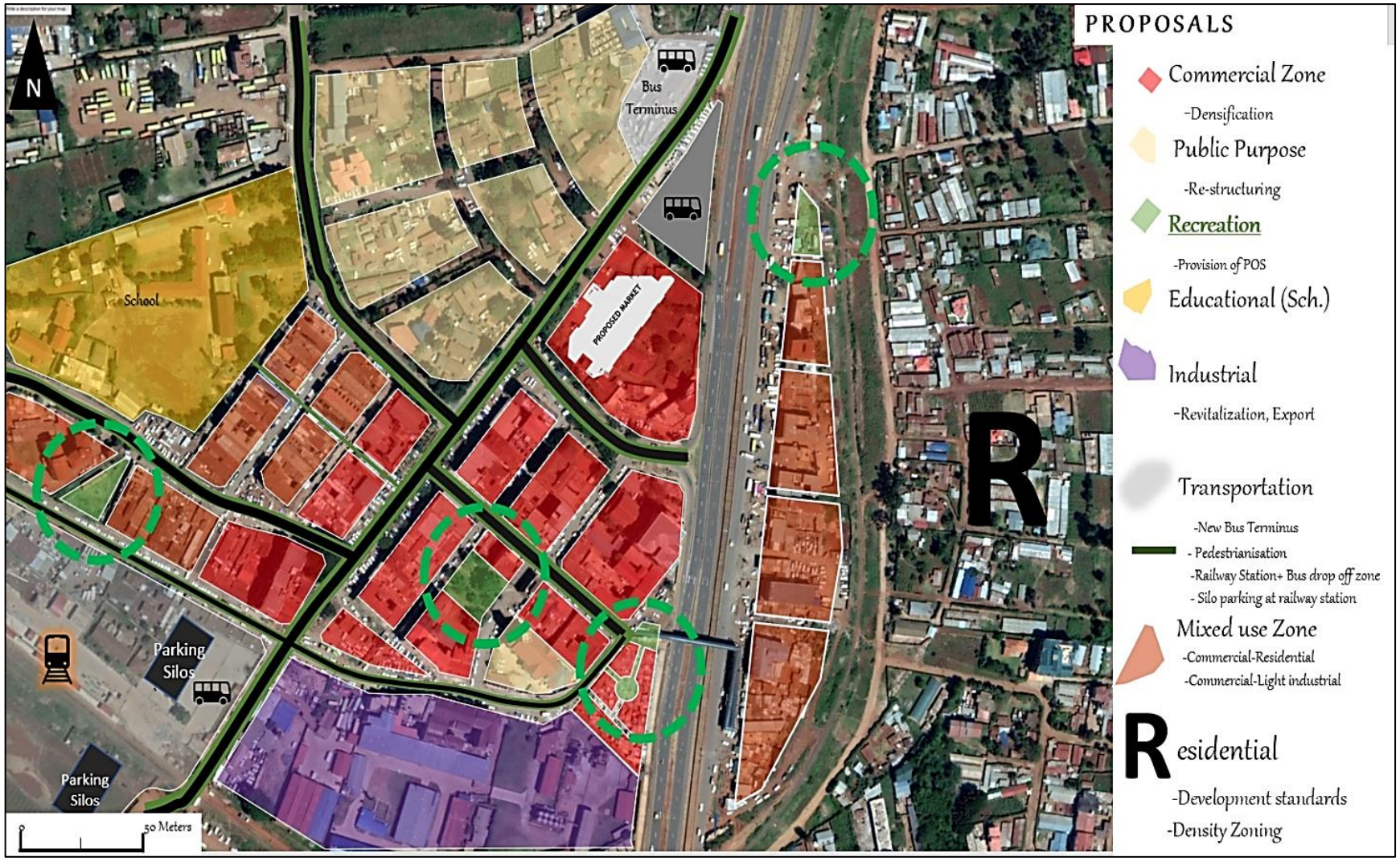


Figure 14-12: Location of Proposed open spaces

Source: Author, adapted from Google Images, 2019

Figure 14-13: Kikuyu CBD Action Area Plan

Source: Author, adapted from Google Images, 2019

14.3.6 Project Impacts

Upon completion and implementation of the design proposals, the table below depicts some of the positive and negative impacts that may arise.

Table 14-20: Projects Impacts

Positive Impacts	Negative Impacts
• Enhancing the centrality and attractiveness of Kikuyu urban centre, through the development of quality public spaces and streetscapes that reflect the physical and historical character of the neighbourhood promotes economic viability; • Densification of the CBD so as to maximize optimal use of land that will create more room for economic and social viability; • Designing open spaces for recreational such as parks will encourage healthier inner-city living; • Beneficiaries of these design projects will be the growing population in Kikuyu town as well as the business community; • Presence of the markets is expected to create employment both directly and indirectly and will be a source of revenue to the county government through the collection of taxes; • The traders in the market will have the security of tenure and will have shelter against adverse weather condition; and • Rehabilitation of Ondiri swamp will improve its capacity to provide numerous benefits to the local people. The swamp is a source of water for farming activities, horticulture and livestock rearing. In addition, the swamp is the source of the Nairobi River, which courses through the middle of the city of Nairobi.	• High rate of urbanization is expected and will lead to social and cultural convergence and increase demand for social amenities; • Increased pressure on land in the urban area will lead to urban sprawl extending to the rural areas; • Increased demand for parking spaces; • Increased waste generation in the town; • Space contestation between vehicles and pedestrians; and • Pollution in the CBD is expected to increase.

14.3.7 Ondiri Swamp - Current Situation

Ondiri wetland is a swamp with bog-like characteristics. It covers an area of approximately 30 ha, is 2 to 3 metres deep with a perimeter of about 3.3 km. The swamp is located about 200 metres from Kikuyu Town. Ondiri swamp is an important resource and provides numerous benefits to the local people. The swamp is a source of water for farming activities, horticulture and livestock

rearing. In addition, the swamp is the source of the Nairobi River, which courses through the middle of the city of Nairobi. During the dry seasons, the swamp provides fodder for livestock and macrophytes are used as mulching material in horticulture farms and tree nurseries.

However, there are observed encroachments to the swamp. As the prices of land have continued to skyrocket in Kikuyu, many other wetlands have been reclaimed and sold. The proprietors have in turn built rental houses. There are also observed encroachments along riverbanks. These include illegally constructed buildings as well as squatter settlements who do not observe the 6-metre easement requirement set by the Urban Rivers Restoration Programme department at the Ministry of Water and Irrigation and the WRMA. Encroachments also include agricultural activities and quarrying. The impacts of these activities on wetlands and riparian areas include pollution in various forms and increased risk of flooding. The table below presents the objectives that will be met by the proposed redesign of Ondiri Swamp.

14.3.8 Ondiri Swamp - Proposed Interventions

Proposed interventions/strategies are:

- Enhance Public Education and Awareness (PEA) campaign as a unique tool for all stakeholders to interact, and exchange ideas and experiences on the best way to restore and conserve the swamp;
- Promote controlled recreation activities by offering places for relaxation and other low impact recreation activities such as walking and picnics;
- Apply innovative and strong regulations and approaches for the conservation of the swamp e.g. NEMA regulations, Biodiversity regulations on wetlands and adherence to planning guidelines;
- Ensure clear and formal land ownership processes; and
- Allowing only low-impact types of developments such as well-landscaped areas for walking, public parks along with the provision of NMT facilities, limited buildings for refreshments and necessary facilities. This will serve several purposes, namely, protect the swamp riparian from erosion, eliminate the encroachment of illegal settlements, promote health consciousness amongst the population and serve as filters to air pollution.

The table below summarises the environmental challenges, intervention objectives and the design strategies for the improvement of Ondiri Swamp.

Table 14-21: Environmental challenges, intervention objectives and the design strategies for the improvement of Ondiri Swamp.

Environmental Challenges	Objectives	Design Strategies
• Unsustainable practices mainly uncontrolled water extraction for irrigation purposes. • Encroachments within the riparian zone include agricultural, residential and quarrying. The impacts of these activities on wetlands and riparian areas include pollution in various forms and increased risk of flooding. • Unsustainable anthropogenic activities in the swamp.	• To Revitalize and Conserve Ondiri Swamp. • Promote tree planting practices which will serve as filters to air pollution and protect the riparian zone from erosion. • Eliminate the encroachment of illegal settlements and enhance the health consciousness amongst the population.	• Swamp Rehabilitation • Research Centre • Ondiri Aquarium (Exotic and Indigenous species) • Performing Arts Amphitheatre • Public Recreational Grounds • Ondiri View Boardwalk (Linkage Corridor) • Forest and Nature Trails

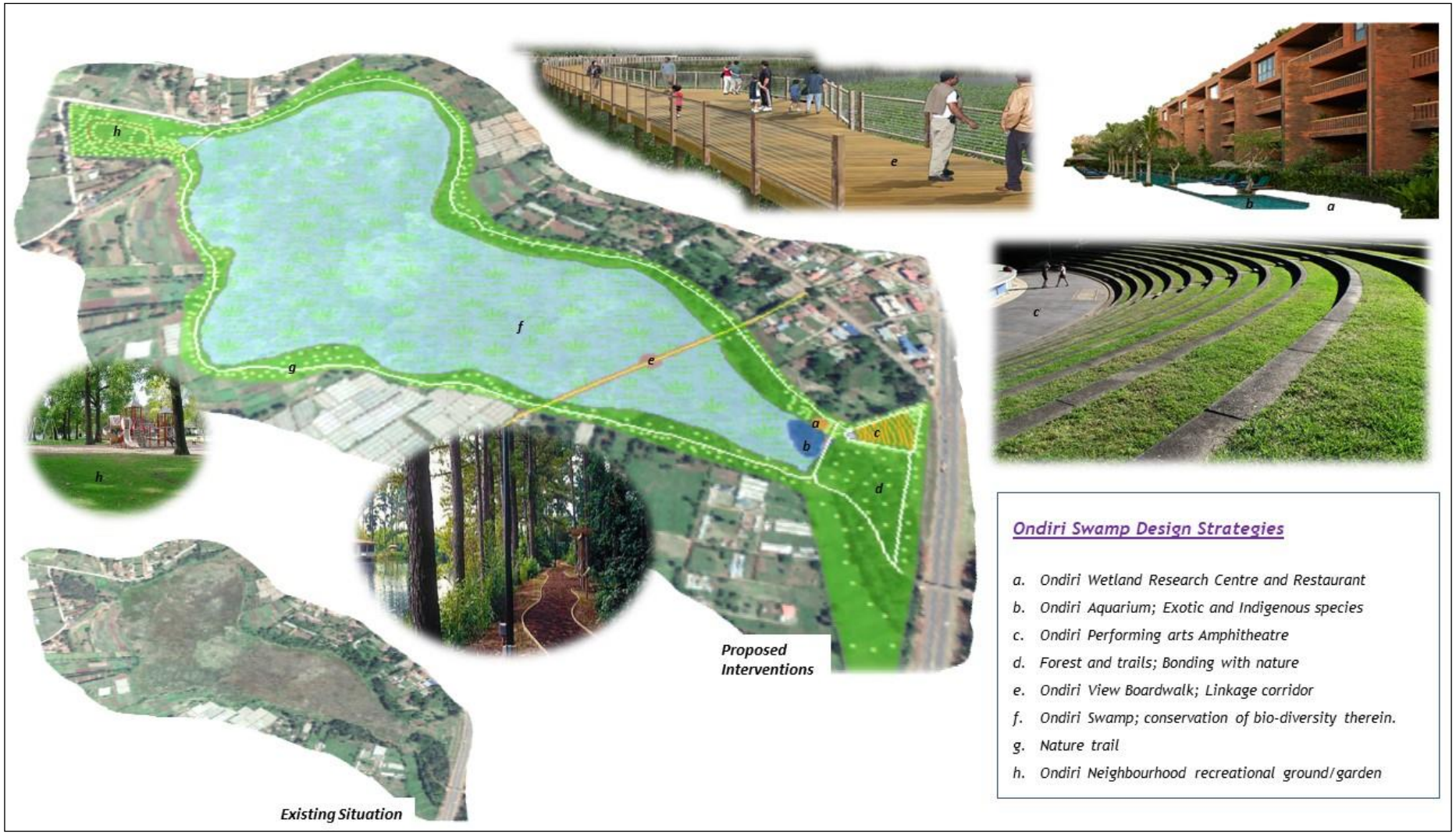


Figure 14-14: Ondiri Swamp Action Area Plan

Source: VisionRI Graphics

14.4 Quick win Projects

14.4.1 Projects and Programmes to support CBD Improvement

The table below highlights objectives and viable design interventions proposed to mitigate the existing spatial challenges in the action area plans which include Kikuyu CBD and Ondiri Swamp.

Table 14-22: Proposed Action Areas Design Interventions

Proposed Action Areas Design Interventions in Kikuyu CBD		
Existing Challenges	Objectives	Design Strategies
1. Transportation		
• The streetscape is vehicle-oriented and not pedestrians friendly; • Space contestations between motorized and non-motorized road users cause congestion; • Encroachment and Spillover of trade activities e.g. hawkers onto the streets; • Spillover activities of bus park activities onto the streets. The existing bus park is unable to accommodate all the public service vehicles and taxis; • Undesignated and limited parking spots within the CBD leading to haphazard parking; and • The railway line has also created an enclave separating the town from the Ondiri side.	• Decongestion of the CBD can be achieved by the renovation of the existing roads and proposed ring roads that will provide alternative linkages; and • Create pedestrian-friendly streets with adequate sidewalks, cycle paths and street furniture that will encourage walkability.	New Bus Terminus. Proposed NMT facilities. Redevelopment of Post office road(30m). Pedestrianization of adjacent roads. Roads upgrade. Modernization of Railway station in Kikuyu. Development of multi-storey parking within the CBD.
2. Local Economy		
• The high demand for commercial space in the market has led to congestion and commotion along the designated access routes.	• To the creation of compact and densified CBD. This will create employment opportunities within	New Market. Redevelopment of the old market. Densification of the CBD.

Proposed Action Areas Design Interventions in Kikuyu CBD		
• Fragmented infrastructural development.	Kikuyu where people can live and work from; • Encourage the provision of services within walkable distances of not more than one-kilometre radius; and • Encourage commercial businesses to create active frontages to attract road users.	
3. Green Open Spaces		
• The town lacks well planned and designed open social spaces that are fundamental for the everyday associations of the individuals of the community.	• Provide public spaces for recreation purposes; • Environmental purification by acting as carbon sinks to rid the air of carbon emitted by vehicles, as well as residential, commercial and industrial activities; and • Enhancing town aesthetics through landscaping along streets, public waterways and along building verandahs. Stress management and Population health management amongst the urban population by providing places of new experiences and relaxation.	Provision of Green open spaces within the CBD that provide a breakaway space for recreation and help to sequester the carbon for a cleaner atmosphere. Tree-lined streets are important to greening and improving the aesthetics of the CBD.
ONDIRI SWAMP		
Environmental Challenges	Objectives	Design Strategies
• Unsustainable practices mainly uncontrolled water extraction for irrigation purposes; • Encroachments within the riparian zone include agricultural, residential and quarrying. The	• To Revitalize and Conserve Ondiri Swamp; • Promote tree planting practices which will serve as filters to air pollution and protect the riparian zone from erosion; and	Swamp Rehabilitation. Research Centre. Ondiri Aquarium (Exotic and Indigenous species). Performing Arts Amphitheatre.

Proposed Action Areas Design Interventions in Kikuyu CBD		
impacts of these activities on wetlands and riparian areas include pollution in various forms and increased risk of flooding; and • Unsustainable anthropogenic activities in the swamp.	• Eliminate the encroachment of illegal settlements and enhance the health consciousness amongst the population.	Public Recreational Grounds. Ondiri View Boardwalk (Linkage Corridor). Forest and Nature Trails.

According to the proposed design interventions listed above, the table below illustrates the costing of each project and the anticipated timeframes required for implementation.

Table 14-23: Costing and Timberwork

	Project	Cost (Ksh.)	Timeframe
Kikuyu CBD	New Market	300,000,000	Immediate
	New Terminus	25,000,000	Immediate
	Redevelopment of the old market	150,000,000	Short-Term
	Train Interchange station sheds	10,000,000	Immediate
	Post office road; carriageway, street lighting, pedestrian walkways, drainage and landscaping. 500m long	250,000,000	Short-Term
	Pedestrianisation of adjacent roads 2100m long.	17,000,000	Short-Term
	Roads upgrade; Proposed roads 5.5km	550,000,000	Short-Term to Medium-Term
	Slip road from southern by-pass	50,000,000	Short-Term
	3 Open spaces; Hedge fencing and landscaping	10,000,000	Short-Term
	Densification of the CBD	Cost to Developer	Short-Term to Long-Term
	Totals	1,362,000,000	
Ondiri Swamp	Research Centre	120,000,000	Medium-Term
	Amphitheatre	2,200,000	Short-Term
	Fish Pond; with in water view form research Centre	2,000,000	Medium-Term
	Park; Landscaping & Fencing	2,000,000	Short-Term

	Project	Cost (Ksh.)	Timeframe
	Boardwalk	17,000,000	Short-Term
	Walkway & track grading (2970m).	6,000,000	Short-Term
	Swamp Rehabilitation	5,000,000	Short-Term
	Fencing Ondiri Swamp	6,000,000	Short-Term
	Totals	160,200,000	

Source: VisionRI

Upon completion and implementation of the design proposals, the table below depicts some of the positive and negative impacts that may arise.

Table 14-24: Project impacts

Positive Impacts	Negative Impacts
• Enhancing the centrality and attractiveness of Kikuyu urban centre, through the development of quality public spaces and streetscapes that reflect the physical and historical character of the neighbourhood promotes economic viability; • Densification of the CBD so as to maximize optimal use of land that will create more room for economic and social viability; • Designing open spaces for recreational such as parks will encourage healthier inner-city living; • Beneficiaries of these design projects will be the growing population in Kikuyu town as well as the business community; • Presence of the markets is expected to create employment both directly and indirectly and will be a source of revenue to the county government through the collection of taxes; • The traders in the market will have the security of tenure and will have shelter against adverse weather conditions; and • Rehabilitation of Ondiri swamp will improve its capacity to provide numerous benefits to the local people. The swamp is a source of water for farming activities, horticulture and livestock rearing. In addition, the	• High rate of urbanisation is expected and will lead to social and cultural convergence and increase demand for social amenities; • Increased pressure on land in the urban area will lead to urban sprawl extending to the rural areas; • Increased demand for parking space; • Increased waste generation in the town; • Space contestation between vehicles and pedestrians; and • Pollution in the CBD is expected to increase.

Positive Impacts	Negative Impacts
swamp is the source of the Nairobi River, which courses through the middle of the city of Nairobi.	

Source: VisionRI

15 STRATEGIES AND MEASURES

15.1 Detailed Residential Development Strategy

15.1.1 Housing and Informal Settlements Upgrading

Goals:

- To provide decent housing for all.

Objectives:

- To increase the supply of affordable housing; and
- To improve the living conditions in informal settlements.

Strategies:

- Encourage private sector investments in affordable housing through public-private participation arrangements;
- Promote research on the development of low-cost housing materials and construction techniques;
- Establish a land banking programme to increase the County Government's inventory of sites for affordable housing; and
- Subsidise on-site improvement of basic infrastructure and services such as roads, street lighting, clean water, drainage, waste management, etc. in informal settlements.

15.2 Detailed Transportation Strategies

15.2.1 Multi-modal Transport Strategies

Goal:

- To ensure sustainable integration of all transportation modes within the Kikuyu planning area.

Objectives:

- To ensure ease in movement hence reduced travel time;
- To decongest the roads especially within Kikuyu CBD;
- To optimise the railway line traversing Kikuyu CBD for mass transit;
- To promote an efficient public transport system for Kikuyu; and
- To promote active transport.

Strategies

- Provision of transit-oriented development centred on important transit hubs like bus terminals and railway stations by creating compact, walkable, pedestrian-oriented, mixed-use communities;
- Increase the productivity and efficiency of existing transportation facilities through transportation system management practices;

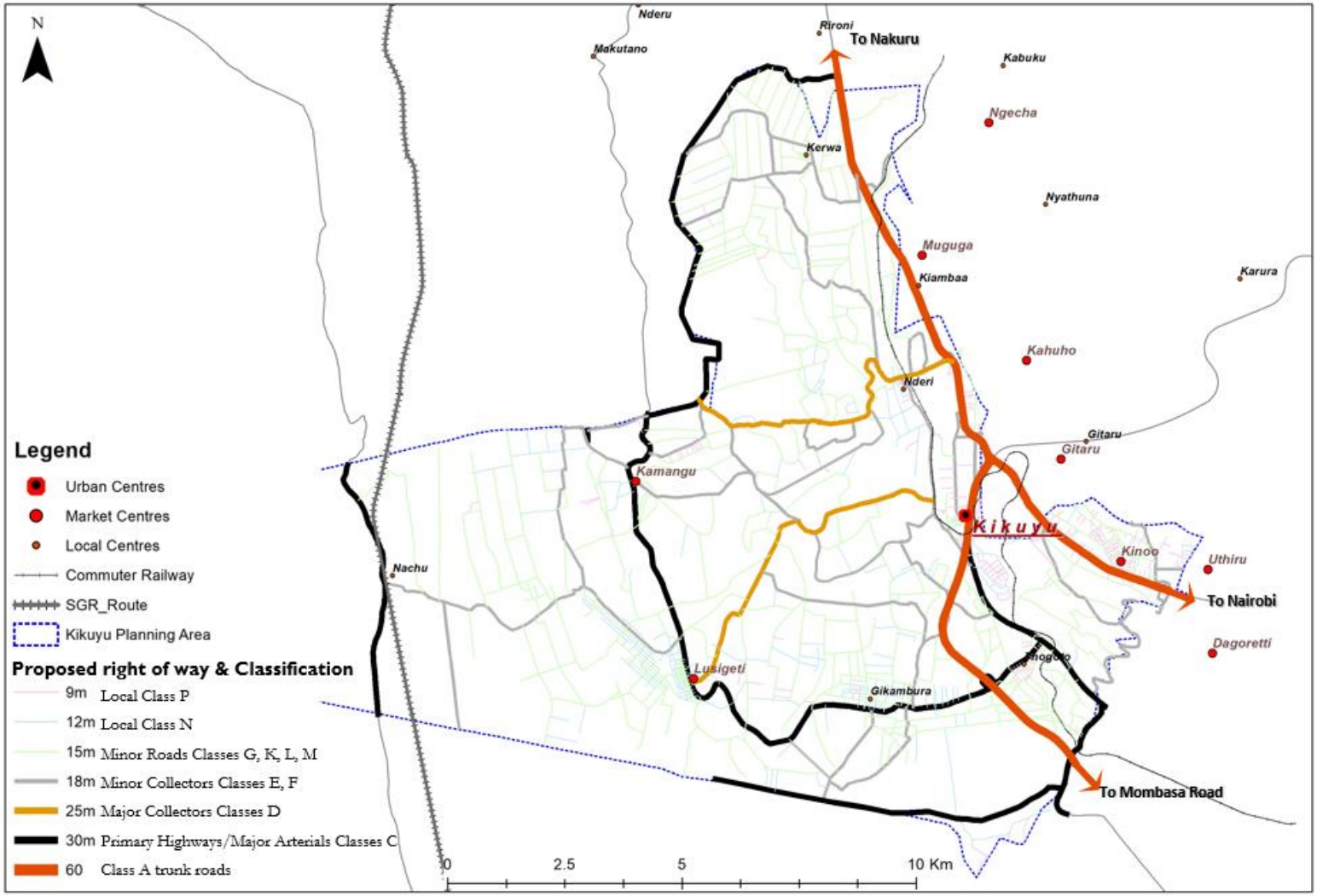
- Promoting and increasing access to multimodal transportation modes within the planning area; Active transport (NMT; dedicated walking and bike lanes), Mass transit;
- Establish road reserves complete with NMT, pedestrian pathways and appropriate stormwater drains;
- Establish transit stations like 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 Kikuyu;
- 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, roundabouts, signalised intersections, grade separation and protected lanes;
- All season maintenance of roads;
- Improve signage on all roads;
- Provide wayfinding information at convenient points in the urban areas;
- Promote sustainable land uses along transport corridors;
- Discourage direct access of plots onto main Arterial, Sub-arterial and collector roads;
- Develop a transportation mobility plan for the entire Sub-County;
- Open missing link roads in Kikuyu East;
- Enforcement of traffic management guidelines through retraining road users and enforce set traffic laws and regulations;
- Construction of parking bays and spaces;
- Expand to 9 metres 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 m;
- Upgrade roads in Kikuyu 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
- Streetlight 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. B.C. highways are functionally classified into five groups:

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.

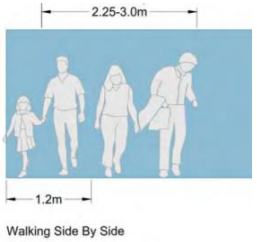
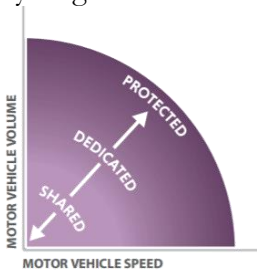
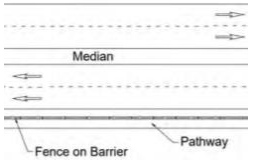


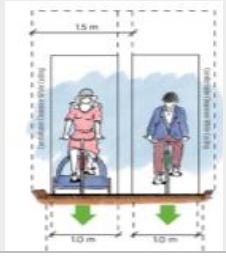
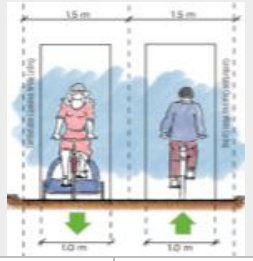
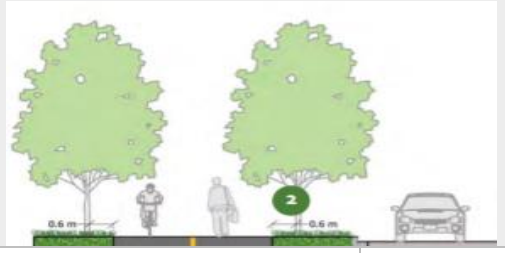
Map 15-1: Proposed right-of-way and classification

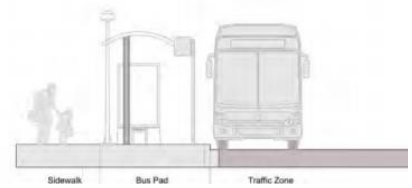
Source: VisionRI

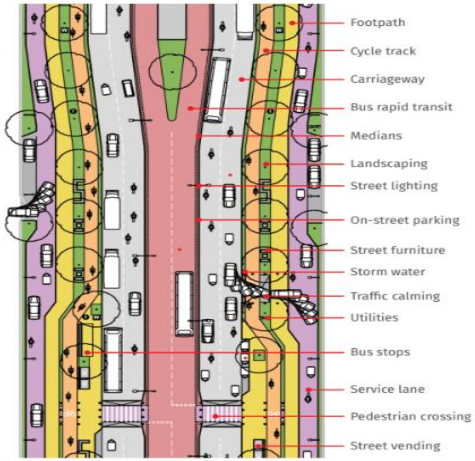
Table 15-1: Transport Implementation Guidelines - Designing safe and accessible roads for everyone

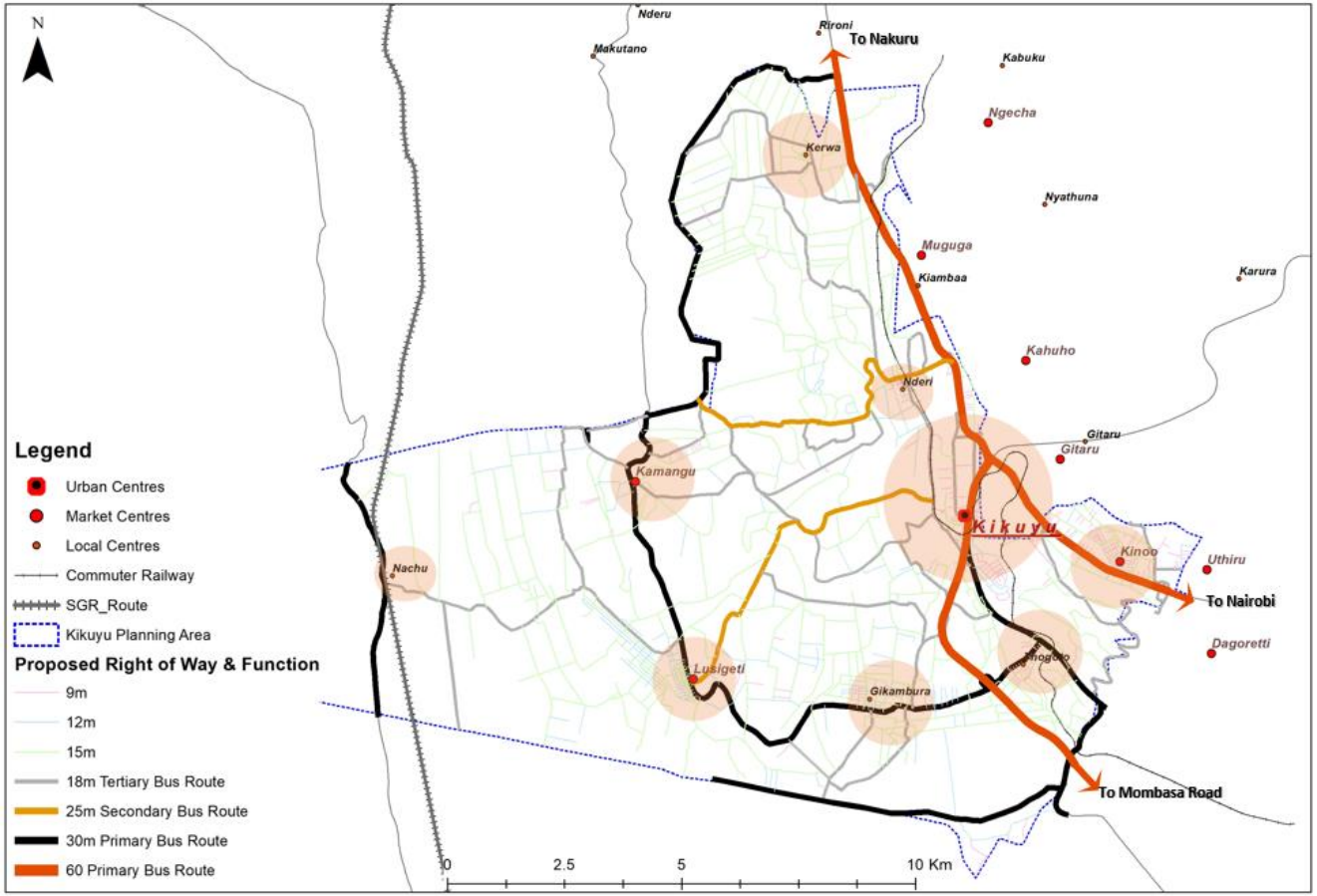
Parameter	Primary/Highway/ Arterial Roads (Classes A, S, B, C)	Major/Secondary/Collector Roads (Classes C, D, E, J)	Tertiary/Minor Roads Classes E, F, G, K, L, M)	Local/Access Roads (Class N, and P)
Design Speed	60-110kph	60-80kph	≤ 50kph	<30kph
Width of Traffic Lane	3.75m	3.5m	3.25m	3m
Shoulder Width	2.5m -3m	1.5m-2.5m	1m	0.5m
Width of Parking Lane	none	2.5m	2.5m	-
Streetlight requirements and spacing	Based on the 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 metres; and 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
Maximum Longitudinal Grade	Preferably less <5.0% else, > 5.0% to 8.3% Landings should be provided with every 9.0 metres, > 8.3% Alternative accommodations recommended (Railings, Rest Areas, Adding Switchbacks, Accessible Ramps, Circulating Shuttle, Ladder Sidewalks, Stairways, Escalators, etc.			

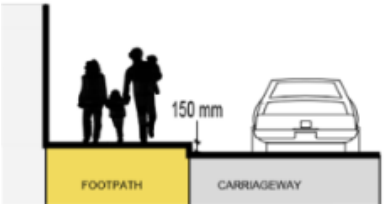
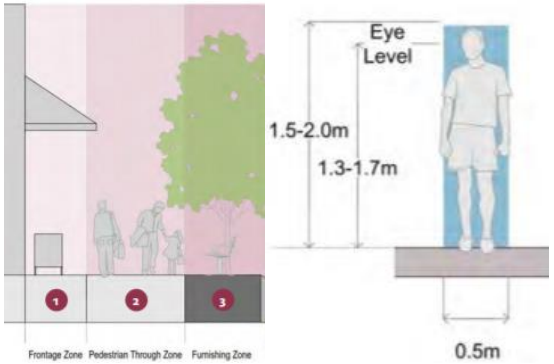
Parameter	Primary/Highway/ Arterial Roads (Classes A, S, B, C)	Major/Secondary/Collector Roads (Classes C, D, E, J)	Tertiary/Minor Roads Classes E, F, G, K, L, M)	Local/Access Roads (Class N, and P)
Pedestrian walkways Surface Materials 	**Asphalt** (long stretch, rural areas, and parks); **Brick** (high 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.			
Furnishing Zone	0.9 metres is the absolute minimum required for streetlights and utility poles, street trees 1.2 metres minimum, Roads with transit stops require the desired width of 3.0 metres for passenger landing pads, benches, and bus shelters.		Basic (0.6m to 2.0m) Enhanced (3.0m to 5.0m)	
	Road Hardware: Road lighting, Traffic signals, Pedestrian and cycling push buttons, Traffic signage, Utilities, Fire hydrants, Parking metres, 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.			
Cycling Facilities 	- Protected Bicycle Lanes; and - Bicycle pathways/highways. 	- Protected Bicycle Lanes; - Painted and Buffered Bicycle Lanes; and - Advisory Bicycle Lanes.	- Protected Bicycle Lanes; - Painted and Buffered Bicycle Lanes; - Advisory Bicycle Lanes; - Bicycle Accessible Shoulders; and - Shared Street.	- Bicycle Accessible Shoulders; and - Shared Street.

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)
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 - 2.0 m	1.5m - 2.0 m
Bicycle and Pedestrian Accessible Shoulders for Urban areas	-	-	1.5 - 1.8 m	1.5 - 1.8 m
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 upfront in the design process to ensure that issues can be avoided. The gradient should not be less than 0.5%. This is to facilitate drainage in flat terrains.			
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				

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)
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 metres. 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 through urban design.			
Corridor Development	Strip development, or development that contributes to the growth of a linear of plots, must not be permitted to the 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; and - 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; and - 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;			

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)
	• Consider station access in route alignments; and • Universal design and universal access. - Roads must be at least 18 metres wide; - Provide a location for a change of bus direction with no backing; - Have adequate shoulders to allow the bus to pull off the roadway; and - 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)
				
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.			

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)
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; and - 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; - Wayfinding that makes it easy to navigate between destinations; - Street trees and other vegetation; - Weather protection elements to provide refuge from the 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; and - Well-maintained pedestrian facilities in all seasons.			
Maintenance	- Follows the road classification guidelines and related legislation; - 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;			

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)
Providing Loading and unloading zones	- Loading zones shall be provided within the urban centres on main streets and back streets; and - 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, the majority of the Kikuyu residents will be walking. Since the infrastructure provision need does not match the need. There is a 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 Kikuyu, complete street designs need to be articulated. Complete street designs ensure that all streets have dedicated spaces for non-motorised 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. The 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 the comfort and convenience 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 Kikuyu, public transport needs major improvement in order to meet the need of the current commuters as well as the projected growth. The existing bus park needs to be expanded in order to accommodate the volume of buses and matatus. In other urban nodes in Kikuyu such as Thogoto, Nderi, Lusigeti, Kamangu, Nachu and Gikambura, 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 terminals include 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 the Boda sector will need to be improved in Kikuyu: 1) It shall be a mandatory requirement for all 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 operators to take advantage of the technologies in boda operators e.g. Safe Bodas, Uber boda etc to avoid overcrowding in urban areas centre, 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 the mobility of public transport, pedestrians, and cyclists. In addition, appropriate parking fees can act as a 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. Kikuyu Sub-County needs to define both on-street and off-street 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 the 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 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 the high turnover of parking slots as it discourages motorist from unnecessary long parking. At locations where there is the demand for long term parking, local Government can identify land for off-street parking with parking charges on a weekly or monthly basis. This increase in 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 penalised.

15.3 DETAILED ENVIRONMENTAL STRATEGIES

15.3.1 Natural Resources & the Environment

Goals:

- To nurture sustainable environmental resources management in the Sub-County.

Objectives:

- To promote sustainable urban development compatible with natural resources;
- To promote conservation of natural resources within the Sub-County;
- To encourage agroforestry in accordance with the Forest Policy, 2014;
- To promote proper waste management in the Sub-County;
- To mainstream climate change in the Sub-County; and
- To increase the coverage of open spaces in the Sub-County.

Strategies:

- Identify, protect and conserve natural resources;
- Undertake public education on environmental issues including preservation and conservation of natural resources;
- Prepare and implement an environmental management plan for the conservation of Ondiri and Nyakumu swamps;
- Prepare and implement an environmental management plan for the conservation of Kikuyu springs;
- Prepare and implement an environmental management plan for the conservation of Dagoretti, Muguga and Kari forests;
- Protect riparian reserves through the establishment of buffer zones and transforming them in green open spaces that are publicly accessible;
- Prepare and implement an environmental management plan for the conservation of surface water bodies in the area like Nyongara, Mbagathi, Nairobi, Githaturu and Mweteta rivers;

- Develop proper waste disposal and management plan and system. This includes expanding the solid and liquid waste management infrastructures to Muthiga, Kinoo, Gikambura, Thogoto, Gitaru, and Dagoreti urban areas;
- Advocate for the adoption of sound waste management practices and discourage the use of pit latrines in urban areas;
- Facilitate mainstreaming of climate change concerns into the County's planning, decision and budgetary processes and implementation of climate change-related programmes to reduce carbon emissions and enhance County's resilience against the impacts of climate change;
- To ensure compliance with all relevant environmental rules, regulations and statutes across the Sub-County; and
- Implement the proposals of increasing the open and green areas especially in the CBD.

15.3.2 Climate Change Strategies

Goals: Build resilience to climate change and its impacts through structural and non-structural measures

Objectives:

- Improve the ability of people and communities to cope with climate change impacts such as floods and drought;
- Increase crop productivity through improved irrigation;
- Promote the diversification of livelihoods, particularly women and those from marginalised sectors, to strengthen their resilience to climate change;
- Build the capacity of institutions to respond to climate change; and
- Develop the necessary policy and regulatory framework for climate change adaptation.

Strategies:

- Enhance community awareness on the impacts of climate change and on how these may be mitigated;
- Improve floods and drought early warning systems through mobile technologies and promotion of people-centred systems;
- Improve water and flood control infrastructure including dams/dykes, drainage systems, and water storage;
- Implement the existing integrated flood management plans; for example, water storage, drainage networks, reforestation and rehabilitation of riparian areas, construction of dams, and land-use restrictions;
- Increase coverage of water harvesting and storage practices in houses as well as commercial and institutional establishments;
- Increase the acreage under irrigation in the Sub-County especially in Nachu area;
- Increase the production efficiency of irrigated fields through improved agricultural practices in Nachu area;
- Support the households, targeting women and those from the marginalised groups, to adopt and diversify adaptive enterprises/value chains for sustained livelihoods and nutrition security in the Sub-County;
- Support small scale farmers to transit to specialised and market-oriented in priority value chains, including drought-tolerant values chains;

- Develop standards and regulations, including social and environmental safeguards, for sustainable forestry management;
- Reduce deforestation and forest degradation reduced through enhanced protection of forests, and community-based forest management;
- Develop alternative technologies to reduce demand for biomass (such as clean cooking and efficient charcoal production);
- Develop guidelines and standards for the establishment of green zones as required by the 2016 Forest Act;
- Mainstream climate change into environment audits, environmental impact assessments and strategic environmental assessments;
- Capacity development of the existing Water Resources Users Associations (WRUA), which are community-based organisations that are rights-based groups with female and male membership; and
- Build the capacity of County-level institutions for the efficient transfer and implementation of climate change adaptation strategies.

15.3.3 Disaster Risk Reduction Strategies

Goals:

- A safer, resilient and more sustainable Sub-County.

Objectives:

- To establish a policy/legal and institutional framework for the management of disasters in the Sub-County;
- To ensure that institutions and activities for disaster risk management are co-ordinated, focused to foster participatory partnerships between the County government and other stakeholders;
- To promote linkages between disaster risk management and sustainable development for the reduction of vulnerability to hazards and disasters;
- To mobilise resources, including the establishment of specific funds for disaster risk reduction strategies and programmes; and.
- To promote mass sensitisation and awareness creation on disaster management.

Strategies:

Natural disasters

- Drought
  - Distribute drought-resistant and fast-growing seeds that will do well in dry harsh conditions;
  - Facilitate the preparation of community-based drought contingency plans that aid in drought preparedness in quick response; and.
  - Establish a system on drought early warning dissemination of information to enable the stakeholders to collaborate on relief plans.
- Floods
  - Construct storm drainage systems of the quality standard;
  - Promote insurance coverage for lives, crops and properties lost as a result of floods;

- Planned relocation from disaster-prone areas such as those that experience flooding;
- Prohibit the construction of structures in floods prone areas such as riparian lands along rivers and wetlands; and
- Strengthen coordination amongst disaster management units in various sectors to put measures to abate loss of life and property through floods areas such as riparian lands along rivers and wetlands.

- Landslides
  - Develop an inventory of the stability conditions of each slope so that they can be ranked according to their rockfall hazards;
  - 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 stabilisation measures, culvert improvements and landslide mitigation measures; and
  - Build technical capacity imparted to officials in order to improve road construction and landscaping methods.

Man-made disasters

- Fires
  - Carry out a County disaster analysis survey and to information DRR plan;
  - Establishment of firefighting departments/unit in each 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.
- Road accidents
  - 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
  - Put traffic warning signs on the road especially 'black spots.

Community and institutional capacity building

- Building community resilience
  - Develop resilient livelihoods through the distribution of drought-resistant and fast-growing seeds that will do well in dry harsh conditions; and
  - Prepare community-based disaster risk management plans.
- Institutional strengthening:
  - Prepare and implement DRR policy and strategy through undertaking multi-hazard risk assessments and mapping;
  - Maintain a database of information and trends on Disaster Management in the Sub-County;
  - Strengthen institutional capacity on disaster risk management by building-up hardware such as the installation of fire hydrants and elevated water tanks, construction of fire station, and procurement of ambulances;

- Strict enforcement of regulations to ensure appropriate quarrying practices;
- Regular monitoring, collection, analysis and evaluation of information on the most frequent disasters in the Sub-County;
- Coordinate all Early Warning System/Information Service providers in order to harmonise the information available on Disaster Management;
- Produce regular Early Warning Disaster Management bulletins and publications; and
- Strengthen early warning systems including community-level response mechanisms for hydro-meteorological hazards.

15.4 Detailed Social Facilities Strategies

15.4.1 Social Infrastructure

Goals:

- To have quality, accessible and affordable social infrastructure within Kikuyu.

Objectives:

- To provide adequate and accessible education and health facilities;
- To equip schools and health facilities in order to address the needs of the residents; and
- To provide adequate public parks and recreational facilities.

Strategies:

- Education
  - Encourage private sector investments in education.
  - Establish the required number of ECDE facilities, and primary and secondary schools to meet current and projected requirements; and
  - Conduct studies for the construction of multi-level schools to reduce land requirements.
- Health
  - Encourage private sector investments in the health sector.
  - Establish the required number of health facilities to meet current and projected requirements; and
  - Increase the number of physicians to meet current and projected requirements.
- Urban safety
  - Establish police posts at strategic locations; and
  - Establish the required number of fire stations plus personnel and equipment.
- Community amenities
  - Establish recreational facilities (public parks and playgrounds) to meet current and projected requirements.
- Cemeteries/burial grounds
  - Improve the accessibility of cemeteries and provide them with necessary facilities such as sheds and washrooms; and
  - Establish a public cemetery for Muslims.

15.5 DETAILED PHYSICAL INFRASTRUCTURE STRATEGIES

15.5.1 Physical Infrastructure Strategies

Goals:

- Enhance quality and accessibility to physical infrastructure.

Objectives:

- To provide clean and affordable water and widen the net of those served.
- To improve the irrigation system.
- To ensure an adequate supply of electricity and increase the use of sustainable energy sources.
- To improve the wastewater management system.
- To upgrade the storm drainage system; and
- To improve the solid waste management system.

Strategies:

- Water supply and irrigation
  - Rehabilitate/protect water catchment areas.
  - Undertake community awareness-raising on water conservation;
  - Install piped water supply system in the Nachu area; and
  - Upgrade the irrigation systems in the Sub-County.
- Energy
  - Establish a community-based system to safeguard installed streetlights.
  - Promote the use of bio-gas amongst farmers; and
  - Promote the use of solar energy in residences and commercial and institutional establishments.
- ICT
  - Encourage increased private sector investments in ICT; and
  - Facilitate the coordination of agencies responsible for road maintenance and construction activities with the ICT service providers.
- Wastewater
  - Installation of public sewerage system; and
  - Undertake community awareness-raising on safe sanitation practices.
- Storm drainage
  - Upgrade the drainage systems in the Sub-County.
- Solid waste management
  - Raise the awareness of the population on appropriate solid waste management practices;
  - Promote the practice of the 4Rs (reduce, re-use, recycle, and recover); and
  - Encourage the entry of private enterprises and NGOs to increase efficiency in garbage collection.

15.6 Detailed Economic Activities Strategies

15.6.1 Economy

Goals:

- To achieve a vibrant, resilient, highly productive and diverse economy to unlock the potential of Kikuyu.

Objectives:

- To facilitate economic growth within Kikuyu;
- To ensure food security; and
- To create more employment opportunities.

Strategies:

- Agriculture
  - Establish policies and regulations to protect important agricultural lands;
  - Improve agricultural support infrastructures such as farm-to-market roads and irrigation systems; and
  - Promote sustainable agriculture practices such as crop rotation, green manure, composting, and biological pest control;
- Industry
  - Promote agro-processing to provide value-added to agricultural products;
  - Increase public investments in Research & Development, post-harvest infrastructure, and overseas markets;
  - Undertake studies to provide tax incentives to preferred agro-industrial enterprises;
  - Encourage investments in logistics infrastructure; and
  - Study the feasibility of establishing a sub-regional wholesale market for agricultural and agro-industrial products.

15.6.2 Urban and Rural Land Development

Goal:

- To ensure the reduction of disparities between the core (urban nodes) and the periphery (rural areas).

Objectives:

- To promote economic simulation in rural areas;
- To ensure proper interlinkages between urban and rural areas;
- To promote agriculture in the rural areas; and
- To strengthen the land administration and management system.

Strategies:

- Create more channels of mutual interaction between urban and rural areas. These may include functional and physical linkages;
- Control the level of urbanisation into rural areas. This will go a long way in preserving agricultural land that is under so much pressure from urbanisation;
- Undertake capacity building of the County staff and town boards to enhance their competencies in surveying, mapping, valuation, planning, and in implementing regulations and laws;
- Include a private registered physical planner in the Land Control Boards to provide professional support in land planning matters;
- Organising community-planning clinics to create awareness to the public on the importance of planning;
- Map out all land parcels in the Sub-County with their attributes clearly spelt out. The issues or attributes that will need to be highlighted include ownership details (including where there are disputes – details on the disputes), sizes, use and tenure amongst others. This will be useful in partly enhancing the revenue for the county and developing an appropriate response to land invasions in the Sub-County;
- Come up with a one-stop-shop for all land transactions. This will reduce the number of departments/personnel handling an application hence hasten the process;
- Digitisation of land registries to enhance effectiveness, monitor land transactions and reduce the loss of revenue; and
- Land banking due to the scarcity of public land and increasing prices of land, it is important that the county government in consultation with the national government should consider acquiring land for future public projects. The land so acquired should be protected from allocation to private individuals by successive county and/or national governments.

15.7 Detailed Revenue Enhancement Strategy

The Kikuyu Plan 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 the measures, the County can implement to increase internal revenue collection.

i. **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). 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.

ii. **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 effect 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.

iii. **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.

iv. **Create Awareness to the public:** A good number of the members of the public are not properly sensitized on matters 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 is by adopting an electronic system e.g. SMS to notify people on impending charges; advertise on media, public forums and churches on the existing revenue streams and financial obligations; hold regular public forums/barazas to notify people of their fiscal obligations.

v. **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.

vi. **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 analyse 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.

vii. **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.

viii. **Other sources:** Other sources include introducing charges on use of public cemeteries, county parks, and tourist sites. The funds collected can then be channelled to maintaining these facilities.

PART IV: IMPLEMENTATION, MONITORING, EVALUATION AND REPORTING

16 IMPLEMENTATION OF PLANNING AND CAPITAL INVESTMENT

16.1 Introduction

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 plan outlines the conforming functions of authorities in the County across all sectors. It provides opportunities for promoting and improving the economic, social and environmental well-being of the counties to the achievement of the sustainable development in Kenya.

Overall, spatial planning under County governance institutional context is a tool for coordinating spatial equity and integrating balanced redistribution of resources through an explicit and approved policy framework.

16.2 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 plan, 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 ISUDPs amongst other spatial plans. Figure 34 provides a detailed representation of the role of the CPU from an institutional and governance framework in line with their power relations.

Under this Plan, the role of the CPU will include coordinating the implementation and monitoring. For example, the 10-year County spatial plans, the CPU will ensure that the processes, mandates, and the implementation and monitoring are well coordinated. This would reduce misnomer in understanding perceptions formed on the role of different stakeholders at all levels.

Under the CPU, the county sectoral plans should provide an understanding of the scale of programmes and projects including their budgetary allocations.

In carrying out their role, the CPU will use the Results-Based Management (RBM) system, in order to compliance and 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.

16.3 Plan Implementation at 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 decentralized to the urban areas and cities (City or Municipality) 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 as illustrated in Figure below. 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.

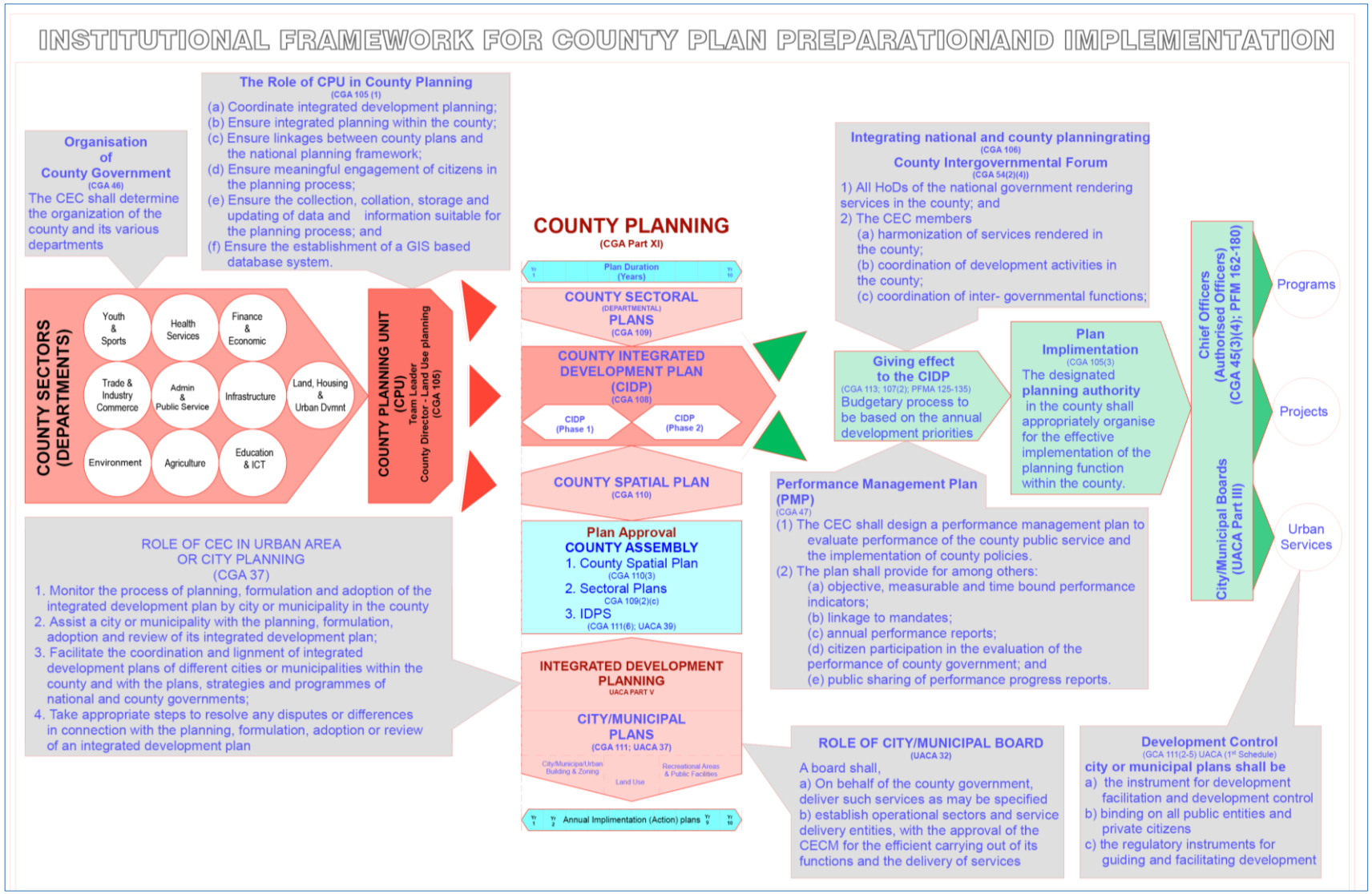


Figure 16-1: Framework for Plan Preparation and Implementation

Source: VisionRI

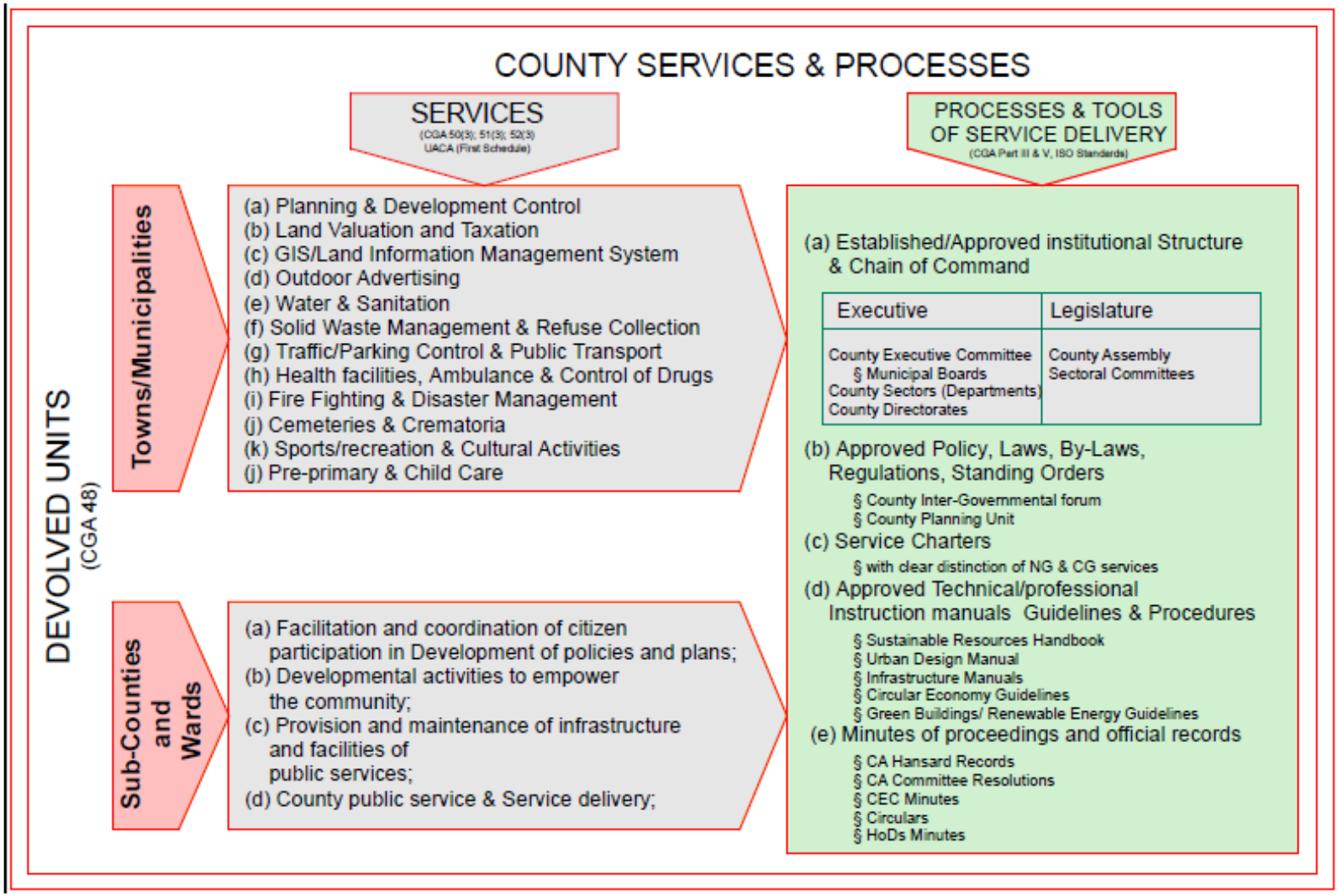


Figure 16-2: County Services & Processes

Source: VisionRI

16.4 Priority Programmes Framework

16.4.1 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. Figure 16-3 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.

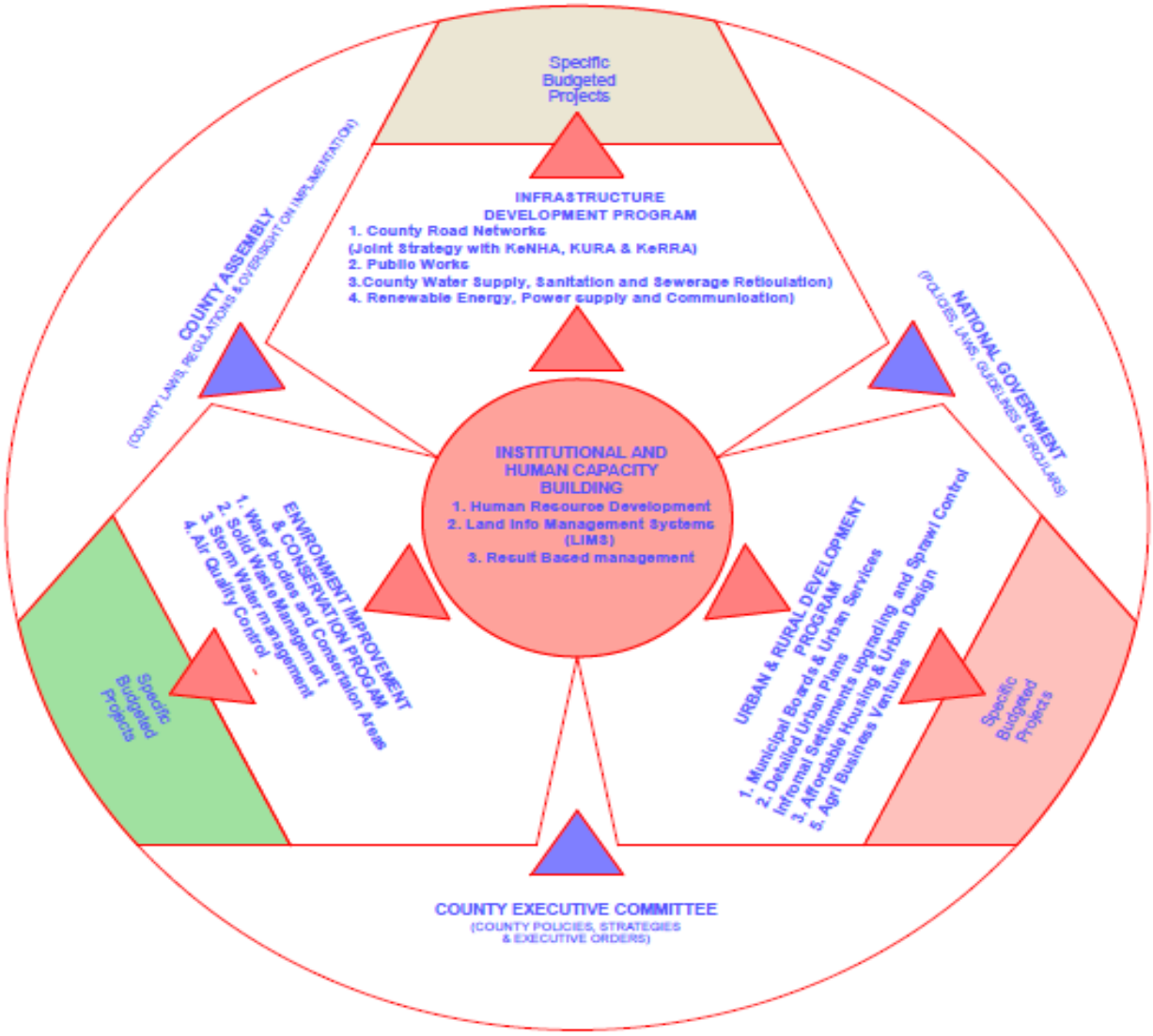


Figure 16-3: Priority Program & Projects Framework

Source: VisionRI

16.4.2 Institutional and Human Resource Capacity Building

This will require the structuring under the Results-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.

16.4.3 Human Resource Framework

The County from the Joint Capacity Assessment and Rationalisation Report of 2015 came up with a human resource framework for both arms of the County i.e. the Legislative and Executive. The executive comprises ten ministers who are in charge of various county departments.

The organogram below shows the proposed organisational structure both at the macrostructure and the departmental structure.

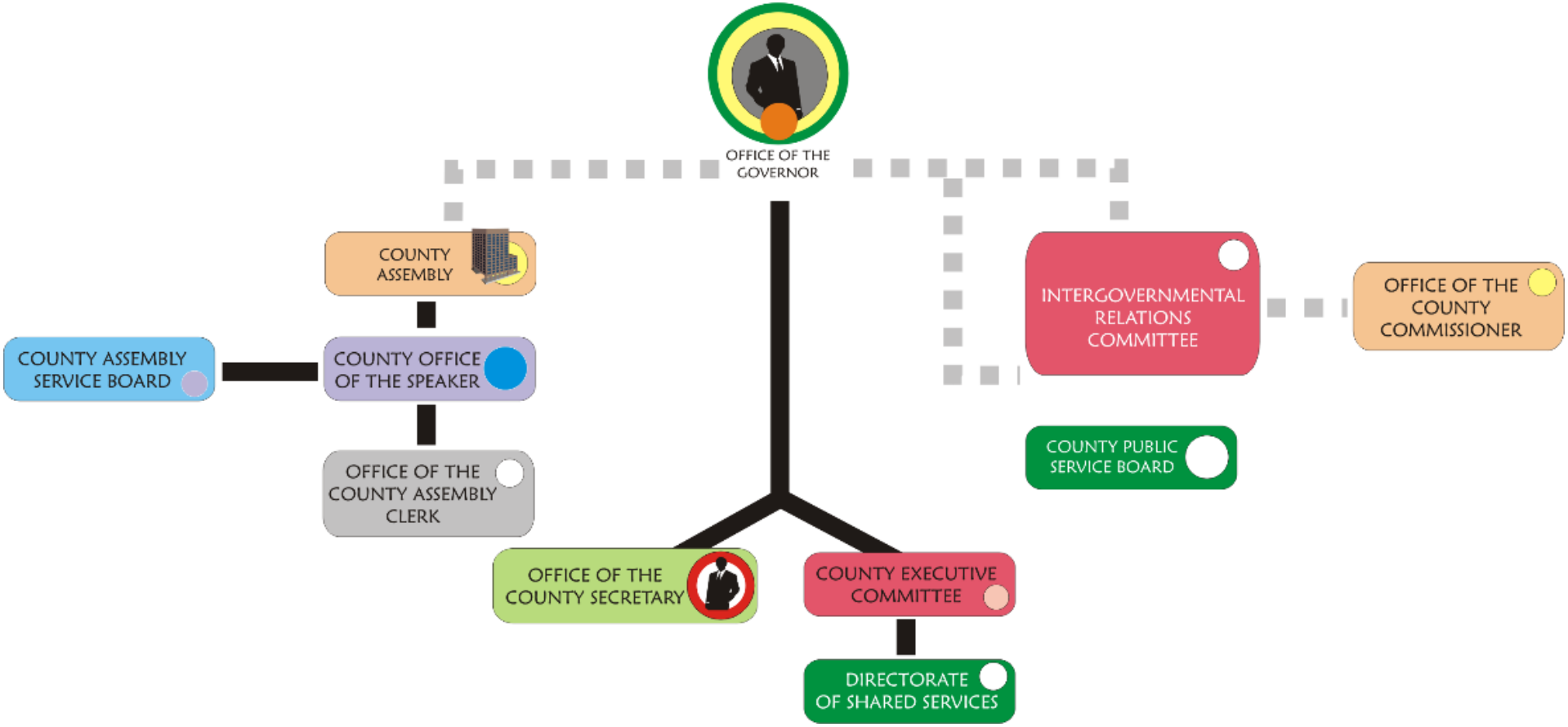


Figure 16-4: Human Resource Framework for Kiambu County's Housing lands and physical planning Ministry

Source: Kiambu County Joint Capacity Assessment and Rationalization Report of 2015

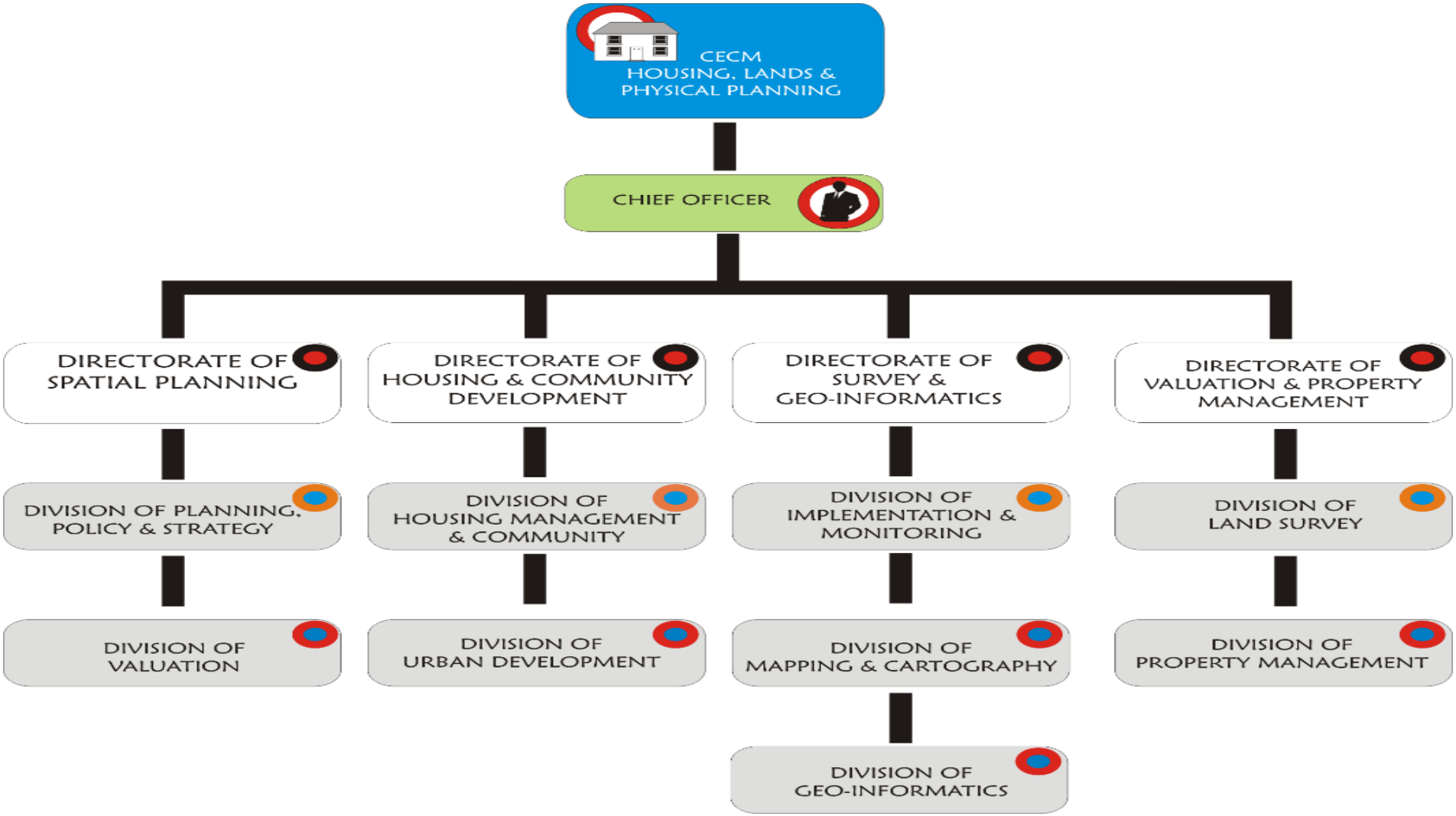


Figure 16-5: Human Resource Framework for Kiambu County's Housing lands and physical planning Ministry

Source: Kiambu County Joint Capacity Assessment and Rationalization Report of 2015

The Report also proposed the optimal staffing level which will ensure that no department is understaffed. The table below outlines the staffing proposed for the department of planning. The department should, however, work closely with other departments such as the environment department

Table 16-1: Existing Human Resources and Proposed Levels

Resource categories	Results of the analysis	County proposed an optimal staffing level
County executive member		
Physical planning		
Chief officer	0.6	1
Director	2.5	3
Planners	18.6	19
Development control officer	4.7	5
Enforcement officer	12.3	12
Secretary	14	14
Driver	14	14
Support staff	30	30
Planning clerks	24	24
Accountant	3	3
Procurement officer	3	3
Stores personnel	3	3
Subtotal	129.7	131

Source: Kiambu County Joint Capacity Assessment and Rationalization Report of 2015

16.4.4 Public/Community Participation Framework

This framework is underpinned by Part VIII on Citizen Participation of the County Government Act No.17 of 2012 and, The Kiambu County Citizen Petition and Participation No. 9 of 2016. The two acts generally highlight the principles of the citizens' participation in the counties.

Public participation mechanisms have been spelt out in this report, sub-section 3.10.2 Mechanisms of Public participation in accordance with County Governments Act 2012 Section 115. In addition, the inclusivity of residents under the County Governments Act 2012 Section 97.

16.4.5 Programmes and Projects

For ease of plan implementation, the final out outputs of the plans are specific projects and urban services that have been clustered into three broad priority programmes. The broad programmes are:

- **Infrastructure Development Programmes:** Comprising the entire roads networks, public works, water supply networks and sewerage reticulation and renewable energy, power supply and communication.

- **Environmental Improvement and Conservation Programme:** Water bodies and conservation areas, stormwater drainage and solid waste management and air quality control.
- **Urban and Rural Development Programme:** Setting up of municipal board structures, detailed urban plans for towns and sprawl management, urban services systems, development control and enforcement, affordable housing and community development services; agricultural extension and agri-business cooperative support to rural-based economic activities.

16.5 Quick Win Projects

The tables below illustrate interventions that could be immediately be undertaken in Kikuyu:

Table 16-2: Quick Win Project Proposal and Strategies

Sector	Intervention	Strategy	Timeline
Environment & Natural Resources	Focus on Ondiri and Nyakumu Swamps (See Ondiri Swamp Action Area)	Protection of Ondiri and Nyakumu Swamps as environmentally sensitive areas.	ST
		Eviction of private encroachment surrounding the Ondiri and Nyakumu swamps.	
		Establishment of appropriate green buffers to protect natural greenery around these environmentally sensitive areas.	
		Enforcement of appropriate and related regulations regarding riparian reserves.	
		Establishment of conservation centres and sites (Ondiri and Nyakumu) to demonstrate sustainable natural resource management.	
		Encourage eco-friendly tourism activities and initiatives at the conservation centres.	
Commerce and Economy	Boost the local economy of Kikuyu Sub-County	Focus on the agricultural sector.	MT
		Encourage growth of agriculture value addition cottage industries e.g. Milk, eggs, meat etc.	
		Promote modern agricultural farming techniques e.g. Green housing - with links to appropriate markets locally and internationally.	

Sector	Intervention	Strategy	Timeline
		Improve transportation links across agriculturally productive regions and the hinterlands in order to grow the agricultural markets.	
		Encourage growth of Small and Medium Enterprises (SMEs) by creating a conducive business environment - reduction of entrepreneurship red tape.	
Kikuyu CBD Redevelopment	Improvement of Kikuyu's Urban Design	Application of ToD principles - Vehicle use management; Quality public transport (BRT, public transport); Active transport complete with adequate NMT and traffic calming measures; Mixed used development with strict building guidelines; Public spaces and amenities etc.	MT
		Managing linear growth along the by-passes (Northern and Western) and main A109.	
		Rejuvenate and promote commuter railway in Kikuyu CBD.	
		Develop proper conservation designs for environmentally fragile and conservation areas.	
		Reclaim encroached road reserves and enforce guidelines across the Sub-County roads.	
Solid & Liquid Waste Management	Improve and extend clean water supply across the Sub-County	Enhance liquid and solid waste management systems.	ST
		Provide waste collection and transfer facilities in the Sub-County.	
		Privatise solid waste management across Kiambu County; encourage private Sub-County players.	

Source: VisionRI

Table 16-3: Proposed Budget for CBD and Ondiri Swamp

Project		Cost (Ksh)	Timeline
Kikuyu CBD	New Market	300,000,000	ST
	New public terminus	25,000,000	ST
	Redevelopment of old market	150,000,000	ST
	Train interchange station sheds	10,000,000	ST
	Post office road; carriageway, street lighting, pedestrian walkways, drainage and landscaping. 500 m long	250,000,000	ST
	Pedestrianization of adjacent roads 2100 m long.	17,000,000	ST
	Roads upgrade; proposed roads 5.5 km	550,000,000	Short-Term to Medium-Term
	Slip road from southern by-pass	50,000,000	Short-Term
	3 open spaces and landscaping	10,000,000	Short-Term
	Densification of the CBD	Cost to developers	Short-Term to Long-Term
	Totals	1,362,000,000	
Ondiri Swamp	Research Centre	120,000,000	Medium-Term
	Amphitheatre	2,200,000	Short-Term
	Fishpond; with in water view form research Centre	2,000,000	Medium-Term
	Park; landscaping & fencing	10,000,000	Short-Term
	Boardwalk	17,000,000	Short-Term
	Walkway & track grading (2970m).	6,000,000	Short-Term
	Swamp rehabilitation	5,000,000	Short-Term
	Totals		0
Total			1,542,200,000

Source: VisionRI

16.6 The Priority Sectoral Programmes and Projects

For ease of plan implementation, the final out outputs of the plans are specific projects and urban services based on the specifics thematic and sectoral area. The project can summate into three broad programmes areas:

- **Infrastructure development programme:** Comprising the roads networks, public works, water supply networks and sewerage reticulation and renewable energy, power supply and communication improvement
- **Urban and rural development programme:** Setting up of municipal board structures, detailed urban plans for towns and market centres to manage urban sprawl, services systems, development control and enforcement, affordable housing and community development services; agricultural extension and agri-business cooperative support to rural-based economic activities.
- **Environmental improvement and conservation programme:** Water bodies and conservation activities, stormwater drainage and solid waste management and air quality control activities.

Table 16-4: Implementation Schedule for priority projects and programmes in Kikuyu

Sector	Planning Issues	Objectives	Strategy	Projects	Location	Time Frame	Implementation Agency	Actors	Budget
Environment and Natural Resources	Management and improvement of Environment and Natural Resources	Protection of ecologically sensitive areas	Control from the encroachment of the Ondiri swamp private investments.	Fencing off of Ondiri Swamp along its officially defined boundaries.	Ondiri Swamp	ST	Lands & Physical Planning	NEMA Police Environment & Natural Resources Development Partners	5M
			Establishment of appropriate green buffers to protect natural resources in the Sub-County.	Protection and fencing off of 5 ecologically sensitive areas in the Sub-County.	Muguga Forest, Dagoretti Forest, Ondiri Swamp, Nyakumu, Kikuyu Springs	ST	Environment &Natural Resources	NEMA KFS	5M
			Carry out a Strategic Environment Assessment (SEA) for the Sub-County.		Sub-County	LT	Environment & Natural Resources	NEMA Development Partners	2M
			Establishment and environmental inventory of all existing natural features across the Sub-County.	Carry out a survey of 8 natural features across the Sub-County.	Sub-County	ST	Lands & Physical Planning	NLC Environment & Natural Resources KFS NEMA	2M

Sector	Planning Issues	Objectives	Strategy	Projects	Location	Time Frame	Implementation Agency	Actors	Budget
			Sensitization and awareness creation on environment and conservation efforts.	Reforest three forest areas in Kikuyu Sub-County.	Dagoretti, Bama and Muguga Forest	ST		KFS Development Partners NEMA	10M
			Enforcement of appropriate and related regulations regarding riparian reserves and wayleaves.	Clear and restore riparian areas across water catchments and sources in the Sub-County.	Mbagathi, Nyangara, Mweteta, Nairobi, Gitathuru, Nyakumu, Ondiri and Kikuyu Springs	ST	Water	Environment & Natural Resources NEMA WRA KIWASCO	5M
			Manage and control pollution into the environment affecting natural resources e.g. rivers, swamps.	Implement water recovery mechanisms in the rivers in the Sub-County.	Sub-County	MT	Environment & Natural Resources	Water NEMA WRA	40M
			Development and enforcement of requisite laws and regulations on managing environmental	Formulate an environment protection law emphasis on sustainably managing the water catchment	Sub-County	MT	Environment & Natural Resources	NEMA WRA	5M

Sector	Planning Issues	Objectives	Strategy	Projects	Location	Time Frame	Implementation Agency	Actors	Budget
			pollution e.g. on effluent disposal etc.	areas for the Sub-County.					
		Sustainable exploitation of natural resources	Establishment of conservation centres and sites (Ondiri and Nyakumu) to demonstrate sustainable natural resource management.	Intervention to conserve Ondiri and Nyakumu Swamps as conservation areas.	Ondiri & Nyakumu	MT	Environment & Natural Resources	ERC NEMA Trade, Tourism, Industries & Enterprise Development	7M
			Promote agroforestry (in Nachu) and agro-tourism across the Sub-County.	Delieanate **hectares for agroforestry in areas requiring reforestation in Nachu, and Gacuthi.	Nachu	MT	Environment & Natural Resources	NLC KFS NEMA	8.5M
			Promote water harvesting in schools, homes and public facilities in Kikuyu.	Construction and implementation of water harvesting facilities in 20 Primary and Secondary Schools in the Sub-County.	Sub-County	Continu ous	Environment & Natural Resources	WRA Water NEMA KIWASCO	34M

Sector	Planning Issues	Objectives	Strategy	Projects	Location	Time Frame	Implementation Agency	Actors	Budget
Social Infrastructure	Social Infrastructure	Improve access to social infrastructure	Encourage private investment towards the provision of health and education facilities.		Sub-County	ST	Health	Development Agencies	2M
		Housing	Enforcement of the building and construction code and regulations across the Sub-County.		Sub-County	ST	Lands & Physical Planning	NEMA	2M
		Education	Construct more schools in Nachu ward.	Construction of 20 Classrooms and 10 Dormitories in primary and secondary schools in the Sub-County.	Nachu	MT	Education	Development Partners National Government	150M
		Health service provision	Construct health facilities in Nachu, Muguga, Kamangu.	Construction of 6 public health facilities (wards and medical units) in Nachu and Kamangu.	Nachu, Kamangu, Muguga	MT	Health	Lands &Physical Planning	100M
			Build a bigger health facility in	Upgrade Lusingetti		MT		Development Partners	500M

Sector	Planning Issues	Objectives	Strategy	Projects	Location	Time Frame	Implementation Agency	Actors	Budget
			Nachu and equip it to be able to attend to the residents of Nachu.	Hospital, Gikambura H. Centre and Nachu Dispensary to Level 3 centres.					
			Ensure that there is at least a dispensary in each ward.	Construct facilities health facilities in Nachu, Kanyayo, Muguga Jet and Kerwa.		MT			50M
			Increase the number of health workers in Nachu. Currently, there's only one nurse.			ST			
		Land management - Public spaces	Develop an inventory of public land available for the provision of public facilities.		Sub-County	ST	Lands & Physical Planning	NLC	5M
			Construction of recreational facilities in each ward.	Upgrade Kikuyu's playground to a 7000 seat	Kikuyu	ST	Social Services		15M

Sector	Planning Issues	Objectives	Strategy	Projects	Location	Time Frame	Implementation Agency	Actors	Budget
				second tier stadium.					
				Construct three playfields in Kinoo, Karai and Sigona.	Kinoo, Karai, Sigona		Social Services		60M
		Security improvement	Construction of Police Posts to enhance security, especially in Nachu.	Construct two post posts in Nachu.	Nachu	MT	Security	Development Partners	22M
			Installation of streetlights in towns, commercial and residential places.	Install street lights to 5 urban centres in the Sub-County.	Nachu, Kanyayo, Kerwa and Muguga Jet	ST	Security	Energy KPLC	20M
	Economy	Improve the agricultural sector	Promote modern agricultural farming techniques.	Set up 2 agricultural innovation centres in Kikuyu and Sigona.	Kikuyu, Sigona	Continu ous	Agriculture, Livestock & Irrigation	Development Partners	60M
Economy			Improve rural roads to facilitate the movement of farm produce to markets	(See road improvement proposals).	Sub-County	Continu ous		Academic Institutions	120M

Sector	Planning Issues	Objectives	Strategy	Projects	Location	Time Frame	Implementation Agency	Actors	Budget
			Promote the adoption of drought-resistant crops.	Propagate 300 acres of drought-resistant legumes in Nachu.	Sub-County	Continuous			60M
			Promote organic fertilizers – Composting.	Establish composting and fortification centres in Kikuyu and Kinoo.	Kikuyu and Kinoo	Continuous			25M
		Create a conducive business environment in order to promote a diverse economy	Encourage the growth of Small and Medium Enterprises (SMEs) by creating a conducive business environment.	Simplify the process of acquiring approvals for commercial developments within areas zoned for commercial.	County and Sub-County	ST			3M
			Encourage innovation into new frontiers.		e.g. Nachu	Continuous			
		Promote the growth of industries	Create new zones where industries can set up.			MT			
			Formulate favourable policies to			ST		Development Partners	

Sector	Planning Issues	Objectives	Strategy	Projects	Location	Time Frame	Implementation Agency	Actors	Budget
			incubate and help the growth of businesses.						
	Urban & Rural Development	Enhance urban and rural interaction	Improve conditions of feeder roads that drain into Dagoreti road.	(See road improvement proposals).	Kikuyu	ST	Road Department	KeRRA	
Urban & Rural Development			Establish administrative operations across the Sub-County.	Construct County Admin offices in 4 Centres in the Sub-County.	Kikuyu CBD	LT	County Government		60M
		Control urbanization	Strictly enforce zoning guidelines so as to protect rural areas.		Kiambu County and Kikuyu Sub-County	ST	Physical Planning Department	Dept. of Agriculture	
			Review the fees charged for change of user in farming zones with a view to protecting agricultural land.			MT	Physical Planning Dept.	Land control Board	
	Urban Design	Promote public spaces	Promote non-motorized transport	Construct 1 Km of NMT in Kikuyu Town.	Urban centres across the Sub-County	MT	Roads Dept	Physical Planning Dept.	33M

Sector	Planning Issues	Objectives	Strategy	Projects	Location	Time Frame	Implementation Agency	Actors	Budget
			including cycle paths.						
Urban Design			Develop proper conservation designs for environmental conservation areas.	Install environment-friendly disposal bins in all urban centres across the Sub-County.		MT	Environment Dept.	Physical Planning	20M
		Sustainable developments	Institute controlled urbanization by densification of residential districts.		County and Sub-County	Continu ous			
	Transportation	Promote multi-modal transportatio n modes	Promote light rail especially in Kikuyu CBD.		County and Sub-County	MT	Roads Dept.		
Transportatio n			Develop strategic stations where different transport modes intersect.	Construction of a major transport terminus in Kikuyu.		MT	Roads Dept.	KeRRA, KURA and KeNHA	53M
			Promote BRT to and around the Sub-County.			MT	Roads Road Dept.	KeRRA, KURA, KeNHA	
			Promote Non-Motorised Transport in	Construct an additional 2 Km NMT in Kikuyu		MT	Roads Road Dept.	KeRRA, KURA, KeNHA	20M

Sector	Planning Issues	Objectives	Strategy	Projects	Location	Time Frame	Implementation Agency	Actors	Budget
			urban areas in the Sub-County.	and Kinoo centres.					
		Road and transportation improvement across the Sub-County	Provision of drainage channels, pedestrian paths on roads.	Construction of 3 km stormwater drains in Kikuyu and Kinoo.		MT	Roads Dept.	Roads Dept, KeRRA, KURA, KeNHA	15M
			Phase-out 6-metre roads for a least a road reserve of 9 metres.			ST	Physical Planning and Roads Depts.		
			Reclaim encroached road reserves.			ST			
	Housing and Informal Settlements Upgrading	Improve housing conditions	Promote rainwater harvesting to supplement tapped water.	Install water harvesting facilities in all County Admin offices across the Sub-County	Kikuyu, Kinoo	Continuous	LHP&UD		2M
Housing and Informal Settlements Upgrading			Improve housing conditions in Nachu and informal settlements of Kiamburi and Muthiga.	Construct 50 housing units in three centres.	Nachu, Kiamburi, Muthiga	MT	As above	KISIP	125M

Sector	Planning Issues	Objectives	Strategy	Projects	Location	Time Frame	Implementation Agency	Actors	Budget
			Innovate new technology for the construction of affordable housing.			MT	As above	Private sector	
			Encourage private developers to build more to increase housing stock.			Continuous	As above	Private	
		Managing Urban Sprawl	Encourage and permit densification of residential districts to reduce urban sprawl.		County and Sub-County	Continuous	LHP&UD		
			Strictly enforce zoning guidelines to curb urban sprawl.		County and Sub-County	Continuous			
		Informal settlement	Provision of subsidized services e.g. water to informal settlements to improve	Upgrading of at least half of Kiamburi Informal settlement into permanent housing units.	Kiamburi	Continuous			200M

Sector	Planning Issues	Objectives	Strategy	Projects	Location	Time Frame	Implementation Agency	Actors	Budget
			livelihoods and increase access to services.						
			Encourage the use of cheaper materials to create decent housing.			Continu ous			
			Widen roads in informal settlements to allow delivery of services to informal settlements and to also enable authorities to respond to emergencies.	Expand 500 m of the road in Kiamburi and Muthiga settlements.	Kiamburi, Muthiga	Continu ous			13M
	Physical Infrastructure Strategies	Improve access to water	Provision of tapped water in Nachu.	Extension of 5km piped water (complete with water conservation measures) to residents of Nachu.	Nachu	MT	Water Dept.		20M
Physical Infrastructure Strategies									

Sector	Planning Issues	Objectives	Strategy	Projects	Location	Time Frame	Implementation Agency	Actors	Budget
			Subsidize the cost of water to enable more residents to get connected.		Sub-County	ST			
			End with axte sewer system in areas where the slope is appropriate.						
		Enhance waste management	The County Government to enhance waste collection within the town.	Provision of 3 strategically placed additional waste skips in four urban centres.	Kikuyu, Magana, Kinoo and Gikambura	Continu ous	Environment and Natural resources.		50M
			Encourage the entry of private companies to collect garbage.			ST			
			Regular collection of waste in Kikuyu.		Kikuyu	ST			

17 MONITORING, EVALUATION AND REPORTING

17.1 Procedure for Monitoring and Evaluation

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.

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.[13]

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 in a correct and efficient manner.

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.[14]

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."[15]

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

The guidelines provide for:

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

17.2 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 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.

17.3 Suggested M&E Proposals

An effective physical and land use planning M&E system should be domiciled within:

- National policies such as Vision 2030, National Land Use Policy, Urban Policy, Housing policy etc.;
- County planning and development framework as provided in the County Government Act, 2012, UACA, Physical Planning and Land Use Act 2019 etc.;
- Public participation with an emphasis on grassroots aspirations; and
- Effective partnerships to ensure inclusivity, resource mobilisation and timely delivery of programmes and projects.

Table 17-1: Physical Planning Indicators/Outcomes

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.
	Integration with other plans.
Institutional framework	Effectiveness of Municipal Boards in plan implementation.
	Effectiveness of the relationship between the Municipal Board and County.
	The functionality of the physical planning liaison committee.
	Technical staff capacity of the Sub-County/Municipality.
	Technical equipment capacity at the Sub-County/Municipality.
	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.

Physical planning indicators	Means of verification
	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

17.4 Institutionalization of M & E

As described in Chapter 9 above, 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 Plan are integrated across Entire County planning process to reflect the spatial, social, and economic development programmes and projects in the County.

18 CONCLUSIONS

Kikuyu's strategic location along major highways and corridors places it at an advantage that it attracts an increasing population either transient or sedentary. Within the Nairobi Metropolitan Region, it is considered as a sub-regional centre, providing administrative functions as a Sub-County headquarter complete with good infrastructure and a growing industrial and logistical hub.

The Sub-County's growth is influenced by its proximity to Nairobi, busy transport links (Nairobi - Naivasha Highway, Western by-pass, and the Southern by-pass); and the quickly developing nodes (Ndeiya, Gikambura, Nachu etc.). At the same time, the Mombasa – Uganda Railway line (which played a major role in its establishment), continues to be a major land structure that defines the Sub-County.

As a result, this plan is a timely tool to be used to contextualize this development. The plan, therefore, presents the following recommendations:

- **Strengthening the Municipalities Board Capacities:** As earlier mentioned in the plan, CPUs have strategically mandated the role of coordinating all County sectors, without which operations would be inconsistently implemented. For the proposals in the Plan to be successfully implemented, their functionality requires rejuvenation as In most counties in Kenya they seem non-operational.

- **Defining Municipality Boundaries:** While there are clear landmarks that define most of the urban and growth centres in the County, it would be prudent to delineate the Municipality boundaries.

- **New growth centres:** Urbanization continues to remain rife in most of the Sub-County with new centres sprawling uncontrollably. This plan recommends a review of other centres within the Sub-County that are likely to face this detriment and take appropriate measures to contain this. For example, Nderu, Gikambura, Lusingetti, Kanyayo, Kamangu and Nachu.

- **Strengthening service delivery at the neighbourhood level:** It is becoming clear that in the future, the neighbourhood associations and their cohorts will influence the delivery and implementation of future plans. This recognition should drive the requisite strategy to make access easier to the residents in the Sub-County.

- **Development of a transport master plan:** Transportation across the Sub-County, influenced by the rapidly sprawling neighbourhoods and centre needs to be reviewed. The product of this review will involve the development of a transport master plan that will explore road, rail, NMT and para-transit systems and prepare appropriate measures for the future.

- **Development of a transport master plan:** Transportation across the Sub-County, influenced by the rapidly sprawling neighbourhoods and centre needs to be reviewed. The product of this review will involve the development of a transport master plan that will explore road, rail, NMT and para-transit systems and prepare appropriate measures for the future.

- **Food security investment:** With most agricultural land waning to pave way for the more lucrative developments (residential), the Sub-County is staring at a time when

potentially productive lands will be engulfed causing food scarcity. Appropriate measures need to be put in place to protect agricultural lands.

- **A Cohesive Plan Coordination at All Levels**: Implementation of this plan will require a cohesive and well-coordinated plan that aligns within the National, NMR and Kiambu County planning frameworks specifically the County Spatial Plan, CIDP, ISUDPs, IDePs and other sectoral plans and initiatives.

- **Governing by Provision:** The relationship between the County and Municipalities is through delegated authority. This will require elaborate governing provisions of delegation to the 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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