



GOVERNMENT
OF KENYA



COUNTY GOVERNMENT
OF KIAMBU

GATUNDU TOWN INTEGRATED STRATEGIC URBAN DEVELOPMENT PLAN 2020–2030



VISION
A VIBRANT COMMERCIAL AND
SERVICE HUB

Report Prepared by:



MINISTRY OF TRANSPORT,
INFRASTRUCTURE, HOUSING &
URBAN DEVELOPMENT

Nairobi Metropolitan Services Improvement Project
(NaMSIP)



County Government of Kiambu

Department of Lands, Housing, Physical Planning,
Municipal Administration and Urban Development

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January 2020

APPROVAL

Certified

I certify that the plan has been prepared as per the County Governments Act, 2012 and Section 110 on Planning standards and guidelines.

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Date: _____

COUNTY ASSEMBLY

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Signature: _____

Date: _____

H.E THE GOVERNOR

FOREWORD



The Kenya Constitution 2010 assigns the function of County planning to the County Governments within its Fourth Schedule. The Gatundu Town Integrated Strategic Urban Development Plan (ISUDP) is a ten-year development framework that will guide the physical, social and economic development, and management of the town from the year 2020 to 2030.

An Integrated Strategic Urban Development Plan (ISUDP) is a statutory requirement provided for in section 111 of the County Governments Act, 2012 (CGA). Section 36 (1) of the Urban Areas and Cities Act 2011 (UACA) further states that ISUDP shall be basis for development control; preparation of environmental management plans; preparation of valuation rolls for property taxation; provision of physical and social infrastructure and transportation; preparation of annual strategic plans for an urban area; disaster preparedness and response; and overall delivery of service including provision of water, electricity, health, telecommunications and solid waste management.

This ISUDP forms part of the Nairobi Municipal Services Improvement Programme (NaMSIP) which is a World Bank funded project. It reflects the desired development trajectory for Gatundu Town, guided by the aspirations of the people, the resources available, as well as the social, physical legal and economic opportunities within the town. The desired patterns of development have been synchronized to other existing regional, national and other County plans. Indeed, the Plan reflects the objectives and aspirations of the County as outlined in the County Integrated Development Plan (CIDP) for the 2018-2022 Plan period and the County Spatial Plan (CSP).

The ISUDP provides strategies for conservation, use and management of natural resources. In addition, the spatial structure of the population, existing infrastructure, economic activities and human settlements have been mapped. Similarly, the challenges and opportunities for tapping into these resources have been identified. I also take note that the Town Plan has identified areas where priority strategic intervention and funding is required. Equally important, the Plan has considered the rights of all special groups in the County and the constitutional requirements for participatory planning and development.

I am aware that the preparation of this Integrated Strategic Urban Development Plan was carried out through a participatory process as per the requirements of the County Governments Act 2012. The process involved representation from the general public, the County Government and the National Government through the Nairobi Metropolitan Services Improvement Project- NaMSIP.

I believe that this Plan will be an important pillar in stimulating agricultural production, infrastructural and social economic development in Gatundu Town towards the desired Vision. I am confident that in the renowned true spirit and tradition of the hard working Gatundu Town people, this plan will become an important guide for investments in the County. I therefore take this opportunity to rally the people of Gatundu Town to support the implementation of this Town Plan as part of the County Spatial Plan in line with our desired transformation agenda of our County and hereby commit myself to appropriate funding for its implementation.

Signature: _____

PLAN. JAMES MAINA MITAMBO,

County Executive Committee Member,

Lands, Housing, Physical Planning, Municipal Administration and Urban Development,

Kiambu County

ACKNOWLEDGEMENT

This Gatundu Town Integrated Strategic Urban Development Plan is a tool for efficiently controlling and managing the use of space in Gatundu Town over the next ten years, in a sustainable manner. The Plan will also serve as a base for all future physical development plans in Gatundu. The Plan also aims to help coordinate implementation of sectoral projects and programs, especially to reduce wastage of scarce resources and to avoid the duplication of efforts.

The preparation of this ISUDP has been as a result of a concerted effort by many players. I wish to thank the County Executive and staff, led by H.E. Dr. James Karanja Nyoro for their goodwill and support during the preparation of this Plan.

I wish to acknowledge efforts of staff of the Nairobi Metropolitan Services Improvement Project- NaMSIP, for initiating, supervising and supporting the entire preparation of this Plan. Special thanks go to the NaMSIP Project Coordinator, Engineer Benjamin Njenga, Planner Ann Mugo (Project Supervisor) as well as Planner Esther Muthoni. Special thanks go to the planners from Kiambu County; Planner Nicholas Waweru (deputy director planning), Plan. Wallace Mochu, Planner Christine Kamau, Planner Charles M. Mwangi, Plan. Bryan Njeru, Plan. Onesmus Ng'ang'a, Plan. Hilda Mwai, Plan. Rehema Nyambuga, Plan Christine Njeru, Plan. Judith Nyamongo, Plan. Alex Waweru, and Plan. Esther Waweru.

The consulting team from ALPEX Consulting Africa Ltd (ACAL), EcoPlan Kenya and BC Gildenhuys and Associates CC (South Africa), worked tirelessly with the Department of Planning at the County level in data collection and analysis. The draft was subsequently discussed at the technical level and in a stakeholders' workshop. I would like to acknowledge the technical expertise and team spirit provided by the team of consultants led by Planner Geoffrey Njoroge, Aron Kecha, Planner Hellen Njoki, Dr. Samuel Gichere, David Mathenge, Sylvia Moraa and Shelmith Mwendwa. Finally, I wish to thank the people of Gatundu Town for sharing their proposals through the stakeholder forums that were held. It is for them that this Plan has been prepared.

PLAN. JANE WANJIKU MWANIKI,

County Director of Physical Planning

Department of Lands, Housing and Physical Planning, Kiambu County.

EXECUTIVE SUMMARY

The Gatundu Integrated Strategic Urban Development Plan (ISUDP) for the year 2020-2030 has been prepared as part of the Nairobi Municipal Services Improvement Programme (NaMSIP). The plan was prepared within the framework of the Kenya Constitution 2010, County Government Act 2012, Urban Areas and Cities Act 2011 and the Physical and Land Use Planning Act 2019, among others. The plan is guided by Kenya Vision 2030, National Spatial Plan 2015-2045, National Land Use Policy 2018, and the National Land Policy 2009. The plan has been prepared by a consortium of ALPEX Consulting Africa Ltd (ACAL) and BC Gildenhuys.

The ISUDP was prepared in a participatory process bringing together all actors, including the local community, Kiambu County Government, and NaMSIP. The planning process began with the notice of intention to plan, inception workshops, reconnaissance survey, delimitation of planning boundaries and base map preparations. The planning team used both secondary and primary data for the planning process. Consultative meetings and workshops with all stakeholders were held for purposes of visioning, validation of situational analysis, presentation of draft plans and validation of the same.

Gatundu Town is located in Ng'enda Ward, Gatundu South Sub-County, in Kiambu County. It is the administrative headquarter for Gatundu South Sub-County. The planning area covers an area of approximately 9.56 square kilometres. Agriculture is the main source of livelihood, with the area dominated by subsistence farming. The town has its history as being a colonial town, and the home to the founding president of Kenya. The town's strategic location provides opportunities for improving the commercial and retail sector, the service function, and the agricultural sector. This, coupled with strategic investment in road circulation systems, as well as support services such as water and sewerage systems, have the potential to revitalise the town's economic and social status.

Guided by the town's social, physical and economic data, a vision for the town;

“A VIBRANT COMMERCIAL AND SERVICE HUB” was crafted during the visioning workshop.

Towards developing the plan proposals, various spatial development opportunities and challenges in the County were analysed. Three scenarios were considered in the preparation of the Gatundu Town Plan, namely service led strategy, urban economic regeneration strategy, and green growth strategy. The development model that was eventually selected was a hybrid of the three development trajectories, integrating revamping of the service function of the town (administration, education and health), commercial revitalisation strategies (trade, industry, agriculture) and environmental conservation of key resources and the environment.

The service led strategy aims at capitalising on the town's administrative function to drive growth. As a sub county headquarter, the town boasts numerous social infrastructure. The town has a level 5 hospital, a medical training college, a vocational training college, justice system, among others. The town's strategic location can also propel it as a dormitory town. The rich history of the town gives it potential for enhanced tourism sector through diversification of tourism products, for example, through promoting conference tourism, and development of a cultural museum.

The urban economic regeneration strategy uses agricultural development as the basis upon which the town is to grow. The plan identifies protection of key agricultural lands, enhancement of agricultural production, and value addition targeting agricultural produce. The town also boasts a modern market and various commercial activities. Several banks and financial institutions have setup branches within the town. This services can be enhanced to attract more population into the town, thus providing more market for goods and services and thus driving economic growth. Provision for light industries and value addition can further generate employment opportunities and contribute to the growth of the town. The ultimate goal of the strategy is urban regeneration. This will be achieved through expansion of commercial and retail space to spur trade, provision of adequate land for human settlements, as well as improve access to basic services: water, sanitation, education and recreation facilities.

Transportation strategies provide an enabling framework for achievement of the vision through identification of key roads for opening up and upgrading so as to enhance linkages and facilitated access to markets. The strategy also proposes measures for improvement of circulation within the town by opening up select roads and investments in non-motorised transport facilities.

The green growth strategy will focus on conservation of riparian zones and areas of steep slopes by restricting development in such areas, embracing conservation agriculture and farm forestry on slopes beyond 25%. It further emphasises compact growth, provision for non-motorised transport, and solid and liquid waste management.

In general, the structure plan provides a framework that sets out strategic planning policies in terms of space. The structure plan comprises three elements – namely a physical zoning map, land management policies, and land use standards. Overall, the spirit the structure plan is Sustainable Development.

The plan proposes a two-tier implementation team having both the County Government team and the team from other development stakeholders. The implementation team is proposed to be holding consultative forums at least once every two years to keep track of the progress of the implementation. A town management committee shall be put in place and be directly responsible for the plan implementation, monitoring and enforcement.

A capital investment plan is provided showing the cost of the major projects which total to about 2.34 Billion Kenya Shillings within the entire plan period. It is further proposed that the ISUDP will be reviewed after 5 years to harmonize the development strategies with changes that could have occurred within the five years. It is expected that implementation of this ISUDP will promote socio-economic development through agro industrial developments and creating strategic linkages in the region resulting into enormous positive multiplier effects towards improved livelihoods to the people of Gatundu, including employment creation and poverty reduction.

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LIST OF ACRONYMS

CBD	Central Business District
EAPC	East Africa Portland Cement
EMCA	Environment Management and Coordination Act
GoK	Government of Kenya
ISUP	Integrated Strategic Urban Plan
ISUDP	Integrated Strategic County Development Plan
KeNHA	Kenya National Highway Authority
KeRRA	Kenya Rural Roads Authority
KFS	Kenya Forest Service
KURA	Kenya Urban Roads Authority
KWS	Kenya Wildlife Service
MTIH&UD	Ministry of Transport, Infrastructure, Housing and Urban Development
NaMSIP	Nairobi Metropolitan Services Improvement Project
NEMA	National Environment Management Authority
NGOs	Non-Governmental Organizations
NMR	Nairobi Metropolitan Region
NMT	Non-Motorized Transport
SEA	Strategic Environmental Assessment
WRA	Water Resources Authority
WSPs	Water Services Providers
WSS	Water and Sanitation Services

GLOSSARY OF TERMS

Building density: area of buildings/hectare.

Corridors: A corridor is a linear strip of land or area, connecting large activity nodes, traversing urban or inter-urban areas, surrounding a major transport facility or facilities providing an appropriate regional level of mobility and accessibility to adjacent areas. It constitutes a high concentration of population and mixed land uses” and “... accommodates major linear transport routes like heavy and light rail and/or freeways, large shopping concentrations, social, cultural and sporting facilities as well as a large amount of residential accommodation”.

Density: The number of units per unit of land area, e.g. dwelling units/ hectare. There are five measures of density:

Densification: Densification is the increased use of space both horizontally and vertically within existing areas/ properties and new developments, accompanied by an increased number of units and/or population threshold.

Efficiency: Development that maximises development goals such as sustainability, integration, accessibility, affordability, and quality of living, relative to financial, environmental, and social costs, including on-going and future costs.

Gross dwelling unit density: dwelling units / total land area of a project or suburb including roads, public open space and non-residential land uses.

Net dwelling unit density: dwelling units/land occupied by residential plots only.

Population density: people / hectare.

Infill Development: Development of vacant or underutilised land within existing settlements to optimise the use of infrastructure, increase urban densities and promote integration.

Kernel density calculates the density of features in a neighbourhood around those features. The result is a smooth surface indicating the intensity of an attribute (buildings, schools, settlement, social facilities, etc.) over the study area.

Land Use Management: Establishing or implementing any measure to regulate the use or a change in the form or function of land and includes land development.

Land Use Management System: A system used to regulate land use, including a town planning or zoning scheme, or policies related to how land is used on a plot-by-plot basis.

Nodes: Nodes are focused areas where a higher intensity of land uses, and activities are supported and promoted. Typically, any given area would accommodate a hierarchy of nodes that indicates the relative intensity of development anticipated for the various nodes, their varying sizes, and their dominant nature.

Settlement density: (dwelling units / total land occupied by settlement) also known as average gross dwelling unit density.

Spatial Planning: Planning of the way in which different activities, land uses, and buildings are located in relation to each other, in terms of distance between them, proximity to each other and the way in which spatial considerations influence and are influenced by economic, social, political, infrastructural and environmental considerations.

Spatial Development Framework: A Spatial Development Framework (SDF) is a core instrument in spatially expressing the economic, sectoral, social, institutional, environmental vision. In other words, it is a tool for moving towards a desired spatial form for the planning area.

Sector Plans: This refers to plans for different functions such as biodiversity conservation, housing, transport, local economic development and disaster management. They may also be geographically based, for example, a sub-region, settlement within an area or a component of that settlement.

Stakeholders: Agencies, organisations, groups or individuals who have a direct or indirect interest in a development intervention or its evaluation.

Urban–rural transect (continuum): A cut or a path, a gradient or a geographical cross section of a region that can be used to reveal a sequence of environments

Urban Edge: The urban edge is defined as an indicative boundary within the planning area with the sole purpose of containing physical development and sprawl and re-directing growth towards a more integrated, compact and efficient urban form.

Zoning Scheme: A legal instrument for regulating the use of land regarding County or national legislation (see Land Use Management System.)



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PART I: INTRODUCTION AND PLANNING CONTEXT

1 CHAPTER ONE: INTRODUCTION

This chapter gives a description of the project background and planning context; the urban planning methodology; the integrated and strategic approach taken; and, the national policies, legal context and institutional frameworks that guided the preparation of the Integrated Strategic Urban Development Plan for Gatundu Town.

1.1 Background

The promulgation of the Constitution of Kenya, 2010 (CoK) ushered a fundamental paradigm shift in governance, creating a two-tier system of governance: National and County governments. The devolved system created 47 counties with vested substantial power and authority on governance¹. The constitution makes great demands on development planning as a means of delivering sustainable and productive management of land resources and allows the state to regulate use of any land and property (Article 66) in the interest of land use planning, among others. It further places governance and public affairs management in the hands of the people at the County and local level which is best guided by the approved Integrated Urban Development Plans of respective urban centres in the counties. Every County government is constitutionally required to prepare and approve an integrated urban development plan for every settlement with a population of at least two thousand residents.

An integrated Strategic Urban Development Plan (ISUDP) is a tool for promoting social and economic development and the provision of proximate, easily accessible services. It contributes to the protection and promotion of the fundamental rights and freedoms contained in the CoK and the progressive realization of the socio-economic rights. The ISUDP is expected to nurture and promote development activities in an orderly and sustainable manner. In addition, the ISUDP guides and informs all planning, development and decisions in the respective urban centres and ensures comprehensive inclusion of all urban functions.

Kenya has a high population ranking at twenty seventh (27th) in the world and estimated to be growing at an annual average rate of three (3) percent (National Spatial Plan 2015-2045). The proportion of urban population to the total population is estimated at twelve million representing approximately 31.8 percent of the population and growing at a rate of 4.4 percent². The bulk of this growth has occurred within the Nairobi Metropolitan region. The Metro region extends some 32,000 square kilometres, and is a national, regional and international strategic centre for education, commerce, transport, regional cooperation and economic development. The region comprises fifteen key urban areas including Nairobi City County; Kiambu town, Machakos, Thika, Kajiado, Limuru, Mavoko, Ruiru, Kikuyu, and Tala/Kangundo towns. Most towns within the metro are experiencing overwhelming challenges in the provision of civic services and utilities, diminished returns on investment and challenges of access to sufficient basic needs.

Kiambu County lies within the Metro region, and it is one of the most spatially dynamic counties. The County is fast urbanizing owing to her proximity to the capital city. The county is experiencing the 3rd highest urbanisation rate after Nairobi and Mombasa at an average rate of 3.4% compared to the 4 percent National Urban Growth rate (Draft County Spatial Plan). As a result, most of the urban centres in the county, including the rural towns, have experienced a boom in development activities, driven by demand for affordable land, as well as opportunities arising from capital inflows from the devolved governance system. Most of the urban centres are ill prepared to accommodate the rapid growth, leading to a lag in service provision (water, sewerage, garbage collection). Consequently, there have been rising cases of slum proliferation, informal settlements, constrained mobility, inadequate water supply, illegal dumping and exposed wastewater, among other urban challenges. This points to the need for planning interventions to enable manage the negative impacts while maximising on the benefits of urbanisation.

The various strategies used by the government to manage urban development have largely failed and there is need to rethink urban planning and development strategies. Planning for the towns needs a regional approach, thus the intervention by the Nairobi Metropolitan Services Improvement Project (NaMSIP). The project has

¹ National Spatial Plan 2015-2045

² NSP 2015-2045

adopted an integrated and regional approach targeting key towns within the entire metropolitan region, with special measures being taken to address the different needs of its diverse population and landscape. NaMSIP aims at strengthening urban services and infrastructure in the Nairobi Metropolitan Region for an estimated 1.5 million urban residents.

The County Government of Kiambu, in collaboration with the National Government, through NAMSIP, opted to prepare the integrated Strategic Urban Development Plan (ISUDP) for Gatundu town, one of the satellite towns located within Gatundu North Sub County. Like most towns in the Metropolis, Gatundu lacks a development plan to guide sustainable urban growth. The town is currently experiencing uncoordinated growth and linear sprawl, thus the need for planning intervention. The ISUDP is expected to nurture and promote development of commercial and human settlement activities in an orderly and sustainable manner. In addition, the ISUDP shall bind, guide and inform all planning development and decisions in the respective urban centres and ensure comprehensive inclusion of all urban functions.

This document presents the Gatundu Town Integrated Strategic Urban Development Plan, 2020 – 2030. The plan was prepared with the assistance of ALPEX Consulting Africa Ltd (ACAL) and BC Gildenhuis & Associates under a contract agreement issued on 24th June, 2014 with the Government of Kenya (GOK) through the then Ministry of Lands, Housing and Urban Development. The consultants were supervised by the Nairobi Municipal Services Improvement Programme (NamSIP) officers in the Nairobi Metropolitan Development (NMED) section of the then Ministry of Lands, Housing and Urban Development. In undertaking the assignment, the Consultants worked very closely with the Country Government of Kiambu, relevant National Agencies and Authorities and ensured full participation of all key Gatundu Town stakeholders.

1.2 Terms of Reference

Guided by the Terms of Reference (as elaborated in the Inception Report attached as annex 1).

1.2.1 Purpose of the Plan

The purpose of this Plan is to:

- a) Define a vision for future growth and development of Gatundu Town over the next 10 years;
- b) Indicate anticipated patterns of land use and set out basic standards and guidelines for a land use management system designating desirable urban settlements, functional spaces and management of natural resources within the planning area;
- c) Provide an overall strategic and integrated spatial framework for the location and function of development and the resultant urban growth within Gatundu town;
- d) Provide a framework to guide infrastructural development and service provision within the planning area and revitalize housing, industries, trade and commerce to spur economic development;
- e) Provide development guidance based on optimum location and nature of development within planning area and enhance environmental protection and conservation;
- f) Determine the effective urban boundary for Gatundu township and develop a smart urban system in Gatundu Town;
- g) Interpret and align National, Regional and County Development policies and strategies and reflect them as development programmes in the planning area and establish better development coordination and implementation mechanism;
- h) Provide a basis for coordinated programming of development projects and budgeting within the planning area, thereby serving as a downstream management tool guiding public and private investment on key urban infrastructural projects and programmes; and,
- i) Improve transport and communication networks and linkages and identify opportunities for job creation and employment;

1.2.2 Objectives

The main objective of Gatundu Town Integrated Strategic Urban Development Plan is to provide an overall Urban Integrated Development framework for the Town. Though the Plan will have a 10-year time-horizon, it shall provide a basis for long-term sustainable development in Gatundu town.

The specific objectives of the Plan include:

- a) To provide a basis for infrastructure and service provision for present and projected population over the plan period;
- b) To determine demographic changes in the last ten years and those expected over the life of the plan for each town, and how these relate to economic changes, welfare and administrative shifts;
- c) To identify environmental issues and concerns affecting Gatundu town
- d) To identify development potentials of the planning area (social, economic and environmental profiling);
- e) To provide a basis for development control and investment decisions;
- f) To allocate sufficient space for various land uses to ensure efficient function and convenience of users and accommodate future growth;
- g) To provide for adequate land for recreation and open spaces;
- h) To enhance and promote safety and security;
- i) To uphold innovative civic and urban design that enhances the character and form of Gatundu town;
- j) To prepare the plans implementation and monitoring framework.

1.2.3 Scope of the Plan

1.2.3.1 Geographic Scope

The geographic scope of the Plan covers Gatundu town, and 1.5 km radius totaling 9.56 square kilometres.

1.2.3.2 Planning Scope

The Plan is a medium term spatial urban development framework with a planning horizon of ten (10) years from 2020-2030 and shall be subject to five (5) year reviews. It covers the following thematic areas: Natural and Physical Environment, Human settlements, urban development, physical infrastructure, and social infrastructure. The plan integrates the strategies, policies and objectives of the Vision 2030, the National Spatial Plan (NSP), the Metro 2030 Strategy, and the Metropolitan Spatial Plan.

1.2.3.3 Mapping Scope

The plan has prepared a GIS based data base depicting the different land uses and zones for the planning area.

1.2.4 Deliverables of the Plan

The significant output of this assignment is the Gatundu Town Integrated Strategic Urban Development Plan that provides the structural blueprint guiding development of Gatundu town for a period of 10 years (2020-2030). The Plan was prepared in various complementing phases which generated the following outputs:

- i. Situational analysis reports
- ii. Base map
- iii. An appropriate and widely accepted vision
- iv. Vital Gatundu town sector development strategies
- v. A comprehensive Town Spatial Development Framework
- vi. A practical Implementation Matrix
- vii. Structure and action plans
- viii. Plan Implementation Strategy
- ix. Capital Investment Plan,
- x. Monitoring and Evaluation Plan

1.3 Justification of the Plan

Section 111(2) of the County Governments Act, 2012 (CGA) mandates County governments to prepare plans for populations above 2000 persons. ISUDP is provided for in Section 36 (1) of Urban Areas and Cities Act (UACA) further states that ISUDP shall be basis for development control; preparation of environmental management plans; preparation of valuation rolls for property taxation; provision of physical and social infrastructure and transportation; preparation of annual strategic plans for an urban area; disaster preparedness and response; and overall delivery of service including provision of water, electricity, health, telecommunications and solid waste management.

In anticipation for the growth experienced in major towns, there is need for the County governments to prepare ISUDPs as an instrument for guiding optimal use of land to achieve sustainable development by addressing development challenges and exploiting opportunities in key areas that have spatial dimension.

Gatundu town enjoys a strategic location by virtue of its position off the Thika superhighway, in close proximity to the capital city of the country. The town also holds the honour of being the hometown to two presidents; the founding president of the republic of Kenya and the fourth president. Apart from its strategic location within the metropolitan region, the town enjoys good climatic conditions and suitable soils favour agriculture. The town has good linkages with surrounding regions through a well-developed road network. In addition, the town has well developed services by virtue of hosting the administrative offices of the sub County. Among the key facilities are: Gatundu Level 5 hospital, a medical training college and a modern multi storeyed market. This makes the town an attractive dormitory town for the growing populations from the capital city looking for a balance between urban and rural life.

To capitalise on the rising demand for urban services, the town needs an Integrated Strategic Urban Development plan so as to achieve sustainable urbanisation. The ISUDP will foresee and address some of the key challenges facing Gatundu town that include, but are not limited to the following:

- a) Land use changes to accommodate urban growth;
- b) Inadequate civic infrastructure;
- c) Inadequate serviced land to accommodate urban growth;
- d) Inadequate land information system as a basis for planning, optimal revenue and land rates collection, land data management and Development control;
- e) Inadequate provision for recreational grounds, parking areas;
- f) Poor Infrastructure Provision, especially roads, water reticulation, drainage and storm water management system;
- g) Poor solid waste management;
- h) Un-coordinated sub-divisions of land;
- i) Poor governance, weak public institutions and inadequate financial and technical capacity to undertake planning and development control;
- j) Climate change and environmental degradation;
- k) Poor promotion of innovation, inadequate informal business acceptability and regulation;
- l) Inadequate promotion of tourism, culture and natural resources as revenue enhancers; and,
- m) Inadequate disaster preparedness and lack of a Disaster Management Plan.

1.4 Vision of the Plan

“A Vibrant Commercial and Service Hub”

1.5 Mission Statement

The Mission of this plan is:

“To transform the town into a vibrant commercial and service hub”

1.6 Organization of the Plan

The Gatundu Town Integrated Strategic Urban Development Plan (G-ISUDP) consists of narrative and graphical interpretations of the contextual aspects as well as the existing character and proposed spatial structure of the town. It is hereby presented in four (4) parts that rationalise a logical flow of chapters as follows: -

Part I: Introductory and Planning Context

Part one consists of chapter one and two.

- i. Chapter One: Background- covers the purpose of the plan, Planning challenges in the Town, objectives, scope, deliverables of the plan, and the organizational structure that presents the plan
- ii. Chapter Two: Planning Context- Describes the National, Regional and Local context of Gatundu Town, the policy and legal framework guiding the K-ISUDP process. It provides linkages to other relevant plans i.e. CIP and previous planning interventions in the town and explains the methodology and approach employed in preparing the K-ISUDP.

Part II: Situational Analysis

Part two consists of chapter three to twelve, covering the different aspects of situational analysis.

- i. Chapter Three: Discusses the physiographic characteristics of Gatundu town with focus on terrain, slope, geology, soils, hydrology, vegetation, and how they affect development:
- ii. Chapter Four: Discusses the population and demographic characteristics of the town; focusing on population size and structure, population projections, morbidity and mortality, poverty levels as well as employment data for the town.
- iii. Chapter Five: Analyses the land uses in the planning area, land tenure details, land administration arrangements as well as land suitability analysis for the planning area.
- iv. Chapter Six: Analyses the environment with focus on key natural resources found in the planning area, as well as environmentally fragile areas within the area. The chapter also looks at environmental challenges related to waste management, as well as climate change.
- v. Chapter Seven: Analyses housing and human settlements within the planning area, with focus on settlement patterns for rural and urban areas, housing typologies, housing demand, as well as housing materials used with the planning area.
- vi. Chapter Eight: Analyses the physical infrastructure systems within the planning area, with focus on transportation infrastructure, water and sanitation supply infrastructure, waste management infrastructure, energy as well as communication infrastructure within the planning area.
- vii. Chapter Nine: Analyses the social infrastructure, looking at education facilities (primary, secondary and tertiary), health facilities, recreation, administrative, as well as religious facilities.
- viii. Chapter Ten: analyses the economic characteristics of the planning area, looking at key economic drivers (agriculture, industries, trade and commerce, mining, among others)
- ix. Chapter Eleven: Analyses the governance and administrative framework that is relevant for the implementation of this plan, and what is required for effective implementation of the plan.
- x. Chapter Twelve: This chapter synthesizes all the issues discussed with the aim of laying the framework for the plan formulation process.

Part III: Plan Formulation

Part three details the plan formulation process and the contents of the plan. It consists of chapters thirteen to seventeen.

- i. Chapter Thirteen: The chapter analyses the different scenarios for achieving the vision of the plan, looking at nil intervention scenario against scenarios for economic development, green growth as well as integrated approach to development.
- ii. Chapter Fourteen- Highlights the different strategies for achieving the preferred scenario.
- iii. Chapter Fifteen presents the spatial development propels in the form of a structure plan, presenting the different land use options recommended for attainment of the vision.
- iv. Chapter Sixteen: Presents the zoning plans to guide the spatial development proposals outlined in the structure plan. It also presents action plans within the structure plan.
- v. Chapter Seventeen presents the plan implementation matrix, outlining the actions, the actors and the time frames for implementing the different strategies. It also presents a capital investment plan outlining the cost implications for implementing the plan.

Annexes: Cover, among other things:

- i. Annex 1: Terms of Reference (Inception Report).
- ii. Annex 2: The Notice of intention to plan.
- iii. Annex 3 and 4 are lists of stakeholders who attended the 1st stakeholders' meetings in Gatundu.

2 CHAPTER TWO: PLANNING CONTEXT

2.1 Overview

This chapter details the location of the planning area, focusing on the national, regional and local context. It gives a brief background of the planning areas, as well as the legal, policy and legislative framework under which the plan has been prepared. The chapter also outlines the vertical and horizontal linkages of the plan with other plans.

2.2 Historical Background of Gatundu

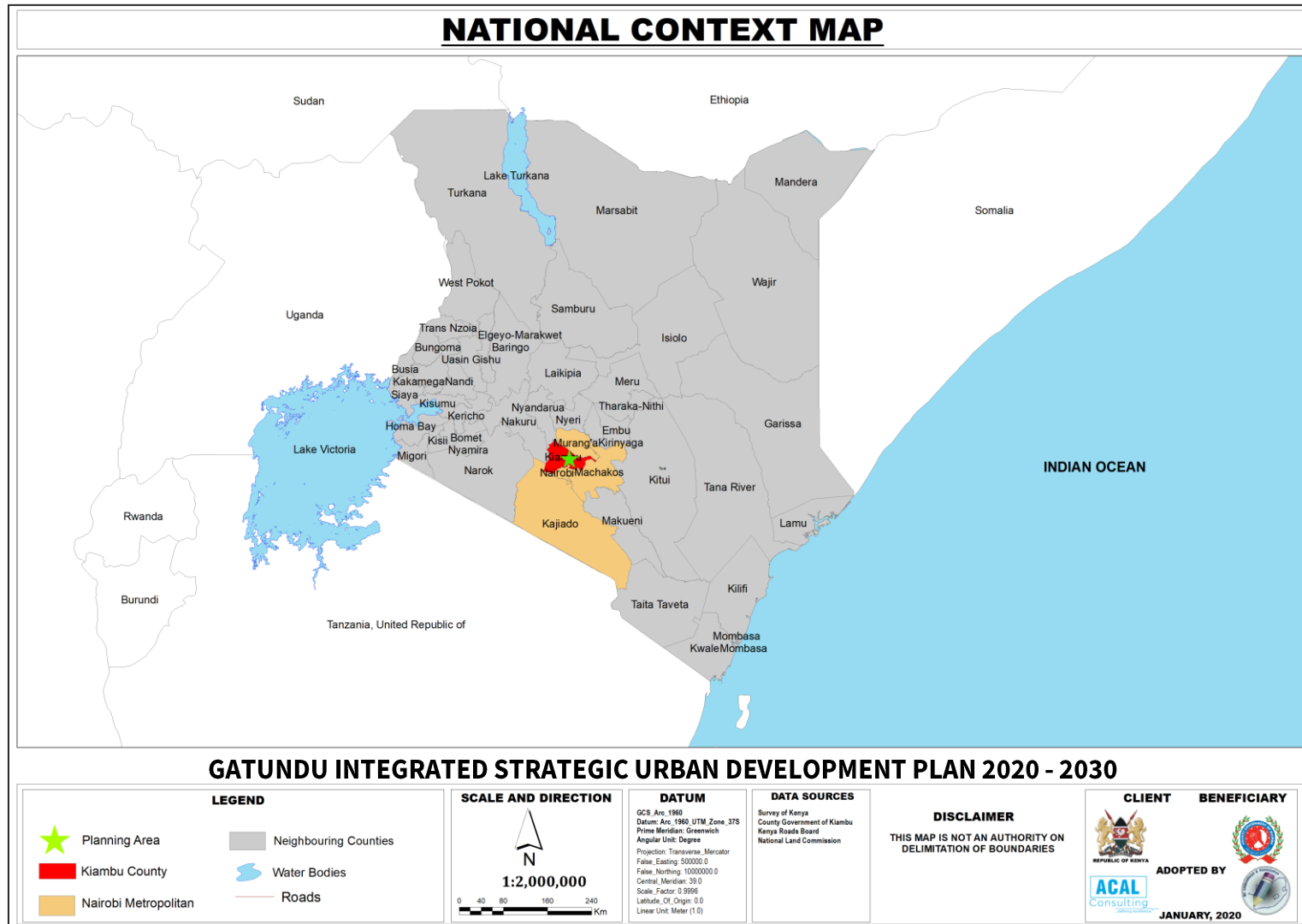
Historically, Gatundu town is known for being home to the first Kenyan president, Jomo Kenyatta, as well as his son, Uhuru Kenyatta, the current (and 4th) president of Kenya. Gatundu was originally a settlement town. The town hosts offices of the Gatundu Sub-County constituency.

2.3 Geographic Location and Size

2.3.1 National Context

The planning area is located within Kiambu County, in Kenya. Kiambu County borders Nairobi and Kajiado Counties to the South, Machakos to the East, Murang'a to the North and North East, Nyandarua to the North West, and Nakuru to the West as indicated in Map 2-1. The County lies between Latitudes 00 25' and 10 20' South of the Equator and Longitude 36 31' and 37 15' East.

Map 2.1 Gatundu town in the National context

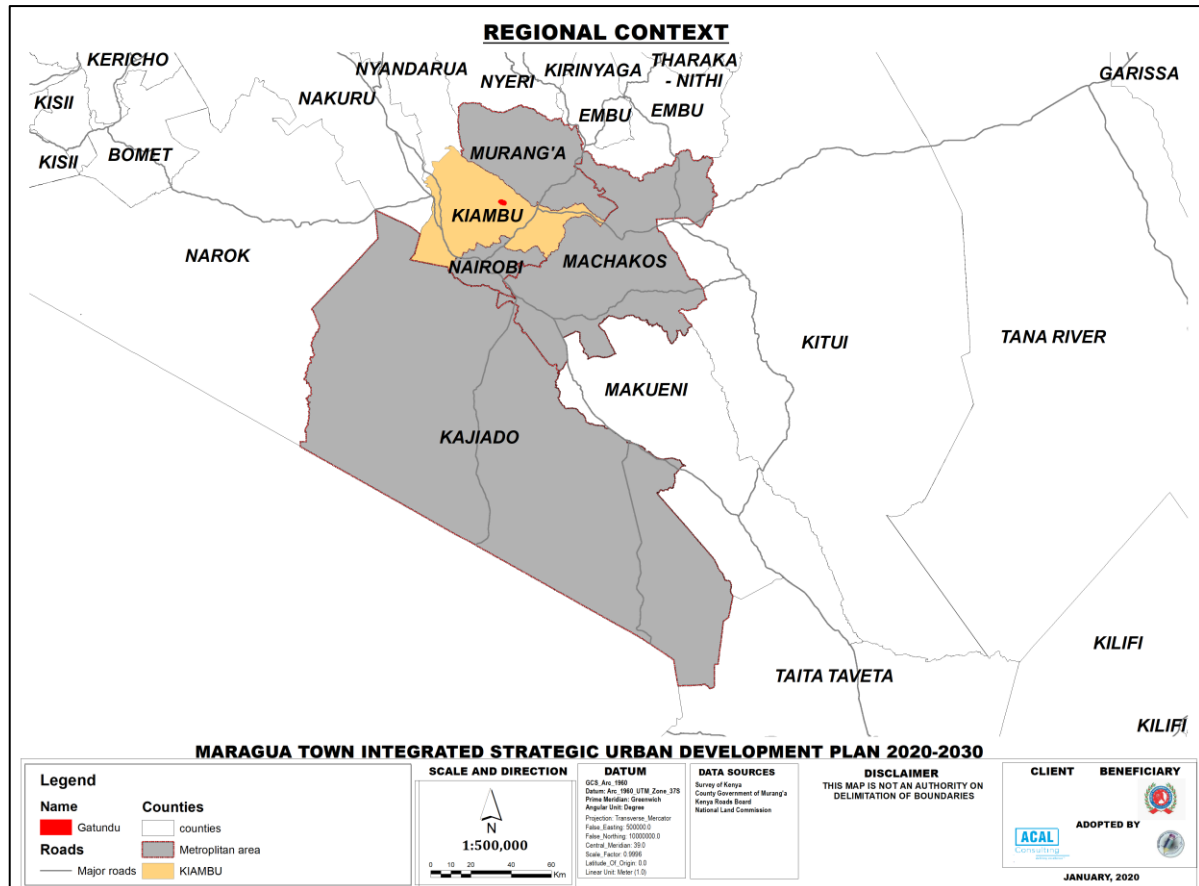


Source: ACAL & BC Gildenhuys, 2020

2.3.2 Regional Context

Kiambu is located within the Nairobi Metropolitan region. The Nairobi metropolitan region comprises fifteen key urban areas including Nairobi City County; Kiambu Municipality, Machakos Municipality, Thika Municipality, Kajado Municipality, Limuru town, Mavoko town, Ruiru town, Kikuyu town, and Tala/Kangundo town

Map 2.2 Gatundu town in the Nairobi Metropolitan Region



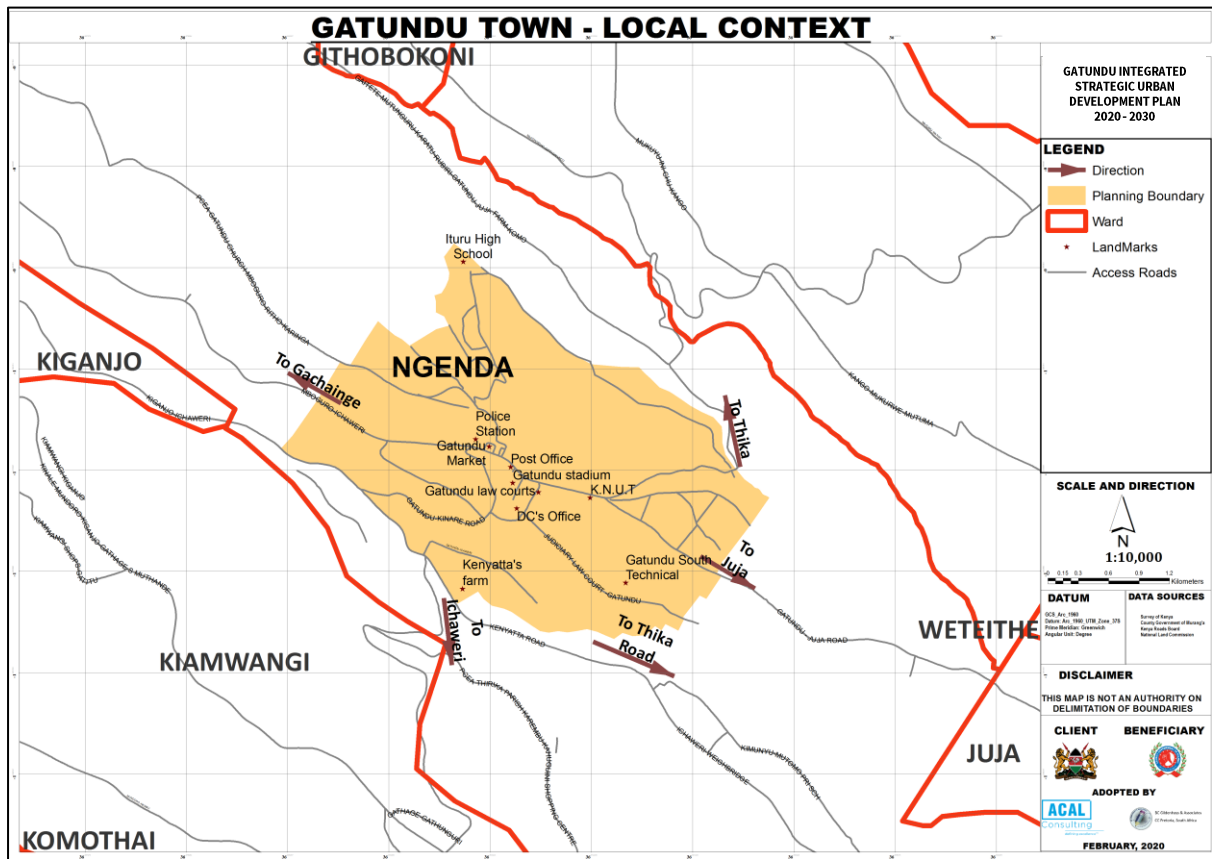
Source: ACAL & BC Gildenhuys, 2020

2.3.3 Local Context

The planning area covers an area of **991 hectares** and falls within Ngenda ward, covering parts of 4 sub locations: Githunguchu, Ituru, Kiranagani, and Kiminyu. Gatundu town is the administrative headquarters of Gatundu South sub-County, geographically located within Coordinates 1°01'00"S, 36°56'40"E. The town is located west of Thika town approximately 29 Kilometers, road distance through Mang'u and north of Kiambu and about 44 Kilometres, road distance through Ruiru.

The main road cutting through the town is Gatundu – Juja Road. The town is connected to the Thika Super Highway through Kenyatta Road.

Map2.3: Gatundu town in the local context



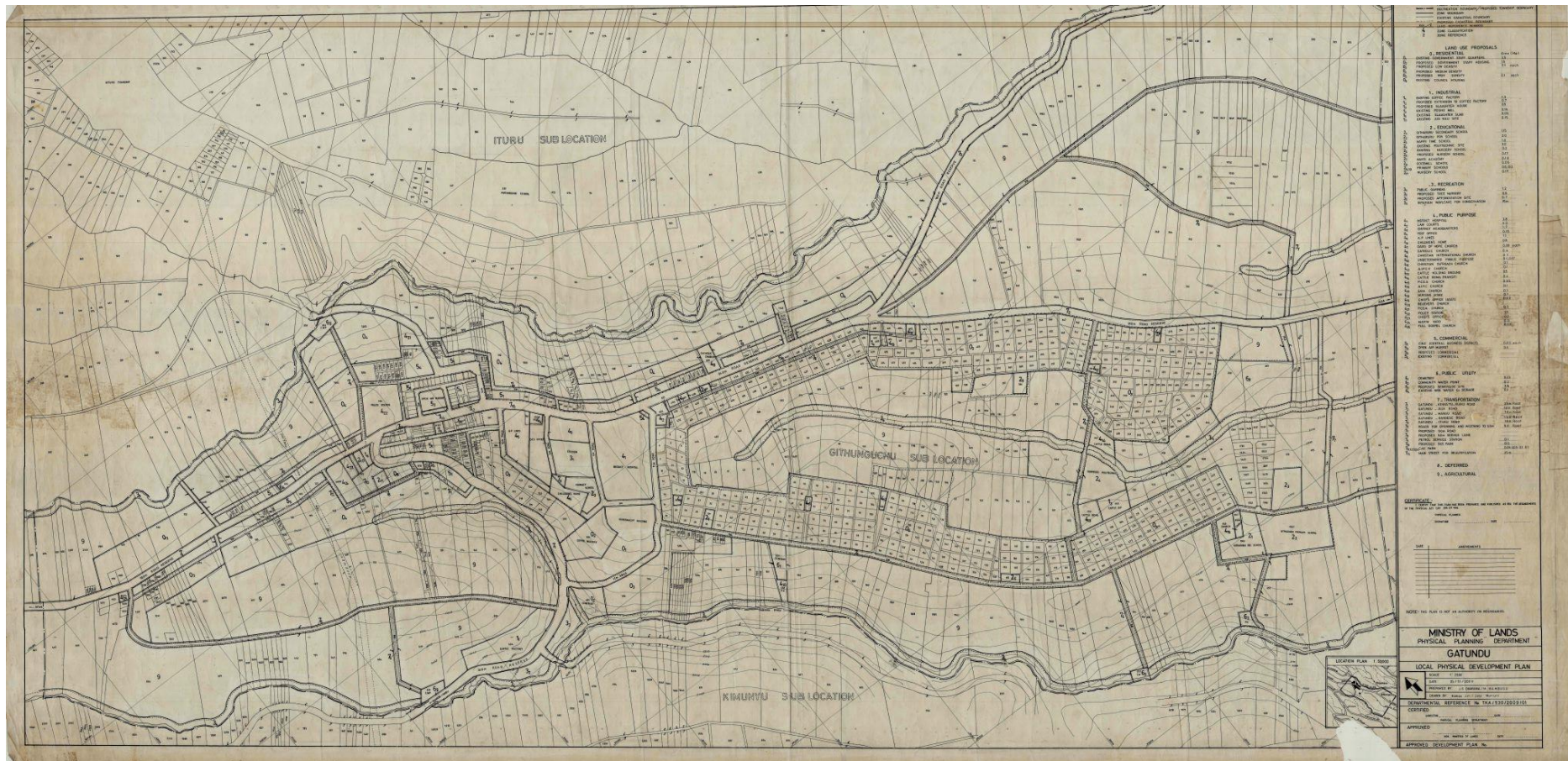
Source: ACAL & BC Gildenhuys, 2020

2.4 Previous Planning Interventions

Gatundu Development plan is the only available plan that was developed in 2009 which covers Ngenda ward. Kiambu County Integrated development plan 2018-2022 also touches Gatundu South as a ward in the plan. The map below shows previous planning interventions from the Gatundu Township Development plan.

Map 2-1: Gatundu Town Previous Planning Interventions

Figure 2-1 Previous Planning Intervention

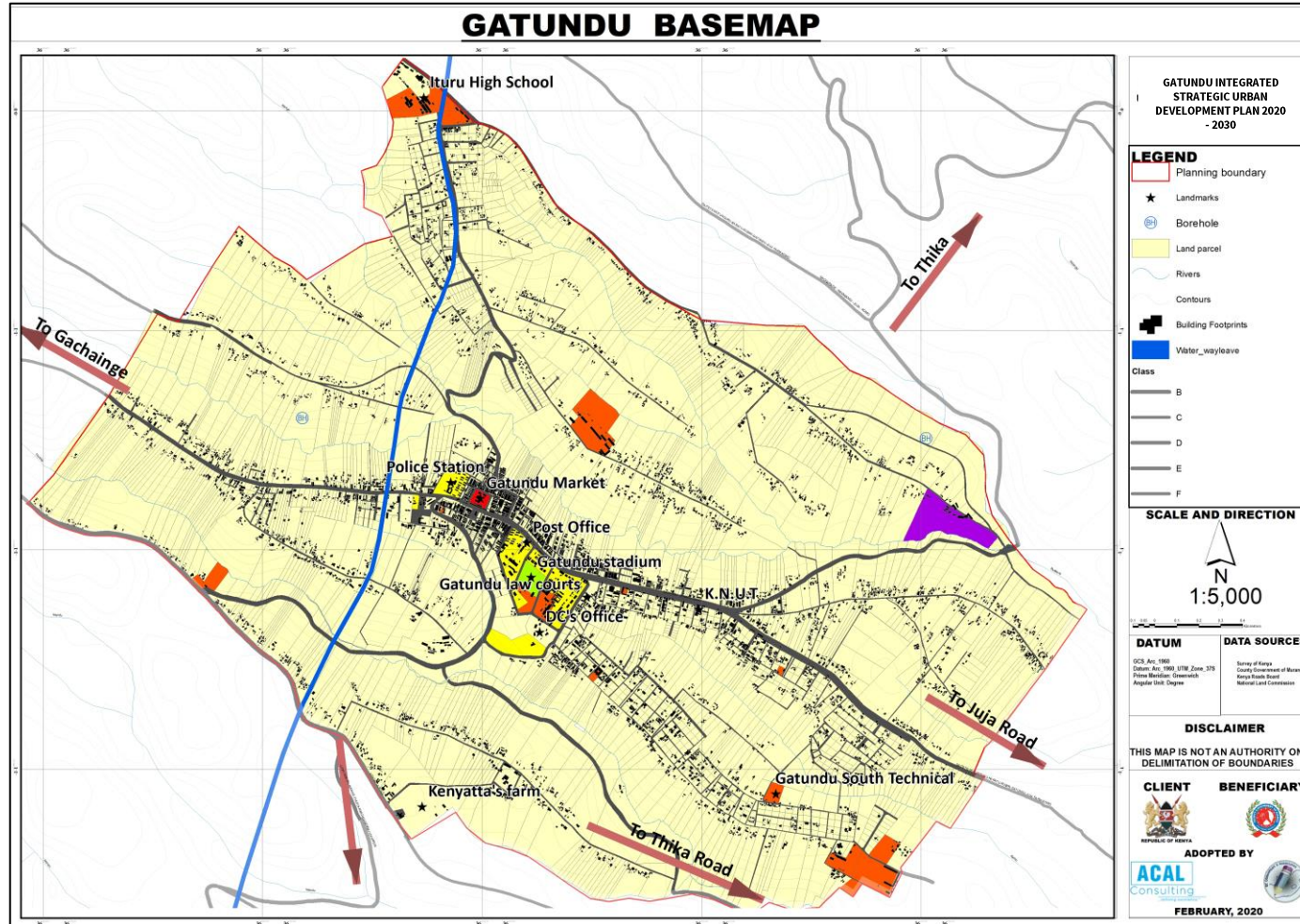


Source: County Government of Kiambu

2.5 Gatundu Planning Area Base map

The key structuring elements of Gatundu planning area include: B30 road and C565 roads.

Map 2-2 Gatundu Basemap



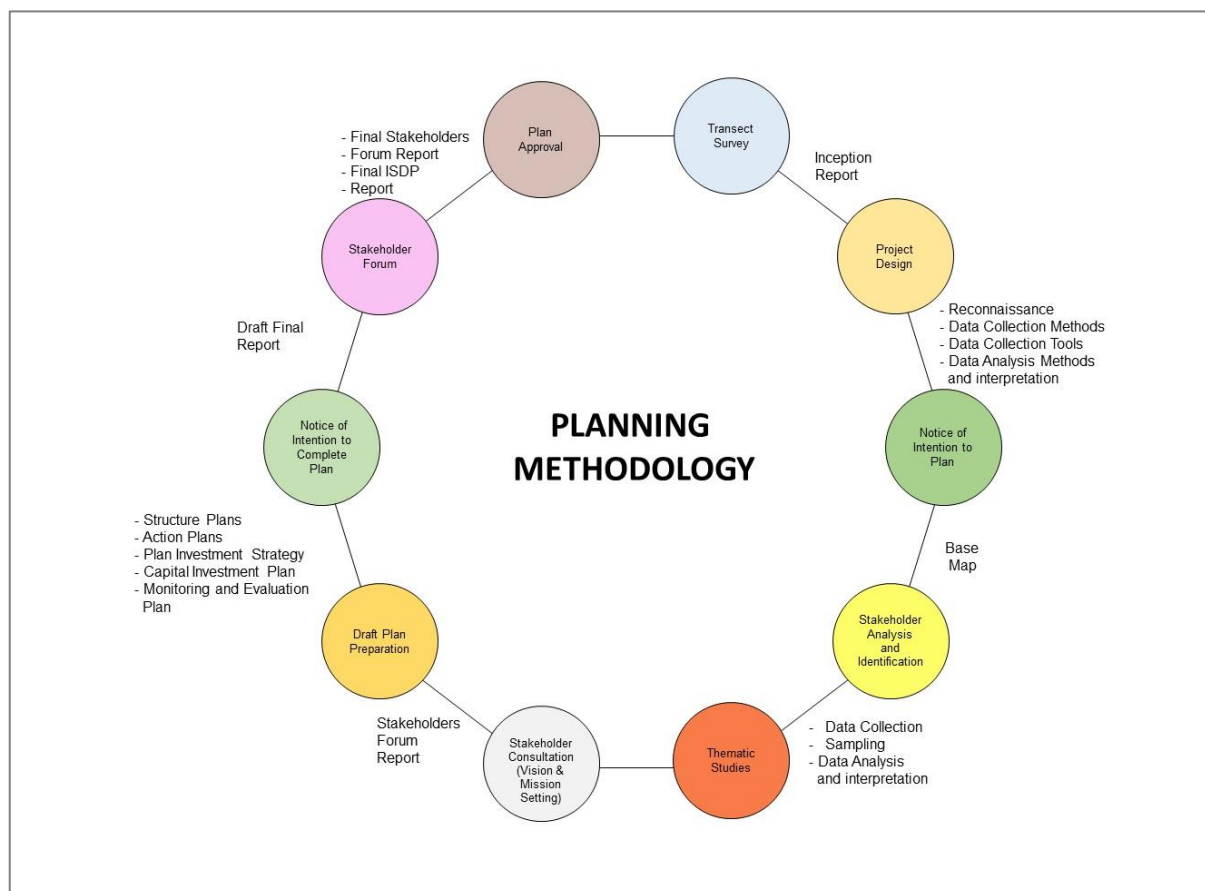
Source: ACAL & BC Gildenhuys, 2020

2.6 Methodology (Planning Approach, Stakeholder Participation, Planning Process)

In undertaking this assignment, the team adopted an integrated and inclusive approach that would yield a relevant, effective and implementable integrated urban strategic development plan. A mixed method approach allowing active participation of the mapped stakeholders was utilized as part of the process taking into account guidelines provided in various statutes including the Constitution of Kenya 2010, Physical Planning Act 1996, the County Governments Act 2011 and the Urban Areas and Cities Act 2012. This was necessary in order to ensure that the processes and the final products are legally compliant.

The planning methodology was also in line with the existing regulatory framework. The methodology is summarized in figure below;

Figure 2-2 Summary of Plan Methodology



Source: ACAL & BC Gildenhuys, 2020

The process had ten major phases namely transect survey, project design, notice of intention to plan, stakeholder analysis and identification, thematic studies, first stakeholder consultations, preparation of draft plans, notice of plan completion, second stakeholder consultations and the final plan approval. All the phases were followed in a participatory manner and were validated through technical working groups and stakeholder workshops.

1. **Transect Survey-** This phase basically involved project commissioning. Preliminary discussions were held between the Client, project beneficiary and project consultants on 2nd June 2015. The main aim was to build consensus on the planning area. The Terms of Reference were also defined to regulate the project and its outputs. On 19th June 2015 a kick-off meeting was called by the project beneficiary for purposes of notifying key players and stakeholders of the intention to prepare the ISDP and confirmation of the planning boundaries. Thereafter, a County Introductory Meeting was convened to introduce the planning team to the county officers. Reconnaissance surveys were conducted for the consultants to familiarize with the project area.

2. **Project Design**- This is where defining the methodology (data collection tools, data collection methods, data analysis methods and interpretation, data synthesis and presentation), the base map with all the cadastral data from the survey of Kenya) and work plan were created. In the work plan Technical Working Groups were to be formed by the County Government which would review each report produced before and after each stakeholder meeting. Two stakeholder forums (first for situation analysis report and second for the Draft Plan validation) were agreed upon by the client and the County during the 20th June 2015 a kick-off meeting.
3. **Notice of Intention to Plan**- To sensitize and attract the involvement of the greater public, notices of Intention to Plan were published in daily newspapers. This was in the Standard and Daily Nation dated 30th July 2015. The notices were also simultaneously placed at strategic notice boards within the local area
4. **Stakeholder Analysis and Identification**- Pursuant to the Constitution of Kenya and Urban Areas and Cities Act, 2012, public participation was a key component of this project. In this regard, stakeholders to be engaged in this project were identified through consultation among various actors including project managers at the Ministry of Lands, Housing and Urban Development, County Government of Kiambu, and Consultants. Actors from different agencies were involved, they were drawn from the National Government, the County Government, opinion leaders, Civil society including NGOs, Churches, professional groups, businessmen, farmers, landowners, resident associations and the general public. Also entailed in this phase was the formation of a technical working group at the county Level.
5. **Thematic Studies** - The data collection process for the project began in August 2016, soon after which the thematic studies (situation analysis) began. The data used for the preparation of this ISUDP was obtained from both primary and secondary sources. Primary data was obtained through field surveys and visits. Methods involved: Land use surveys, where each plot within the planning area was identified in the satellite imagery and its land use mapped. Other attributes of the individual parcels were collected and filled in a mapping sheet. The consultants also held Focus Group Discussions to collect data for problems in various sectors, and conducted key informant interviews for purposes of acquiring firsthand information on various thematic sectors (such as social infrastructure, and physical infrastructure). Secondary data collection was achieved through desktop survey, and this was mainly collected for thematic sectors that had current data (demography and physiography). Secondary sources reviewed included various policy and legal documents, previous plans and maps for various town among other credible and authoritative sources. Following data collection, an assessment of physical and social infrastructure was undertaken alongside the population demand. This was in an effort to determine the needs of the population. Also, an environmental and natural resource evaluation was undertaken. This was aided through various computer programs such as ArcGIS for spatial analysis.
6. **Stakeholder Consultations**- The findings of the situational analysis were validated during workshops and forums held between 6th and 12th May 2018. Visioning was also done at the same time.
7. **Draft Plan Preparation and Development Proposals**- The existing situation was a key consideration in this phase. Preparation of the draft plan involved formulation of structure plan models, Action plans, Capital Investment Plan, Plan Implementation Strategy and Monitoring and Evaluation Plans. The draft plan proposals report was prepared and submitted to the client and the County team for review before being subjected to stakeholders for validation.
8. **Notice of Intention to Complete Plan**- To sensitize and attract the involvement of the greater public, notices of Intention to Complete Plan will be published in daily newspapers. The notices will also be simultaneously placed at strategic notice boards within the local area.
9. **Stakeholder Forum**- the Draft Plan Preparation and Development Proposals will be presented to the stakeholders, receive input and validated if in agreement.
10. **Final Plan Approval**- The process will commence soon after the draft proposals are reviewed by the client and validated by the stakeholders. The Final Plan to be presented to the Kiambu County Assembly for approval.

2.7 Policy and Legal Framework Context

The legal, policy and institutional framework form the anchor to which the ISUDP lies on. The legal, policy and institutional framework also guide the implementation of the plan, hence making it important to the planning preparation process.

2.7.1 Constitutional Framework

The Constitution of Kenya, 2010 gives every Kenyan a right to clean and healthy environment. Other provisions of the Constitution that will guide formulation of the Gatundu ISUDP include:

1. Article 60 (1) - provides that land in Kenya shall be held, used and managed in a manner that is equitable, efficient, productive and sustainable and in accordance to principles such as equity in access to land, security of land rights, sustainable and productive management of land resources, transparent and cost-effective management of land, sound conservation and protection of ecologically sensitive areas.
2. Article 61 (1) (2) - describes land classification in Kenya
3. Article 63 - guarantees the rights of communities to their lands and territories. It states that community land consists of land lawfully held, managed or used by specific communities as community forests, grazing areas or shrines and that it includes ancestral lands
4. Article 66 (1) - states that the state may regulate the use of any land or right over land in the interest of public safety, order, health or land use planning
5. Article 69 - envisions the achievement and maintenance of a tree cover of at least ten per cent of the land area of Kenya.
6. Article 174 - outlines principles of promoting socio-economic development and provision of proximate and easily accessible services which equally depend on proper planning, development and management of utilization of resources.

2.7.2 Policy Framework

2.7.2.1 Global/ Policies

Sustainable Development Goals (Goal 11)

The Sustainable Development Goals (SDGs) define global sustainable development priorities and aspirations for 2030 and seek to mobilize global efforts around a common set of seventeen goals and targets. SDG 11 aims to make cities and human settlements inclusive, safe, resilient and sustainable.

New Urban Agenda

The New Urban Agenda provides a roadmap for building cities that can serve as engines of prosperity, inclusion and centres of cultural and social well-being while protecting the environment. The Agenda also provides guidance for achieving the SDGs and the underpinning actions to address climate change. Additionally, the Agenda provides a framework for urban policies, urban planning and design and urban governance, rules and regulations to enhance municipal finance.

2.7.2.2 National Policies

National Land Use Policy (Sessional Paper No. 1 of 2017)

- Provides legal, administrative, institutional and technological framework for optimal utilization and productivity of land related resources in a sustainable and desirable manner at national, County and community levels.
- Categorization of land uses in the country.
- Advocates for the development of land use plans for the country with full participation of all stakeholders and strict adherence to them enforced.
- Promoting environmental conservation and preservation

National Land Policy (Sessional Paper No. 3 of 2009)

The National Land Policy guides the country towards a sustainable and equitable use of land. It aims at providing a framework for undertaking land use planning and development control in all administrative levels i.e. national, County and town level. It also calls for immediate actions to addressing environmental problems that affect land such as degradation, soil erosion and pollution.

Sessional Paper No. 3 on National Housing Policy for Kenya

The overall goal of the Housing Policy is to facilitate the provision 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. This will minimize the number of citizens living in shelters that are below the habitable living conditions. It will also curtail the mushrooming of slums and informal settlements especially in the major towns.

2.7.3 Legal Framework

Physical and Land Use Planning Act, 2019

The Physical and Land Use Planning Act (PLUPA) which came into effect in August 2019, repealing the Physical Planning Act (Cap 286), is the framework law guiding the preparation of plans and development control in the country.

Section 45 gives the basis for preparation of urban area plans for Cities, Municipalities, Towns or unclassified urban areas. It provides that a County shall prepare local physical and land development plans for these urban areas which could be long-term or short-term development plans. The prepared urban plans are required to be in consistence with the integrated city or urban development plans as contemplated by the Urban Areas and Cities Act, 2011.

Section 46 provides for the purposes for which the urban plans shall be prepared including: zoning, redevelopment, regulating land use and developments, providing sectoral coordination framework and guiding the infrastructure provision. Sections 47 and 48 give provisions for the initiation and preparation of the plans.

Section 54 provides that the plans made under the Urban Areas and Cities Act, 2011 shall with necessary modifications be prepared and approved in accordance with this Act. This section as read together with section 45 gives a legal grounding for the preparation of Integrated Strategic Urban Development Plans.

County Government Act, 2012

The Act gives mandate to the County Governments, with the role of county planning according to the Constitution of Kenya. No public funds will be appropriated to counties without preparation of spatial plans. The Act requires the County Governor to promote and facilitate citizen participation in the development of policies and plans, and delivery of services in the County. In addition, the Act provides that all plans prepared for a County be approved by the respective County assembly.

Other sections of the Act relevant to the formulation of the Gatundu ISUDP include:

Sec 102 (c) and Sec 103 (f) - protect and integrate rights and interests of minorities and marginalized groups and communities; and, integrate under-developed and marginalized areas to bring them to the level generally enjoyed by the rest of the Country.

Sec 103 (i) - achievement and maintenance of a tree cover of at least ten per cent of the land area of Kenya as provided in Article 69 of the Constitution.

Urban Areas and Cities Act, 2011

The Act establishes a legislative framework for classification of areas as urban areas or cities, governance and management of urban areas and cities and participation by the residents in the governance of urban areas and cities.

Urban Management Boards are established by the Act with the function to oversee the affairs of urban areas. This Act was amended through the Urban Areas and Cities Amendment Act reclassifying urban areas as follows:

- A city should have a resident population of 250,000 residents.
- A municipality should have a resident population of at least 50,000 residents,
- Every headquarters of a County government shall be conferred the status of a municipality, whether it meets the criteria for a classification as a municipality.
- A town should have a resident population of 10,000 residents.
- A market center should have a resident population of 2,000 residents and have an integrated urban area development plan.

The National Land Commission Act, 2012

States the functions, powers of the NLC such as to monitor and oversee responsibilities over land use planning throughout the country. In addition, this Act provides for the management and administration of public, private

and community land in accordance with land policy principles. It provides a linkage between the commission, County government and other institutions dealing with land.

Land Act, No. 6 Of 2012

The Act provides power to revise, consolidate, and rationalize land laws as well as provide for the sustainable administration and management of land and land-based resources.

Environmental Management Coordination Act, 2012, Amendment (2015)

EMCA provides for establishment of an appropriate legal and institutional framework and procedures for management of the environment. It provides regulations for the conservation and sustainable use of resources on wetlands, riverbanks and land for the benefit of the people and communities living in the area. This Act also offers preliminary provisions for the regulation of solid waste, industrial waste, hazardous wastes, pesticides and toxic substances, biomedical wastes and radioactive substances.

Water Act, 2016

This Act provides for sustainable management, conservation, use and control of water resources in the country. The Act recognises that water related functions are a shared responsibility between the national and county governments. It creates a framework for water resources management (focusing on management and regulation of the use of water resources), as well as water service provision (water supply and sewerage services).

Energy Act, 2019

This Act replaces the Energy act 2006, and consolidates the laws relating to energy in Kenya. The Act further delineates the functions of the national and devolved levels of government in relation to energy, providing for the exploitation of renewable energy sources, regulation of midstream and downstream petroleum and coal activity and for the supply and use of electricity and other forms of energy.

Agriculture Fisheries and Food Authority Act, 2013

This Act provides for the establishment of an Agriculture Fisheries and Food Authority. It also provides for the development of policy guidelines by the authority on preservation, utilization and development of agricultural land and related matters.

2.7.4 Institutional Framework

The laws discussed above have created institutions that will play a key role in managing the various processes related to the plan.

Table 2-1 Institutional Framework

Institutional Framework	
Institution	Role
Ministry of Transport, Public Works Infrastructure, Housing, Urban Development	The Ministries hosts the State Department for Housing and Urban Development. One of the key functions of the ministry is Urban planning and development. The Nairobi Metropolitan Services Improvement Project (NaMSIP) is housed in this department. The mission of NaMSIP is to support the development of an inter-connected, sustainable dynamic economy.
Ministry of Lands and Physical Planning	<ul style="list-style-type: none"> ▪ Has mandate to ensure efficient administration, equitable access, secure tenure and sustainable management of Land resources. ▪ Is also in charge of <ul style="list-style-type: none"> ○ Physical Planning: Provision of advisory and National Physical Planning services, general principles on land planning and coordination of planning

	<p>by counties in terms of policies, standards and guidelines and technical assistance and capacity building for counties on Physical Planning matter</p> <ul style="list-style-type: none"> ○ Land Adjudication and Settlement: Ascertainment of land rights and interests, land consolidation and adjudication as well as Arbitration of Land disputes. ○ Survey: The official Government agency for land surveying and mapping. ○ Land Administration: Administration and management of private land, control and regulation of land use and property in respect of all categories of land and maintenance of land records. ○ Land Valuation: Valuation of land and assets for stamp duty, Government leasing including foreign missions, asset valuation, rating and development of National Land Value Index. ○ Land Registration: Registration of land transactions and other legal documents and determination of land and boundary disputes in collaboration with Surveys Department
NLC	<ul style="list-style-type: none"> ▪ The National Land Commission is concerned with the management and administration of the public land in Kenya
Ministry of Water and Irrigation	<ul style="list-style-type: none"> ▪ Trustee of all water and natural resources in the country. ▪ Key roles and functions include water policy formulation; water resources management policy; apportionment of water resources and abstraction licensing; appointment of water undertakers; regulation, setting and approval of standards; approval of water tariffs, levies, rates and charges; development and operation and maintenance of urban and rural water supply systems; wastewater treatment and control; water quality and pollution control; catchment area conservation; water conservation; irrigation and dam construction schemes; flood control and land reclamation. ▪ The ministry has several institutions that enables it achieve its objectives. These include: Water Resource Authority; overall responsibility of overseeing sustainable development of the national water resource base. Water Service Boards (WSBs): ensuring adequate access to water and sanitation services within their jurisdictions. Water Services Regulatory Board (WSRB): national regulator with responsibility for providing guidelines on tariff setting and quality standards. Water Services Trust Fund (WSTF): provide financial support to the rural water sector through grant finance for capital investments & Water Service Providers: Provide water services to consumers, ranging from public urban utilities, to small private network.
Ministry of Environment, & Forestry	<ul style="list-style-type: none"> ▪ Mandate for Environment and Natural Resources Policy formulation, analysis and review, as well as Promoting, monitoring and coordinating environmental activities and enforcing compliance of environmental regulations. Institutions under it include: National Environment Management Authority: overall environmental watchdog; Kenya Water Towers Agency (KWTA) protection of water towers, Kenya Forest Service (KFS) custodian of Forests, National Environment trust Fund (NETFUND). National Environment Council: facilitate research intended to further the requirements of environmental management, National Environment Tribunal: review administrative decisions made by NEMA relating to issuance, revocation or denial of license and conditions of license.
Kiambu County Government	<ul style="list-style-type: none"> ▪ The county government will be in charge of adopting and implementing the plan.

2.8 Other Plans & Strategies

2.8.1 Vision 2030

Vision 2030 is the blueprint for Kenya's long-term national development. It is anchored on three main pillars: Economic, Social and Political. The Gatundu ISUDP seeks to transform Kenya into "a newly industrializing, middle income Country providing a high quality of life to all its citizens in a clean and secure environment" through improvement of key thematic sectors such as Infrastructure; Energy; Security; Tourism; Agriculture; Wholesale/Retail Trade; Manufacturing; Financial Services; and Business Process Outsourcing. The Gatundu ISUDP wishes to feed into vision 2030 by focusing on agriculture, trade, manufacturing and financial services.

2.8.1.1 Big Four Agenda

From December 2017, the national government announced the Big 4 Agenda that would be prioritized in resource allocation. The big 4 agenda have been mainstreamed into vision 2030, Medium Term Plan (MTP) 3. The focus is on implementation of policies, programmes and projects designed to achieve the "Big Four" initiatives: Industrialization, Manufacturing and Agro-processing; Affordable Housing; Food and Nutrition Security; and Universal Health Coverage. Implementation of these four initiatives is expected to not only support higher economic growth and faster job creation, but also reduce the high cost of living affecting many Kenyans

2.8.2 The National Spatial Plan

The NSP defines the general trend and direction of spatial development for the country by providing a framework for better national organization and linkages between different activities within the national space hence informing the future use and distribution of activities.

The national spatial plan seeks to provide a framework for functional human settlements, enhanced agricultural productivity, planning and managing natural resources and the environment, providing a framework for infrastructure provision, promoting industrial and commercial development and the enhancement of good governance.

2.8.3 Nairobi Metropolitan Strategies

In 2008, the National Government prepared the Nairobi Metro 2030 Strategy aimed at making the Nairobi metropolitan region 'A World Class African Metropolis' which is safe secure and prosperous. The Strategy forms part of larger national plans such as the Kenya Vision 2030 document. Due to the dominance of the Nairobi Metro, the overall Strategy has national and regional development implications specifically for surrounding counties such as Kajiado, Machakos and Kiambu. Sustainable development that focuses on social (liveability), economic (competitiveness) and environmental sustainability underpin the Strategy.

2.8.4 Draft Kiambu County Spatial Plan (CSP)

In compliance with Chapter 11 Section 110 of the County Government Act, 2012, the county government has prepared a draft Kiambu County Spatial Plan (KCSP). The draft KCSP is a long term physical development framework for a period of ten (10) years (2015-2025) anchored on the vision '*to transform Kiambu into the most developed and prosperous county, economically and socially through sustainable development and good governance*'. The plan integrates three development models namely: agricultural and rural development, urbanisation and industrialization, tourism and environment, and outlines the practical steps over the next decade and spatial expression of the development course in next 10 years.

2.8.5 Kiambu County Integrated Development Plan (CIDP)

The CIDP provides the County's vision for the next five years while detailing various projects and programme per sectors with their location for implementation. The CIDP outlines proposals for budgetary allocations to various sectoral programmes such as establishment of industrial parks, upgrading of road networks, among others.



GOVERNMENT
OF KENYA



COUNTY GOVERNMENT
OF KIAMBU

PART II: SITUATIONAL ANALYSIS

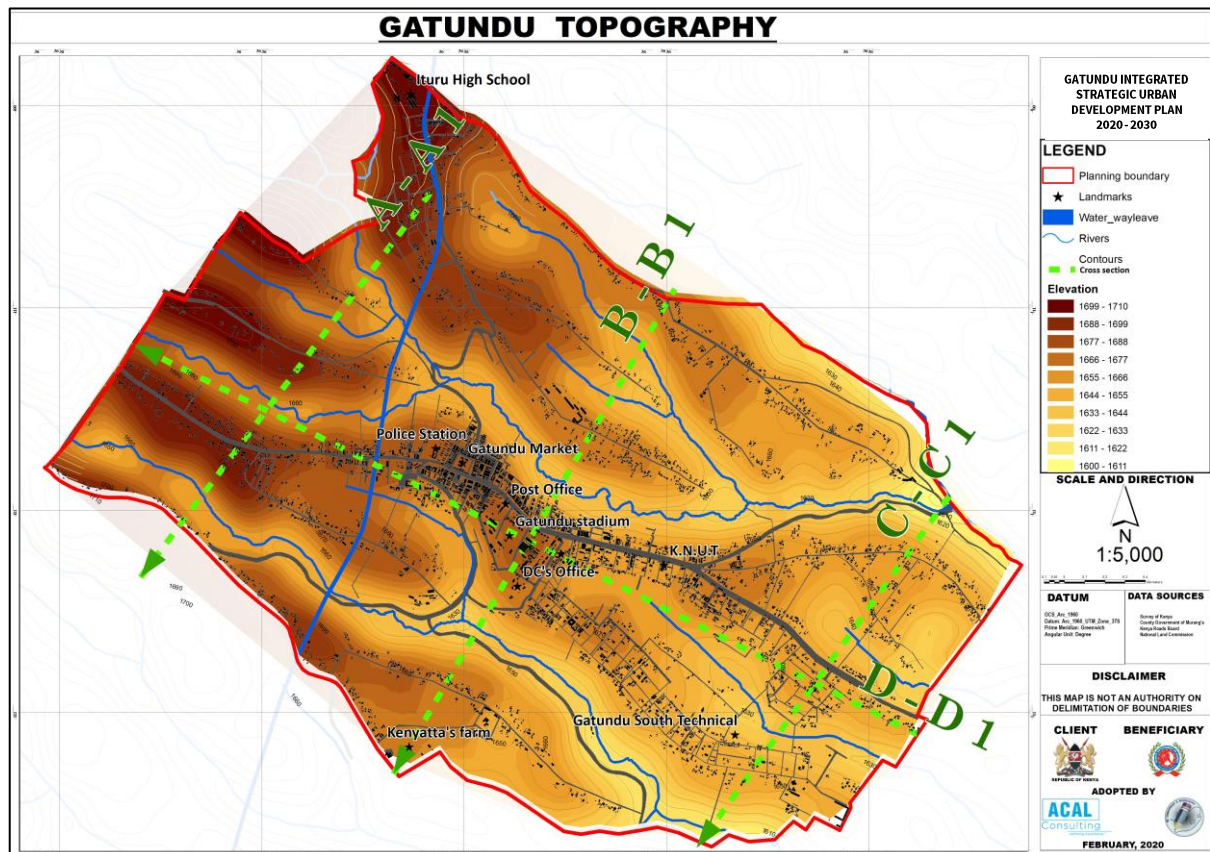
3 CHAPTER THREE: PHYSIOGRAPHIC CHARACTERISTICS

The chapter details the physiographic elements found in Gatundu planning area with focus on the soils and geology, hydrology, topography, vegetation and climate, which have an influence on the planning area.

3.1 Topography

The ridges and valleys that characterise the planning area run parallel to each other from the North West towards South Eastern directions and ultimately converge within river valleys. The highest point is 1718 metres above sea level, while the lowest point is 1611 meters above sea level.

Map 3-1 Topography of Planning area



Source: ACAL & BC Gildenhuys, 2020

3.1.1 Slope

Understanding slopes and the impact thereof on development is important. The Physical Planning Handbook³ provides the following guidelines regarding slopes:

- Slopes between 5 degrees to 15 degrees are considered as medium slopes and could be developed with the implementation of slopes control measures;
- Slopes between 15 degrees to 25 degrees could be developed with the implementation of control measures; and
- Areas with slopes that exceed 25 degrees are not allowed any development, and these slopes are considered unsafe for human settlement.

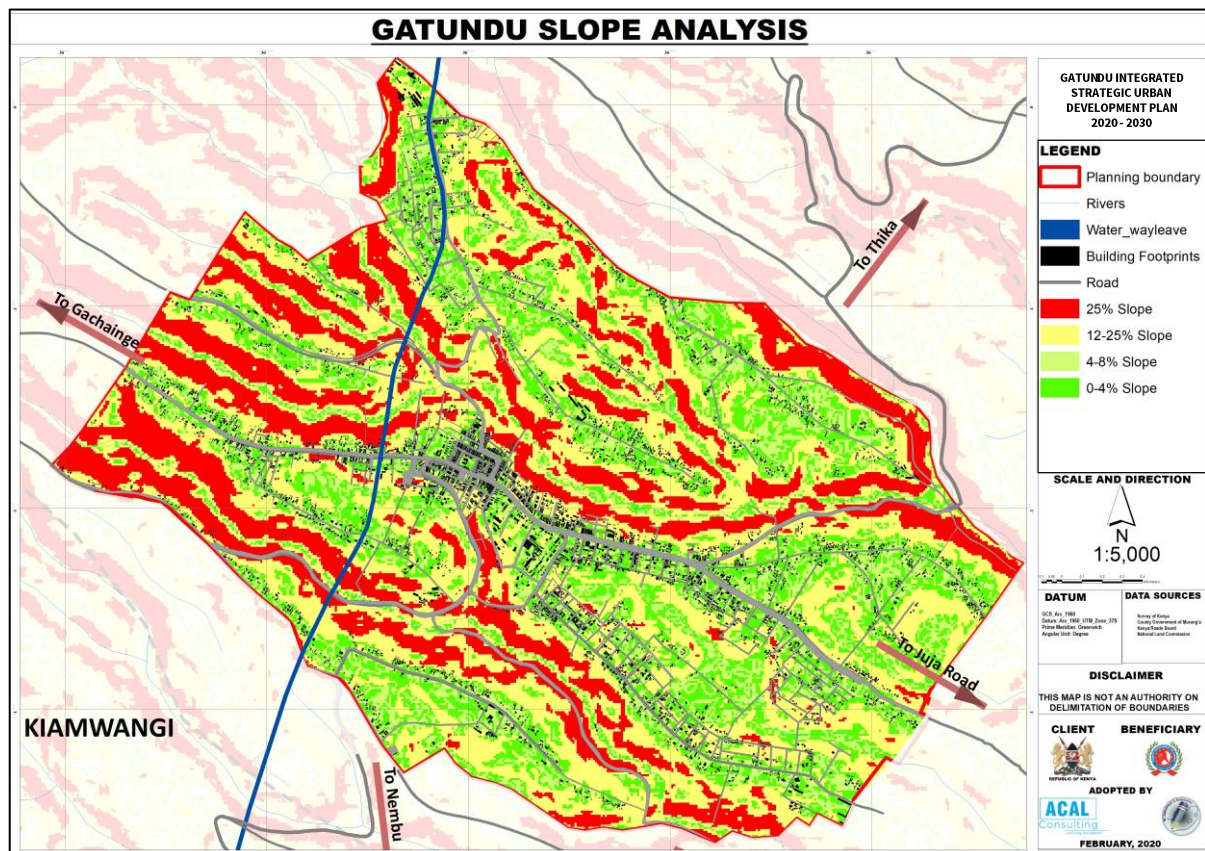
³ Ministry of Lands, Physical Planning Department, Physical Planning Handbook. Undated.

An analysis of the slope reveals that across the ridges, the average slope is 10.4 percent on the upper zone with maximum slope of 25.6%, while the average slope in the lower zone of the planning area is 9.4% on the lower zone with maximum slope of 26%. Along the ridges, the average is gentle with an average of 4.1% and a maximum slope of 15% (see map 3-2).

The settlement pattern of Gatundu is linear, flowing along the ridge to maximize on the gentle slope along the ridge. This further explains the little linkages across the ridges due to challenges of overcoming the terrain.

An analysis of slopes shows that more than 70% of the planning area is developable, while 30% of the area is not suitable for any development. However, about 44.6% of the developable area has some terrain challenges though falling below the threshold of 25% provides challenges with vehicle access. Only 3.7% of the total area is without slope constraints with slope percentages of less than 10%.

Map 3-2 Slope Analysis



Source: ACAL & BC Gildenhuys, 2020

3.1.2 Geomorphology and Landforms

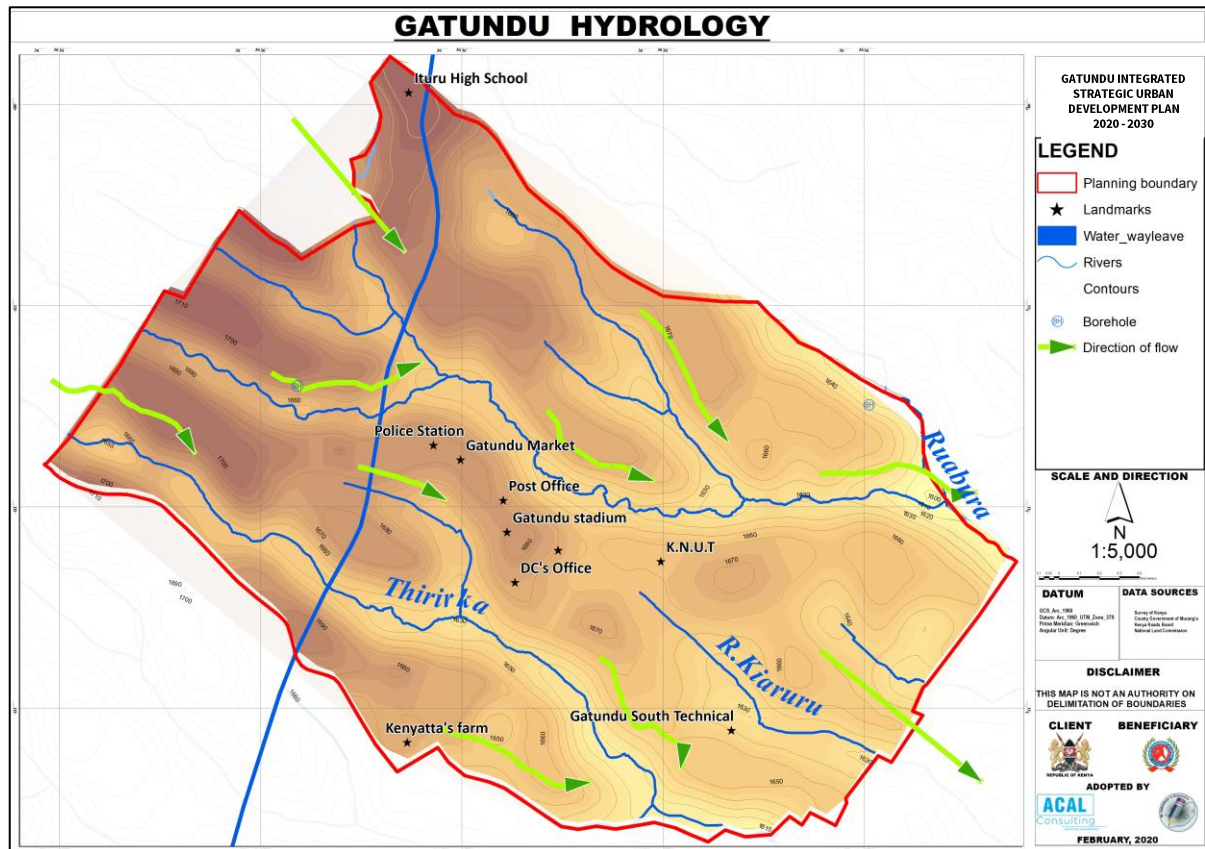
The geomorphology of the area consists of a highly dissected platform with narrow ridges separated by deep valleys and sometimes gorges, forming an undulating terrain. The planning area falls within the lower highland zone of Kiambu County. The area is characterised by hills, plateaus, and high-elevation plains. The area lies between 1,600-1,800 metres above sea level. (Kiambu CIDP, 2018-2022).

The landscape is characterised by short spans of ridges and deep gorge valleys that run parallel to each other with close proximity and ultimately converging within river valleys. These ridges constrain development due to the steep slopes involved. Development along these ridges are mostly restricted to flatter areas on the crests, with the land down the slopes into the valley sections remaining free of development or in some instances used for small-scale agricultural.

3.2 Hydrology and Drainage

Main rivers in Gatundu include: Thirikika, Riabura, Niembu and the Kiariga River. The rivers flow from the Aberdare ranges. There are several small streams running across the area. Gatundu also has a dam; Theta Dam. The proximity of the area to Aberdare Forest Ecosystem, contributes to the abundant rivers and streams draining the catchment into Athi Catchment.

Map 3-3 Hydrology



Source: ACAL & BC Gildenhuys, 2020

Most water courses run in a northwest to southeast direction through the planning area along the valleys as depicted in Map 3-3.

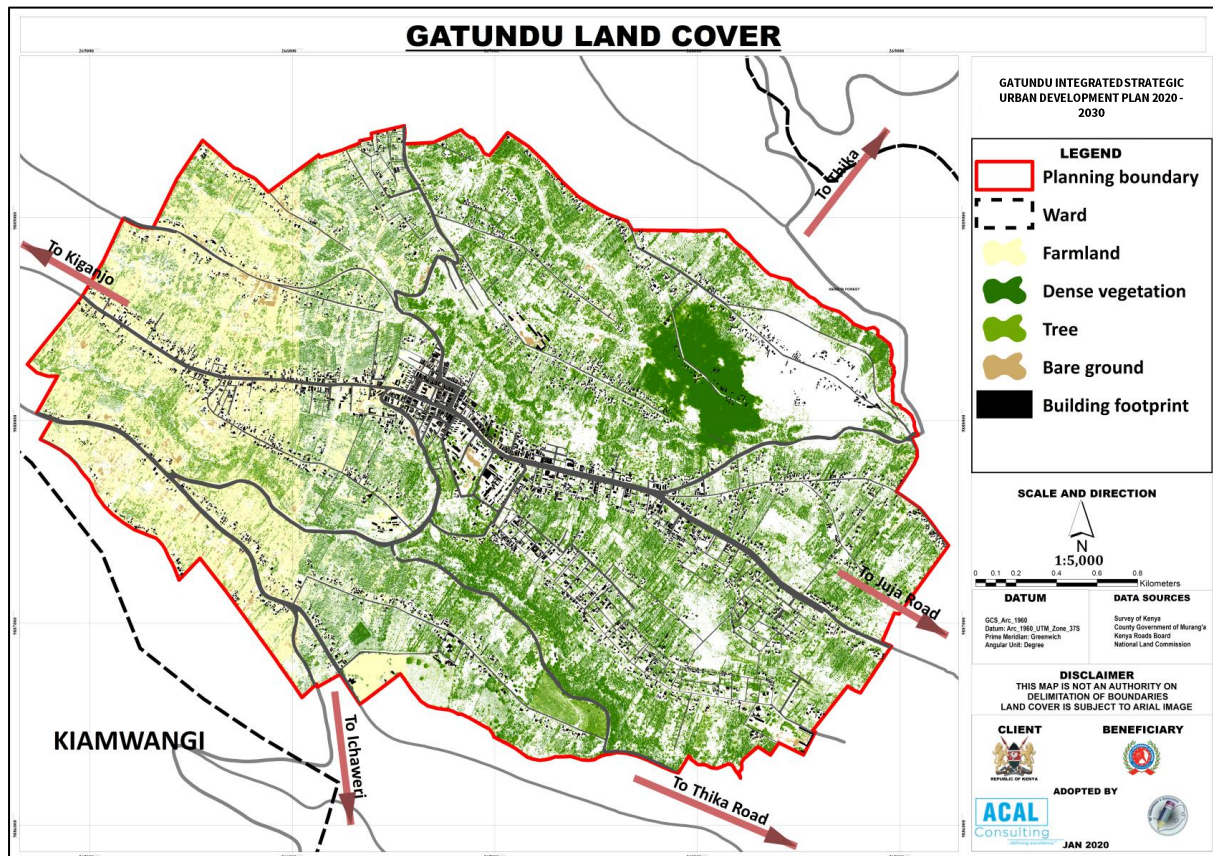
3.3 Geology and Soils

The geology of the Gatundu Sub County is composed of Pyroclastic rocks with minor intercalations of basalts all of Pliocene to Lower Pleistocene Age. Rock exposures are found at riverbeds in deeply incised valleys.⁴ The two major rocks found in Gatundu planning area are Basalt (used in construction (e.g. as building blocks or in the groundwork) and Pyroclastic unconsolidated rocks. The geomorphology of planning area consists of a highly dissected platform with narrow ridges separated by deep valleys and sometimes gorges. Exposures of Pyroclastic rocks in the river courses are rare and mainly confined to the harder bands forming waterfalls (*ibid*).

The main types of soils within Gatundu town are kaolinities. Soils in the landscape are highly fertile, very deep, well drained, dark reddish brown, in many places (see map 3-4)

⁴ Athi Water Service Board (2016) Environmental and Social Impact Assessment Study Report for Gatundu Sewerage Project

Map 3.6: Land cover Map

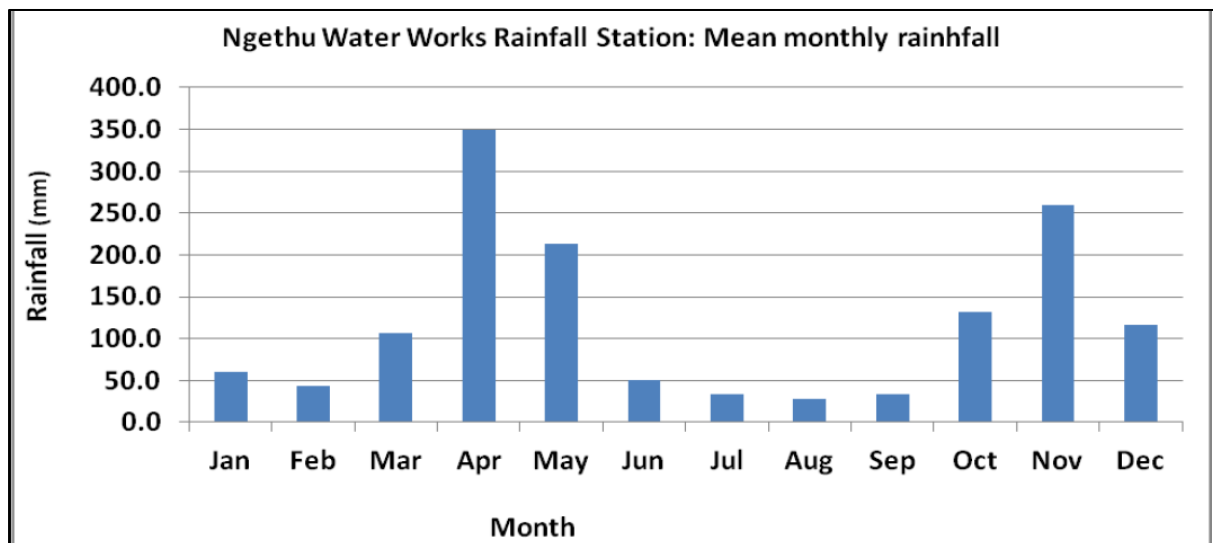


Source: ACAL & BC Gildenhuys, 2020

3.5 Climate

The planning area falls in the “Lower Highlands Zone” as per the Kiambu County Topographical Zones. Rainfall is highly influenced by altitude and comes in two seasons. Long rains occur between March to May and short rains between October and December. The highest rainfall amounts are received during the month of April while the lowest rainfall amounts are received in the month of September. The annual mean rainfall varies from 1,070mm to 1,750mm per annum as deduced from the analysis of rainfall records at Ngethu Water Works Station No.9036308

Figure 3-1 summaries rainfall patterns



3.5.1 Temperatures

Temperature in the planning area is influenced by altitude. Mean annual temperature varies between 17°C and 25°C. The mean temperature in the project area is 26°C. July and August are the months during which the lowest temperatures are experienced, whereas January to March is the hottest months

3.6 Emerging Planning Issues and Opportunities

The physiographic character of Gatundu town presents various opportunities and challenges to development.

Table 3-1 Emerging Issues on physiographic characteristics

Topography and slope	
Key Highlights	Opportunities
<ul style="list-style-type: none"> An analysis of slopes shows that more than 70% of the planning area is developable. Some of the developable areas still face slope related constraints. The nature of terrains has an influence on human settlements resulting in a linear pattern of development. The developments are concentrated on the relatively flat areas and the transport corridors. There is limited north-south linkages due to the terrain and the cost of overcoming the deep valleys and rivers Accessibility in some areas is a challenge due to high cost of overcoming terrain during road construction. 	<ul style="list-style-type: none"> The hilly nature of the land provides an opportunity for scenic views thus can be tapped for tourism. Provision of water and sanitation can benefit from the terrain to make use of gravity thus no need for pumping The terrain also makes it easy to drain the area Topography shapes human settlements pattern thus easy to plan guided by the same
Hydrology and Drainage	
Key Highlights	Opportunities
<ul style="list-style-type: none"> Plenty of rivers and streams drain through the area A water fall exists within the town along Thiririka River 	<ul style="list-style-type: none"> Water resources can be tapped for commercial, industrial and domestic use Studies should be done on small hydro potential along Thirika river
Geology and Soils	
Key Highlights	Opportunities
<ul style="list-style-type: none"> The soils are relatively fertile and well drained The geological structure consist of stable basement rock 	<ul style="list-style-type: none"> Soils support agriculture (subsistence and commercial) Stable basement rock ideal for development activities
Vegetation	
Key Highlights	Opportunities
<ul style="list-style-type: none"> Area is rich in Vegetation cover comprising of both tree cover, shrubs and food crops 	<ul style="list-style-type: none"> Areas with steep slopes can be used for farm forestry and conservation thus enhancing vegetation cover.
Climate	
Key Highlights	Opportunities
<ul style="list-style-type: none"> Climate influenced by altitude Rainfall well distributed throughout the year Temperatures are relatively stable with minimal variations Risk of weather variability due to climate change 	<ul style="list-style-type: none"> Climate can support agriculture productions and human settlements Opportunities for climate change adaptation projects

Source: ACAL & BC Gildenhuys, 2020

4 CHAPTER FOUR: POPULATION AND DEMOGRAPHY

This chapter details the population and demographic characteristic of the planning area. The data from this section has been analysed to inform planning proposals. The population is further projected to cover the planning period of 10 years. The chapter also analyses the socio-cultural aspects within the planning area.

4.1 Population Size and Distribution

The population size for the planning area is approximately 10,184 persons according to the 2009 population census data figures. The Average Household size in Gatundu is 4 persons. Kirangari is the most populated followed by Githunguchu, Ituru and lastly Kimunyu. The Table below indicates the population distribution in the planning area.

Table 4-1: Population Density in Gatundu town.

SUB LOCATION	POPULATION	AREA	DENSITY / km.sq
KIMUNYU	1330	1.5872	838
GITHUNGUCHU	2895	2.7033	1071
KIRANGARI	3938	2.0000	1969
ITURU	2021	2.8914	699
Total	10184		

Source: ACAL & BC Gildenhuys, 2020

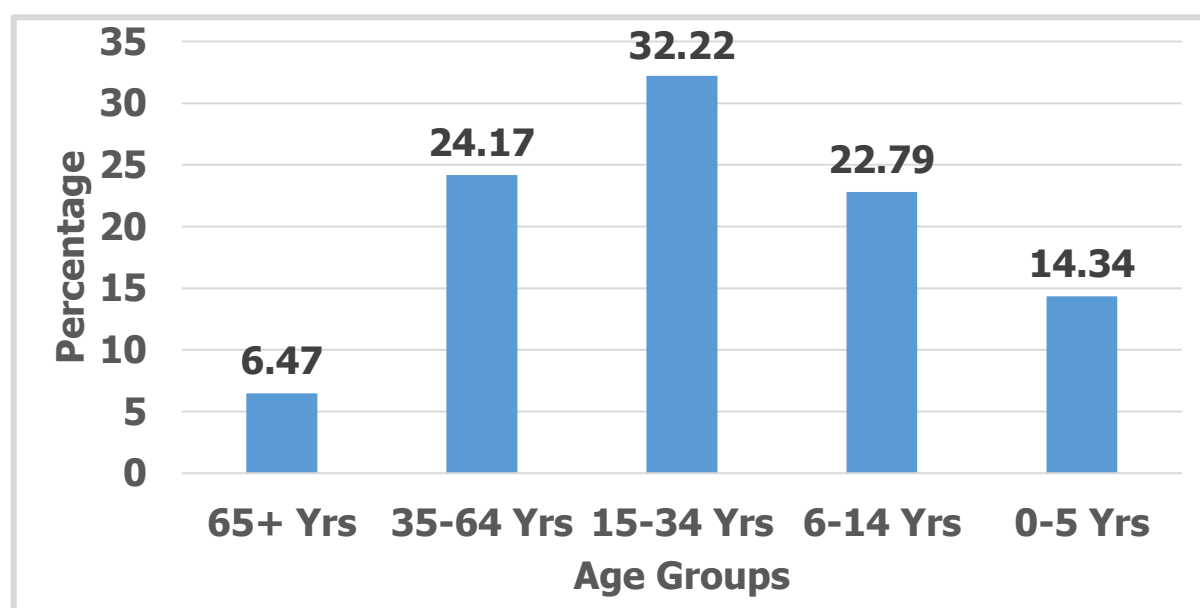
4.1.1 Population Structure

An analysis of population within the planning area reveals a high number of youthful population and the productive age (15-64yrs) showing a large demographic dividend.

The age group 15-34 years form 32.2% of the total population while 35-64% form 24.2% of the total population. This population structure reveals an abundance of labour force thus the need for generation of opportunities for gainful engagement. About 14.3% of the population belongs to the early childhood age of 0-5 years, thus showing the demand for maternal health care and early childhood education facilities.

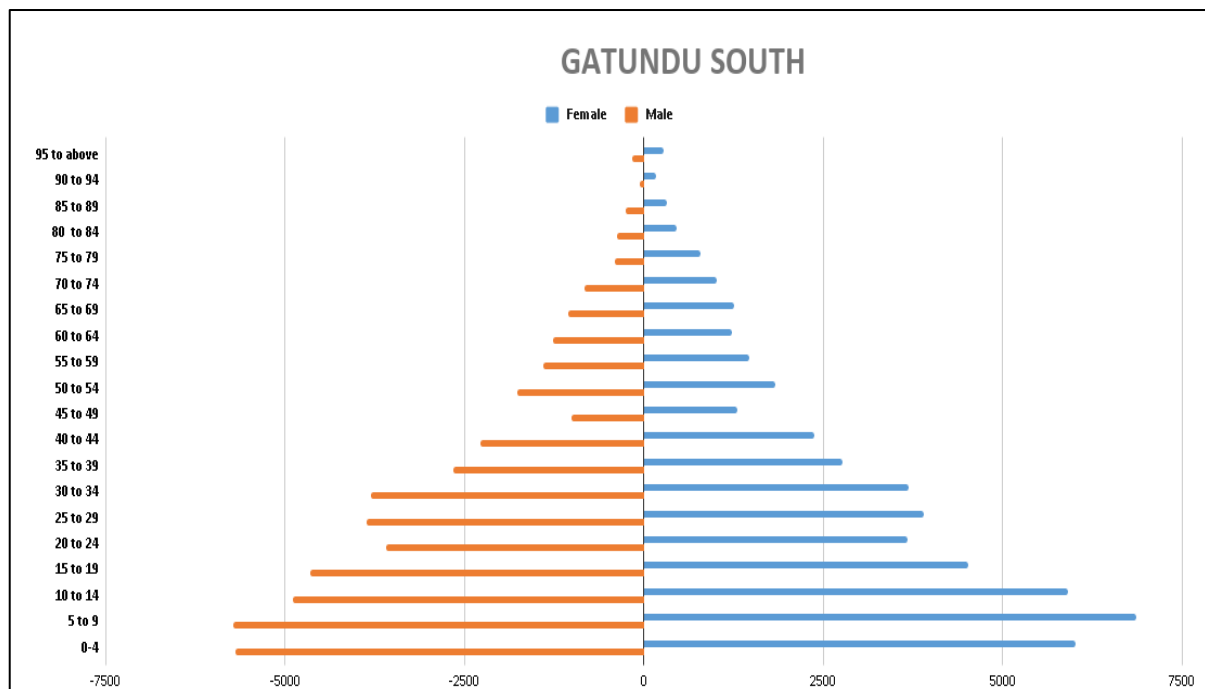
Chart 4-1 and Figure 4-2 summarises the distribution of age cohorts within the planning area.

Figure 4-1 Age Distribution by Percentages



Source: KNBS 2013

Figure 4-2 Population distribution by age group in Planning Area

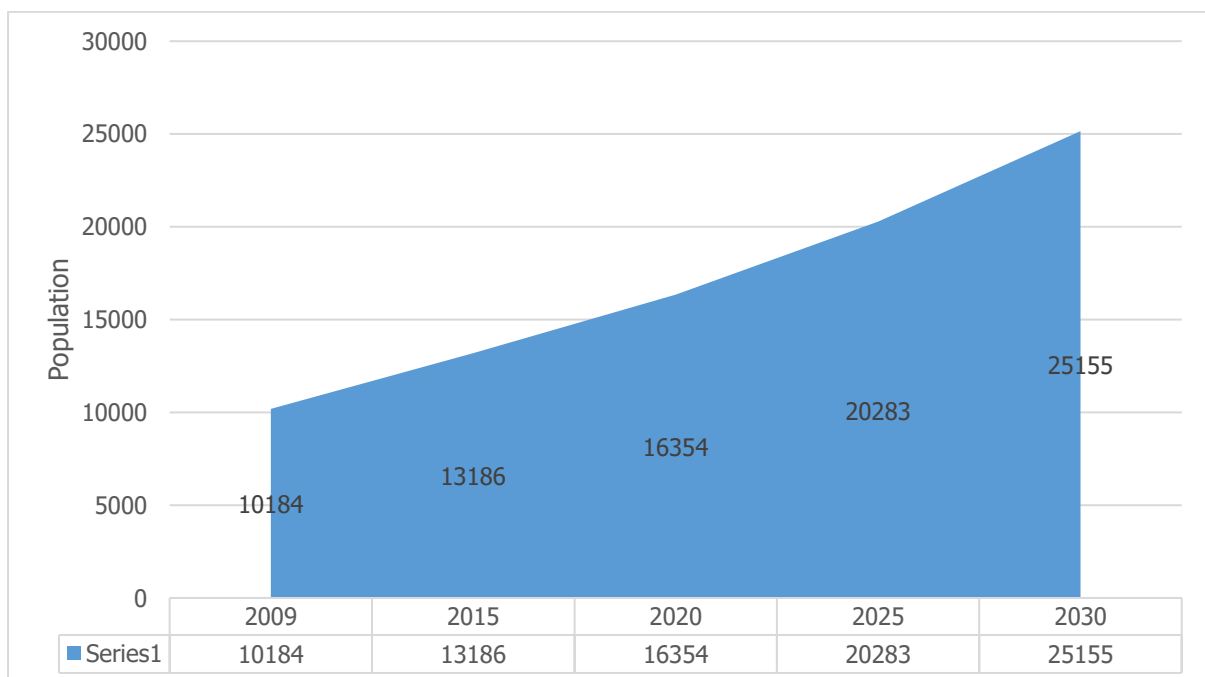


Source: Modified from KNBs 2010

4.1.2 Population Projection

Based on the urban population growth rate of 4.4 % for the country, the projected population projection for the planning area by the year 2030 will be approximately 25155 persons. Chart 4-3 presents the population projection from 2009 to the year 2030.

Chart 4-1 Population Projection



Source: KNBS, 2010

4.2 Demography

4.2.1 Average Household Size

The majority of the households (55%) in Kiambu County have an average household size of less than 3. In the planning area, 46.9% of the have less than 3.8 while 43.6% of households have 4-6 members (CIDP 2018-2022, KNBS 2013). In general, Kiambu County has a transitional population structure where the number of 0-14-year olds currently constitutes 35% of the total population. Within the planning area, the youthful population (15-34-year olds), currently constitutes 31% of the total population and is increasing. This factor has contributed to the high working age population of 55% in the planning area and is expected to continue growing as the town grows.

4.2.2 Well Being

This has been analysed using the Human Development Index (HDI) which summarises the long-term progress in three basic dimensions of human development: a long and healthy life, access to knowledge and a decent standard of living. The national HDI for Kenya as at 2017 was 0.590.

The total dependency ratio within Gatundu constituency is 0.928 with 0.67 being the child dependency ratio and 0.1 being the aged dependency ratio (KNBS, 2013).

The Gini coefficient where the planning area falls is 0.347 which is slightly lower than the County at 0.345 (KNBS 2013). A Gini index of '0' represents perfect equality, while an index of '1' implies perfect inequality.

4.2.3 Education

About 95.4 percent of the total population within Kiambu County can read and write while 4.6 percent cannot read and write. The high literacy rates are as a result of continued investment in the education sector and there is need for more investment to ensure the literacy levels get to 100 percent. (CIDP, 2018-2022)

In Kiambu, about 40% of the residents have secondary level of education or above, while 48% of Kiambu have attained primary level of education.

About 22.7% of residents in Gatundu South lack formal education, 26.3% have attained primary school level of education while 24.3% have secondary education (KNBS, 2013).

4.2.4 Morbidity

The percentage Distribution of Population by Incidence of Sickness in the area reveals that morbidity rates are 20% where sickness is common among males (22.2%) than females (18.3%). The commonest diseases in the project area include Malaria (34.2%), Diarrhoea (29.3%) and upper/lower respiratory diseases (14.8%)⁵

4.2.5 Life Expectancy

The CIDP places the Life expectancy in the County at 70 years for men and 72 women. The figure is above the national average that is at 64.4 years for males and 68.9 for women and total life expectancy in Kenya is 66.7, according to the World Health Organisation.

Under five mortality rates, stands at 58/1,000. Due to high rate of delivery at health institutions which stands at 80.4 per cent, children's health is fair and data available for stunted growth is negligible (CGK).

4.2.6 Poverty Levels

The poverty level in Kiambu County is estimated at 21.75 percent (CIDP). Spatial Dimensions of poverty are such that people of a similar socio-economic background tend to live in the same areas because the amount of money a person makes usually, but not always, influences their decision as to where to purchase or rent a home. At the same time, the area in which a person is born or lives can determine the level of access to opportunities like

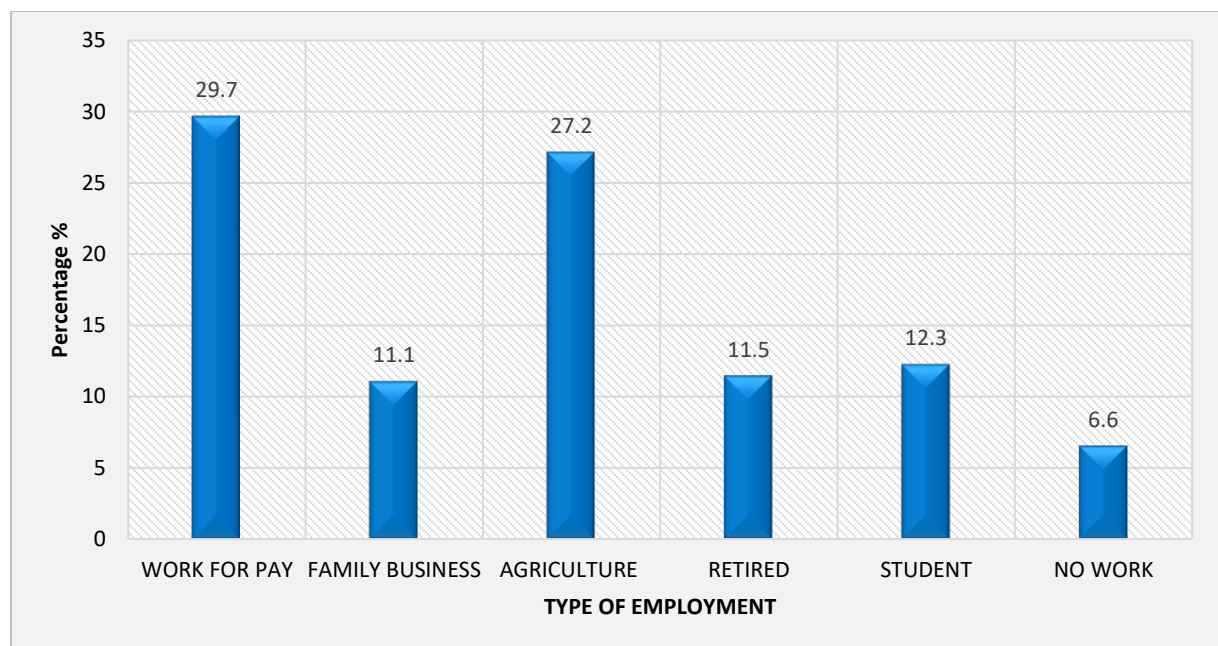
education and employment because income and education can influence settlement patterns and also be influenced by settlement patterns.

4.2.7 Employment and Unemployment

Kiambu County's labour force comprises 59.2 percent of the total population and continues to grow due to the large population of between 5-14 year olds. Unemployment rate is high with 17 percent of the population in the County being unemployed (CIDP 2018-2022).

In Gatundu town the employment rate is lower than the County average, at only 6.6%. About 29.1% of the labour force in the town is engaged in work for pay, implying they are employed in different sectors, while 27.2% are engaged in agriculture, underscoring the importance of the sector as a source of livelihood. The town is also an important commercial hub, employing about 11.1% of the residents, who run businesses in the town as detailed in chart 4-2.

Chart 4-1: Occupation in the planning area



(KNBS, 2013)

4.3 Social Analysis

4.3.1 Culture and Religion

Most residents within Gatundu town are from the Kikuyu community, and are largely born within the area. Majority of the residents belong to the mainstream Christian denominations including Catholics and Protestants, although some people still practice indigenous worship.

4.3.2 Marginalized and Minorities

There is a high incidence of gender-based violence especially against women, and other criminal cases like rape, especially among the elderly women, thus the need for social protection and enforcement of women rights in the society. The county in general also faces the challenge of alcoholism that has reduced productivity among the people falling within the age groups of 18-64 years.

4.4 Emerging Planning Issues, Opportunities and Challenges

The physiographic nature of Gatundu town presents various opportunities and challenges to development.

Table 4-2: Emerging issues on Population and demography

Population Size, Structure and Distribution	
Key Highlights	Opportunities
<ul style="list-style-type: none"> ▪ High number of population within the productive age of 15-64 years ▪ Population is expected to double by the year 2030 	<ul style="list-style-type: none"> ▪ The population represent presence of an active labour force that can be tapped for development activities
Demographic Characteristics	
Key Highlights	Opportunities
<ul style="list-style-type: none"> ▪ The development indices in the town are relatively higher than the national average (HDI and Gini- Coefficient) ▪ Poverty levels at 21.75 percent, lower than national average of 36% ▪ A large proportion of residents have not attained tertiary school education. ▪ Increasing unemployment rates 	<ul style="list-style-type: none"> ▪ Investment in services (health, education, infrastructure) will further enhance the wellbeing ▪ Investment in agriculture value addition can help absorb the growing labour force
Social Analysis	
Key Highlights	Opportunities
Population is relatively homogeneous in terms of social and cultural status	Ease to implement development projects due to homogeneity

Source: ACAL & BC Gildenhuys, 2020

5 CHAPTER FIVE: LAND USE ANALYSIS

The chapter analyses the land tenure and land administration regime in the planning area, focusing on ownership patterns, land use patterns, as well as land availability and land suitability within the planning area.

5.1 Land Tenure

The planning area measures 956 Ha. Land in Gatundu is characterized by two types of land tenure: private and public land ownership. Public land includes parcels owned by the National and County Government. These comprises land earmarked for provision of social services, education, transport services, public utilities, among others. Public land occupies a total of 89.83 ha., equivalent to 9.4% of the total land area (see table 5.1 and map 5-1).

Private land ownership is divided into two categories: leasehold ownership which is mostly common within the CBD; and, freehold ownership which is common in the hinterlands.

5.2 Land Use Patterns

The dominant land use in Gatundu town is agricultural at 87.4%. Residential and transportation land use form less than 11% of total land use at 4.59 and 6.15%. Other land uses like industrial, educational, public purpose, commercial, and public utility have significantly lower percentages of land within the planning area. The Table below shows the existing land use of the planning area.

Table 5-1: Existing Land use

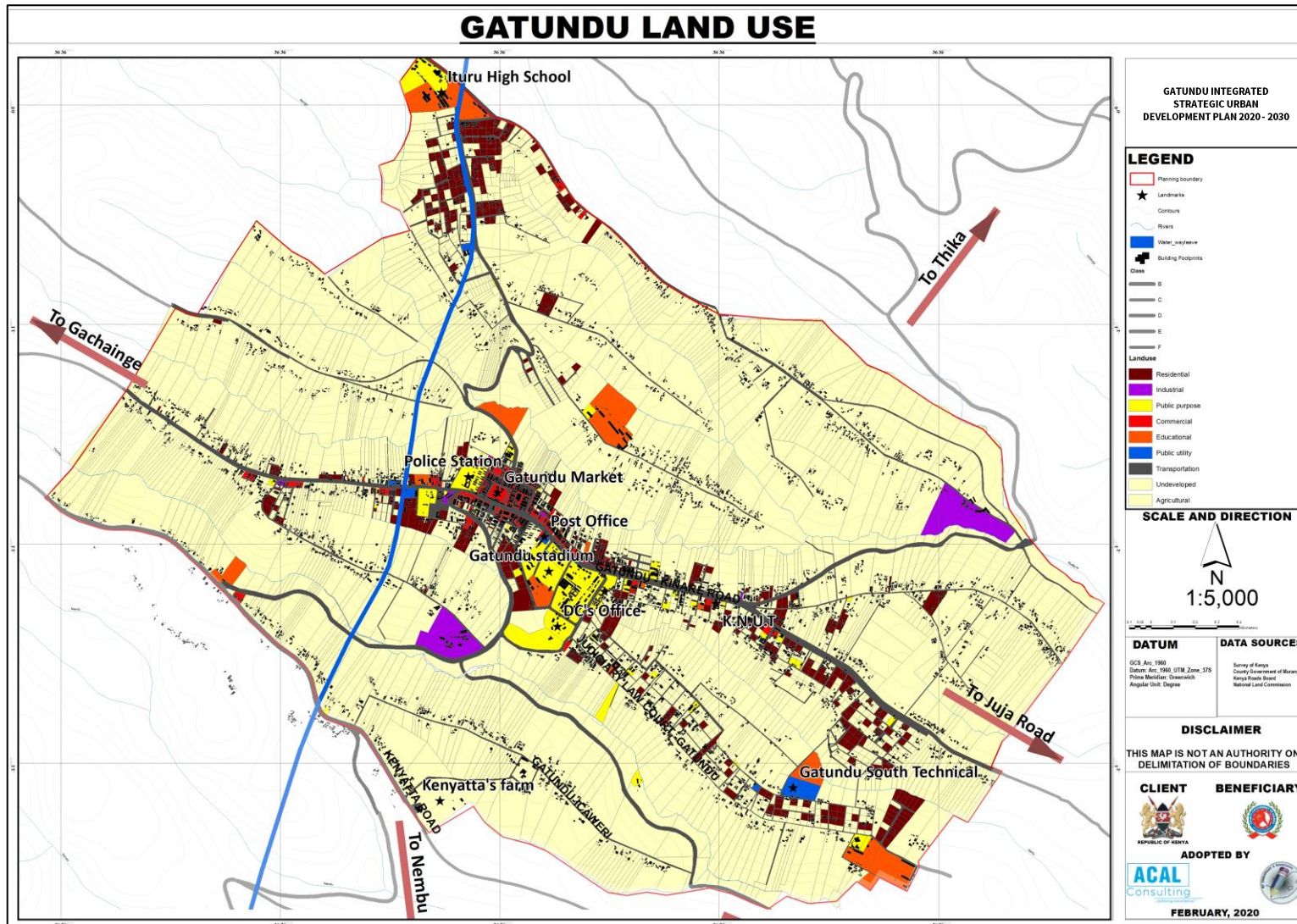
Code	Land use	Existing Land Use	
		Existing Area (ha)	Existing Percentage (%)
0	High Density Residential	4.3059	1.75
	Medium Density	15.8290	0.94
	Low Density	14.8536	0.64
1	Industrial	8.8535	0.1
2	Educational	17.5537	2.1
3	Recreational	1.1932	0.13
4	Public purpose	18.1447	1.03
5	Commercial	7.2917	0.53
6	Public utilities	2.0657	0.006
7	Transportation	64.0021	3.98
8	Deferred/ Undeveloped	2.7905	1.27
9	Agricultural	834.217	87.4
	TOTAL	991.2395	100.00

Source: ACAL & BC Gildenhuys, 2020

The commercial use is largely found along the Gatundu-Kinare road (which is the main transport corridor of the town). Residential land uses are concentrated along the Munara road, and Juja Gatundu road. The urban core comprises retail and commercial uses, key features being the modern market, the modern bus stop, several building hosting banks, shops and offices.

There are also several parcels for public purpose use among them the Gatundu Level 4 Hospital, Gatundu Police Station, deputy County commissioner offices and administrative offices housed within the compound, just within the CBD. There are also a few educational institutions that are scattered throughout the area. Industrial land use only occupies 0.92% of the total planning area indicating that there is minimal industrialization.

Map 5-1 Existing Gatundu land use



Source: ACAL & BC Gildenhuys, 2020

5.3 Projected Land Use Requirements

The population of Gatundu is expected to grow to 25,155 people by 2030 creating more demand for land to support the different uses. This may lead to shifts in percentage land uses to accommodate change based on the trend. The biggest demand will be on land for residential, commercial and transportation purposes. The table 5.2 summarises the land demand.

Table 5-2 Projected land Use Requirements

Land Use	Existing Area (ha)	Required 2020	Deficit/Surplus	Required 2030	Proposed
0. Residential					
High Density Residential	4.3059	73.188	-68.88	112.52	55.3312
Medium Density	15.829	54.891	-39.06	84.39	87.7496
Low Density	14.8536	12.198	- 2.66	18.75	23.4615
Total	34.9885	140.28		215.66	166.5423
1. Industrial					
	8.8535	4	4.8535		7.8615
2. Educational					
ECDE			0		
Primary		14.31	-14.30975	20.44	
Secondary		14.15	-14.1496875	14.15	
Tertiary					
Total	17.5537	28.46	-10.91	34.59	17.723
3. Recreational					
Parks		3.271	-3.2708	5.03	
Halls/community centre		0.204	-0.204425	0.31	
Playing Fields		4	-4	4.00	
Total	1.1932	7.475	-6.282025	9.35	6.7392
4. Public purpose					
Health		3	-3	3	
Admin			0	10	

	Police Station		2	-2	2	
	Community Centre			0	1	
	Fire Station			0	0.4	
	Library			0	0.4	
	Post Office			0	0.04	
Total		18.1447	21.4559	-3.32	16.84	21.4559
5.	Commercial	7.2917	10.5412	-3.2495		10.5412
6.	Public utilities			-2.8343		
	Water and Sewerage		4.9			
	Garbage		2			
Total		2.0657	5.1	-3.04		4.9
7.	Transportation	64.0021				58.7996
8.	Deferred/ Undeveloped	2.7905	0			0
9.	Agricultural	834.217				682.8893
TOTAL		991.2395				

Source: ACAL & BC Gildenhuys, 2020

Analysis of the land use requirements shows that the key land use allocations fall below the threshold requirement. The most affected are residential, education, public purpose and recreation.

5.4 Land Administration and Management

Land administration is done through the registry and ministry of lands through the set instruments of land subdivision and amalgamation.

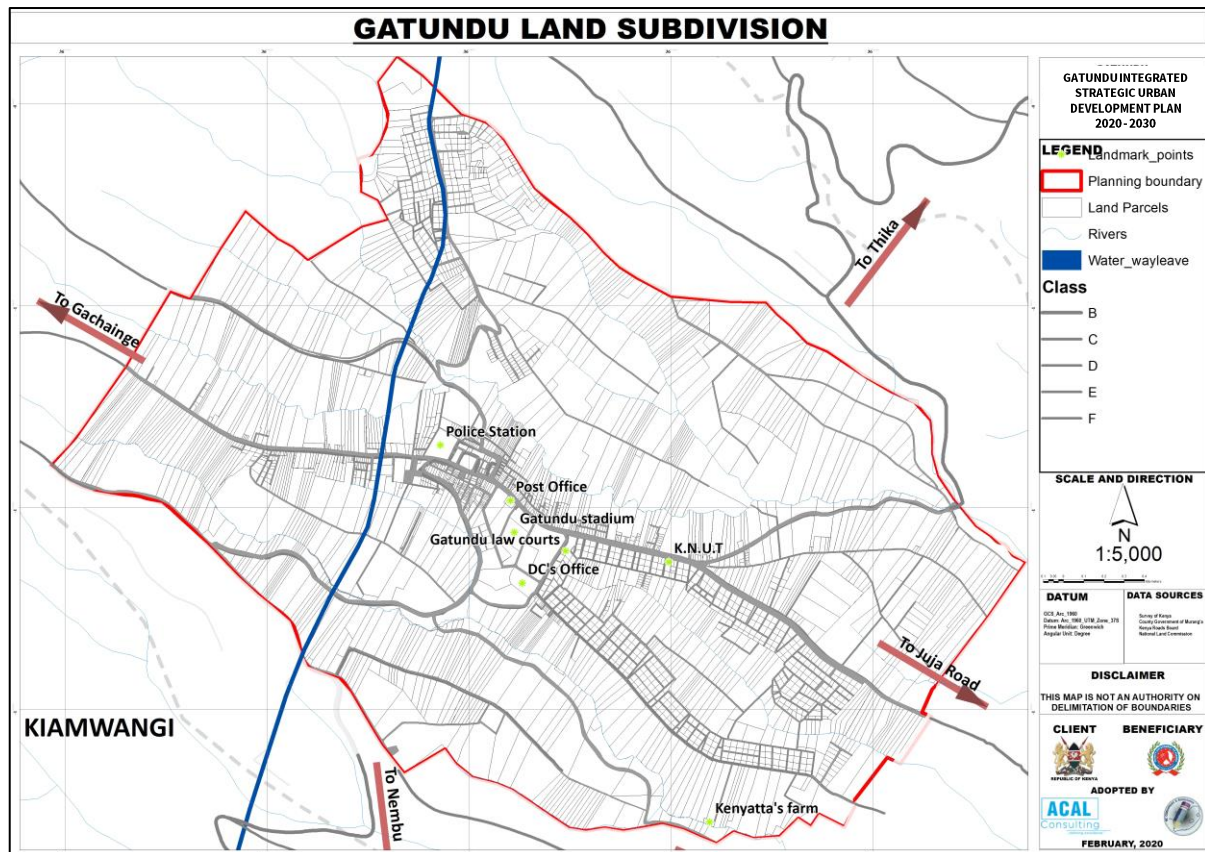
From the land tenure regime, the administration of land within the planning area is mainly the responsibility of Kiambu County Government, and the National government for parcels of public land belonging to the National Government.

The County Government is responsible for the allocation, servicing, land use control and land rating. However, Gatundu town lacks an approved zoning policy and regulations to guide land subdivision and management. There exists an unapproved part development plan for the town.

Poor coordination between National government and County government on subdivision of private land has led to rampant subdivisions that do not comply with the 1:2 ratio. This has been propagated by the traditional method of land subdivision where each parcel touches the road and the river, resulting in long narrow strips of land. The nature of subdivision renders some parcels too tiny.

With the adoption of this IUSDP, a zoning policy will be in place and thus an opportunity to regulate land by adding conditions to the titles through instruments such as change of use.

Map 5-2 Land Subdivision

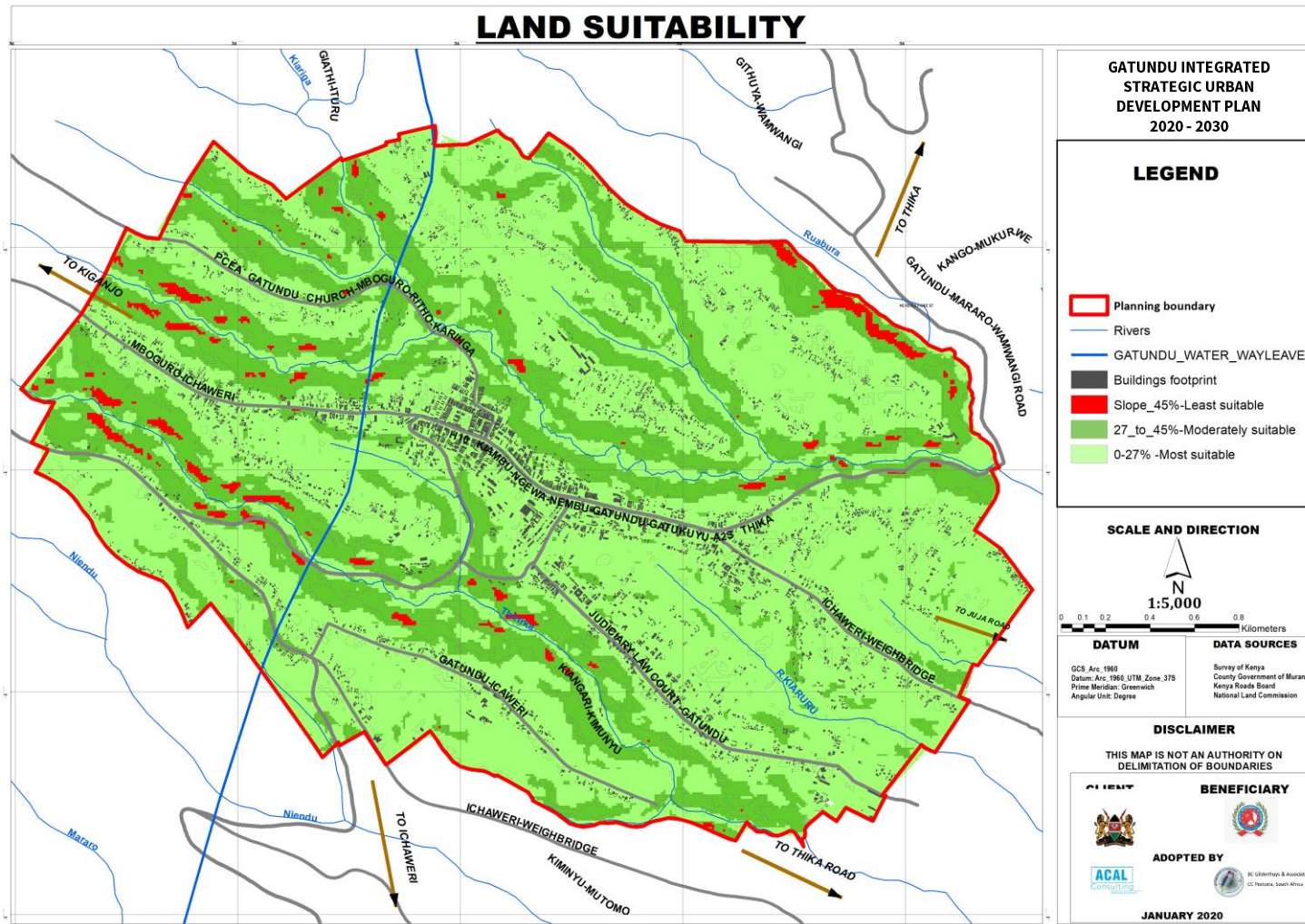


Source: ACAL & BC Gildenhuys, 2020

5.5 Land Availability and Suitability

There are an estimated 2037 parcels within the planning area, most of which are under agricultural use. The land in Gatundu town is gradually being fragmented as the population grows. The parcels of land under residential use measure about 0.09 Ha in area on average. The parcels under commercial use measure about 0.05 Ha in size. Suitability has been based on slope profile, excluding areas with slope percentages exceeding 25%. Other unsuitable areas include riparian reserves, and wetlands/ swamps.

Map 5-3: Land suitability for urban development



Source: ACAL & BC Gildenhuys, 2020

5.6 Land Values and Markets

The management and operation of land markets is governed by the private sector, with little public sector intervention. The location of the town in proximity to key nodes such as Juja, Thika, Kiambu town has contributed to steep rise in land prices as people look for land at the outskirts of Nairobi town. Informal interviews with Gatundu residents place the current land values in Gatundu at an average of Ksh 25 million per acre.

5.7 Emerging Planning Issues and Opportunities

Table 5-3 Emerging issues on land

Land Tenure	
Key Highlights	Opportunities
<ul style="list-style-type: none"> ▪ Bulk of land is under private ownership, Public land occupies only 8.1% of the total land area 	<ul style="list-style-type: none"> ▪ Compulsory acquisition around the urban areas for purposes of redeveloping the town
Land Use	
Key Highlights	Opportunities
<ul style="list-style-type: none"> ▪ Majority of land is under agricultural use ▪ Commercial land use is concentrated in the urban core ▪ Distinct pattern of development within the planning area 	<ul style="list-style-type: none"> ▪ Potential for infill development to reduce urban footprint ▪ Opportunity for protection of agricultural land from further land use change
Land Administration and Management	
Key Highlights	Opportunities
<ul style="list-style-type: none"> ▪ Land subdivision is done the traditional way leading to proportional strips of land. ▪ Weak coordination between county and national government on matters of land administration is partly to blame for irregular subdivisions 	<ul style="list-style-type: none"> ▪ Plan offers an opportunity to streamline land administration in the planning area
Land Availability and Suitability	
Key Highlights	Opportunities
<ul style="list-style-type: none"> ▪ Areas with steep slopes above 25% and riparian zones not considered suitable for development ▪ Majority of land suitable for residential and agriculture functions 	<ul style="list-style-type: none"> ▪ Rugged terrains can support coffee plantations and farm forestry
Land Market and Land Values	
Key Highlights	Opportunities
<ul style="list-style-type: none"> ▪ The cost of land has been on the rise ▪ The demand for land on the rise due to strategic location along C66 and good linkages with other regions 	<ul style="list-style-type: none"> ▪ Valuation roll can help enhance county revenue ▪ The true potential of land being unlocked by the rising land values

Source: ACAL & BC Gildenhuys, 2020

6 CHAPTER SIX: ENVIRONMENT AND NATURAL RESOURCES

6.1 Physical Environment

The landforms in the region predispose the area to agents of land degradation. The steep slopes are prone to agents of soil erosion in the face of changing vegetation cover due to anthropogenic activities. Surface water quality is generally fresh and clear. However, with increasing agricultural activities, settlements and urban expansion, the water sources are potentially faced with pollution threat from increased erosion and waste from urban runoffs.

6.2 Natural Resources

6.2.1 Land

Land is the primary natural resource in Gatundu. The area is rich in arable land that supports agriculture. Agriculture is the dominant land use and economic activity, driven by availability of fertile/arable land and favourable climatic conditions. The planning area lies within the Lower Highland, Upper Midland agro-ecological zones thus supporting cash crops like coffee. Both subsistence and commercial agriculture is practiced in the area.

6.2.2 Water

The planning area is rich in water resources consisting of rivers and streams. Few studies have been done on the ground water potential. Key rivers include River Thiririka and River Ndarugu. River Thiririka forms a water fall at the entry of the town from Kenyatta road. The surface water resources are an important source of water for domestic and agricultural use within and outside the planning area. There are cases of agriculture activities along the riparian areas that are mainly used for growing arrow roots. The ground water sources have not been extensively exploited, although some households have shallow wells for their use.

6.2.3 Forests

There are no gazetted forests within the planning area. However, there are several woodlots in the area mainly due to farm forestry and agro-forestry practices. Farm forests provide timber and non-timber products for household use as well as for sale. They are an important source of household fuel, raw materials for wood products, and also play an important role in soil and water conservation.

6.3 Urban Greenery and Open Spaces

The town has a rich agricultural hinterland offering adequate urban greenery and open spaces. However, the rampant subdivision of agricultural land if uncontrolled will lead to densification thus reduction in urban greenery. Within the core urban area, there is no provision for public parks and spaces, apart from the playing field in the learning institutions and Gatundu stadium. The planning area therefore lacks a proper recreation facility in the form of an urban park. As the town grows, there will be need to provide for an urban park/recreation facility. The steep slopes along the ridges also offer an opportunity for enhancing urban greenery if converted into woodlots.

6.4 Environmental Sensitive Areas

The ecologically sensitive areas include riparian areas, steep terrain and rivers mostly affected by the planting of eucalyptus trees on riparian reserves.

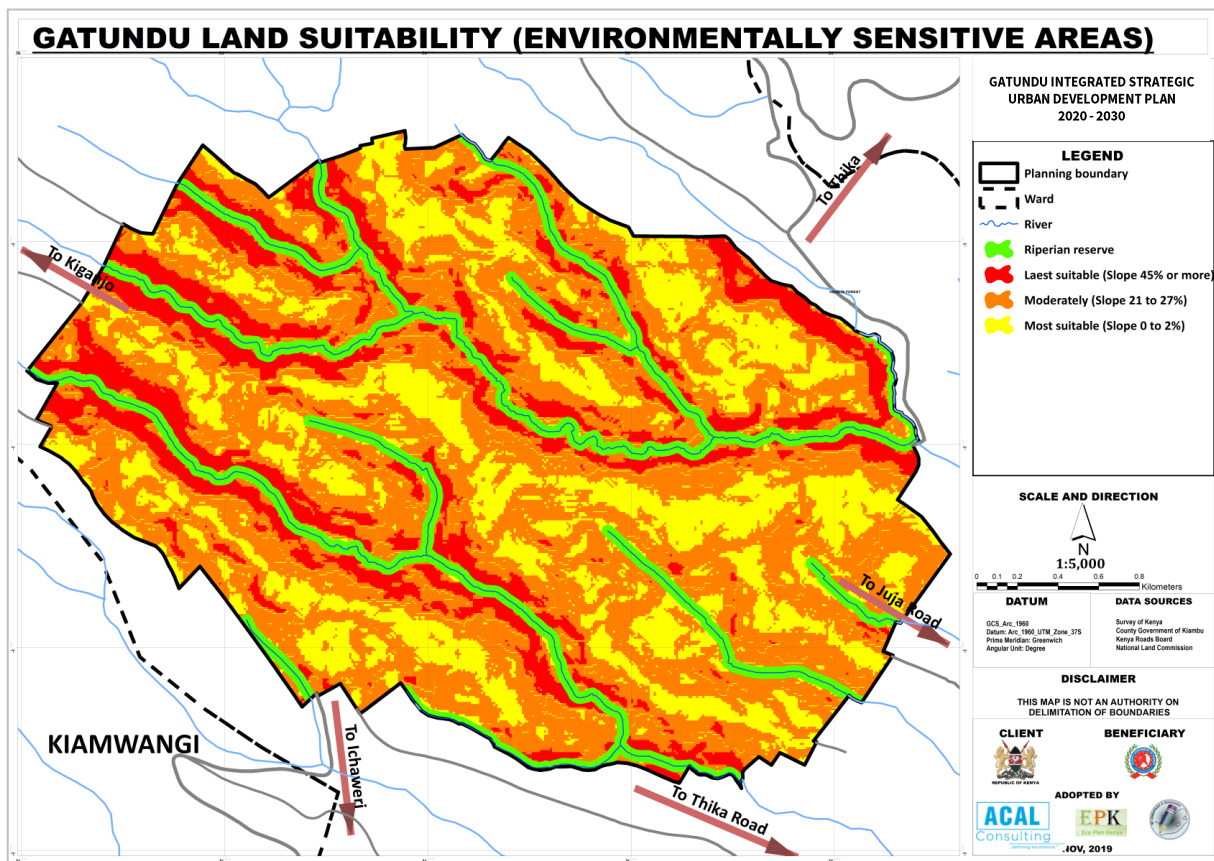
There are 2 categories of sensitive areas within the planning area facing different threats:

- **Areas with slopes of above 25%**- The physical planning handbook categorizes areas above 25% of slope as undevelopable and unsafe for human settlement. Areas above 15% of slope require conservation. They are also potential points of soil erosion and landslides if poorly managed.
- **The rivers, streams and riparian reserves**- The planning area has several streams and rivers. Cases of encroachment onto riparian areas were observed, mostly for farming activities. The rivers and streams are also exposed to pollution by siltation due to the steep slopes and farming activities on the sloppy areas.

Table 6-1 Categorisation of Slopes as per the Physical Planning Handbook

Slope category	Slope constraints
0 to 2%	Area where slope does not constrain development
2 to 9%	Medium slopes which are developable although slope should be considered in site development plan and storm water management
9 to 21%	Maximum slopes for motor vehicle access provided that all weather paved surfaces are available
21 to 27%	Urban development is seriously constrained, and slopes of more than 21% do not allow for motor vehicle access
27 - 45%	No development allowed
45% or more	Not to be disturbed by human activity

Map 6-1 environmentally sensitive areas in Gatundu



Source:: ACAL & BC Gildenhuys, 2020

6.5 Waste Management Environmental Issues

The main environmental pollutants in the town are domestic and commercial waste, both liquid and solid.

There are no solid waste transfer stations, nor receptacle bins supplied for solid waste management. Due to lack of conventional waste management infrastructure, residents have resulted to burning, composting and heaping the waste, leading to detrimental impacts.

Common solid wastes include plastics and other packaging materials, as well as organic waste from the markets and households. The County government is in charge of waste collection, transportation and disposal. Outside the CBD, waste collection and transportation infrastructure is non-existent leading to cases of illegal dumping and thus the risk of pollution and public health hazards. Institutions such as hospitals have their own arrangements for handling waste generated at their facilities. Solid waste within the town is collected by the County government for ultimate disposal in Ruiru, while at household level, open burning and composting is common outside the CBD.

Plate 6-1 Illegal Dumping of Waste within the Planning Area



Source: ACAL & BC Gildenhuys, 2020

The County government is in charge of waste collection transportation and disposal. However, outside the CBD, waste collection and transportation infrastructure is non-existent, leading to cases of illegal dumping and thus the risk of pollution and public health hazards. Institutions such as hospitals have their own arrangements for handling waste generated at their facilities. Solid waste within the town is collected by the County government for ultimate disposal in Thika, while at household level, open burning and composting is common outside the town area. There are proposals by the County government to establish a land fill for management of solid waste.

6.5.1 Liquid and Human Waste Management

Currently, there exists no Convectional sewer system in Gatundu. There is however an ongoing project which entails the development of a sewer treatment plant in Gatundu. Residents in Gatundu mainly rely on pit latrine and use a few septic tanks. This poses the risks of contamination of the ground water. Due to rough terrain, and poor quality of access roads, access to some areas is limited hence challenges in use of waste exhaustion services for filled up pit latrines and septic tanks.

6.6 Emerging Planning Issues, Opportunities and Challenges

Table 6-2: Emerging issues on environment

Natural Resources	
Key Highlights	Opportunities
<ul style="list-style-type: none"> ▪ Agricultural land is key resource in the area ▪ Irregular/uncontrolled land subdivision is a threat to agricultural land as a resource ▪ Abundance of water resources within the planning area 	<ul style="list-style-type: none"> ▪ Increased investment in agriculture can boost livelihoods and living standards of the people ▪ Water resources can further support commercial, industrial and agricultural land uses
Open Spaces/Urban Greenery	
Key Highlights	Opportunities
<ul style="list-style-type: none"> ▪ No public spaces reserved for open space and urban greenery 	<ul style="list-style-type: none"> ▪ Plan will allocate public spaces as per the available guidelines ▪ The immediate areas outside the town offer good greenery
Environmentally Sensitive Area	
Key Highlights	Opportunities
<ul style="list-style-type: none"> ▪ Rugged terrain thus steep slopes forming sensitive areas prone to erosion risk and landslides ▪ The environmentally sensitive areas provide ecological services such as water provision, habitats for flora and fauna and scenic views 	<ul style="list-style-type: none"> ▪ Terrain can be taped for conservation and recreation activities
Waste Management	
Key Highlights	Opportunities
<ul style="list-style-type: none"> ▪ Inadequate infrastructure for solid and liquid waste management thus risks of pollution ▪ Predominance of organic waste that is biodegradable. ▪ 	<ul style="list-style-type: none"> ▪ Ongoing investment in trunk sewer facilities will ease the burden of sanitation ▪ Opportunities for composting to support organic farming ▪ Opportunities for green energy (biogas generation)

Source: ACAL & BC Gildenhuis, 2020

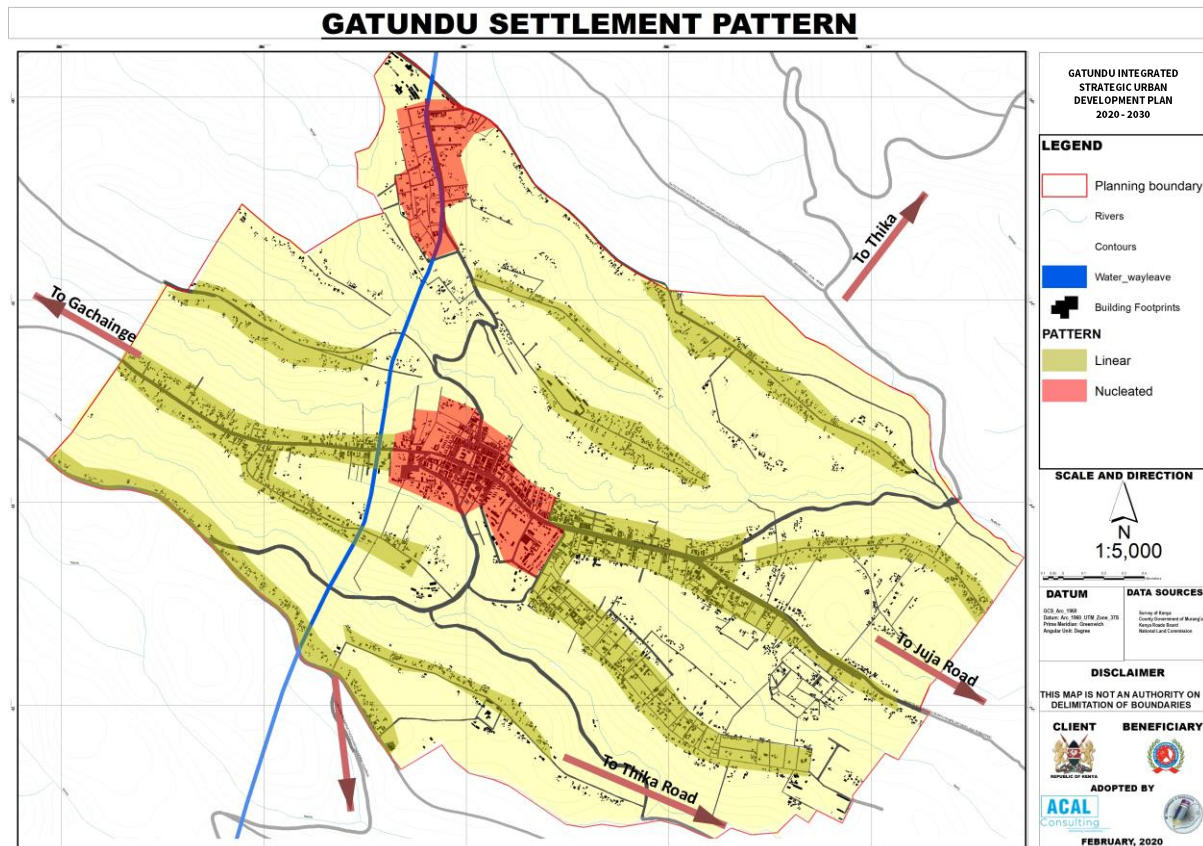
7 CHAPTER SEVEN: HOUSING AND HUMAN SETTLEMENTS

This chapter analyses human settlements with focus on the patterns and character of the human settlements, the typologies of housing, material used in housing, and the demand for housing.

7.1 Patterns and Trends of Human Settlements

Settlement patterns in Gatundu are influenced by topography and infrastructure availability (roads and administrative services). The above factors have led to dominance of linear settlement patterns along the roads. The average population density in the planning area is 1144 persons per Km² (KNBS 2012).

Map 7-1 Settlement Patterns



Source: ACAL & BC Gildenhuys, 2020

7.2 Urban Form and Morphology

Gatundu town has an urban core centrally located along the Gatundu – Kinare road. Over the past few years, development in Gatundu town has coalesced around the CBD and along the western edge of Gatundu- Kinare road as well as the south east of Gatundu-Juja road. The additional cores of development include Ituru. The core is dominated by commercial land use.

7.3 Delineation of Urban Edge

The urban core is structured by the transportation. The CBD is located at the confluence of Kinare road with Juja Gatundu road and Mboguro –Karinga road. The lateral extent of the urban is limited by Muthurumbi river to the North, and Thiririka river to the south. The town is experiencing a sprawl along the Gatundu-Kinare road, and Juja-Gatundu road.

7.4 Rural Character

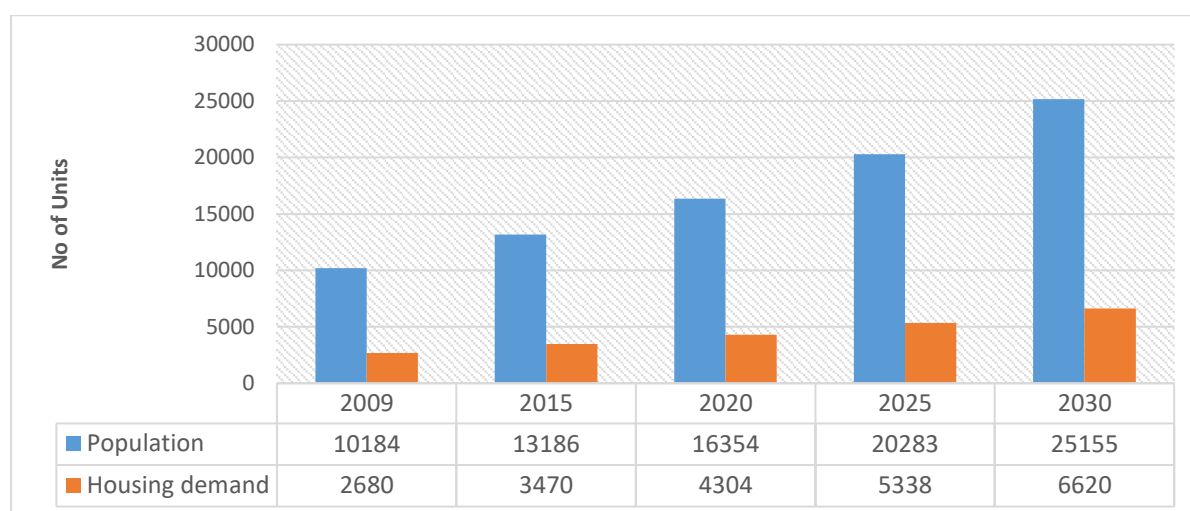
Approximately 84% of the planning area is rural in nature as agriculture is the main land use within that zone. The nature of settlement within this area is dispersed settlements that are minimally built-up. The rural periphery has experienced a trend of uncontrolled sub-division.

7.5 Housing and Housing demand

Permanent and semi-permanent houses are most common in the planning area. Most common typologies in the core urban include row housing, dukawalas and flats. Residential flats are common in the core urban and in the peri-urban areas. There exists no uniformity in the town in terms of building typologies as the character varies.

Based on an average household size of 3.8, the projected demand for housing will be 6,620 units by the year 2030, as shown in chart 7-1, thus the need to plan adequately for the additional demand for residential land. There are no public housing schemes in Gatundu.

Chart 7-1 Housing demand projection

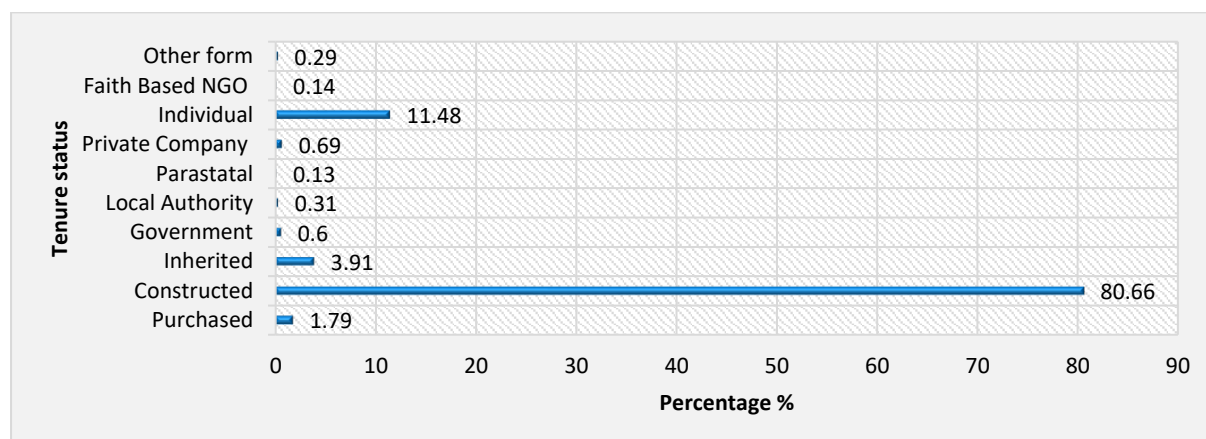


Source: ACAL & BC Gildenhuys, 2020

7.5.1 Ownership

In Gatundu, 80.66% of the houses have been constructed, 3.91% have been inherited while 11.48% are owned by individuals. The government only provides 0.6% of the houses. The private companies provide for only 0.69% of housing supply within Gatundu Planning area.

Chart 7-2: Housing tenure status in Gatundu



(KNBS, 2010)

7.6 Housing Typology

Houses in Gatundu town are mainly built of stone. However, timber and iron sheets also feature among building materials. Formal housing is mainly found within or adjacent to the CBD, and in the rural periphery. The building typologies vary from bungalows, low-rise apartments and row housing. Within the CBD, most buildings are mixed in terms of use, combining both commercial and residential functions. Permanent and semi-permanent row houses are most common in the town. There are upcoming apartments in town and in the peri-urban areas.

Most structures in the rural areas are semi-permanent. There exists no uniformity in the town in terms of building typologies as the character varies. The materials used for construction include stones and timber for walls while iron sheets are used as roofing materials.

Plate 7-1: Building typologies in Gatundu



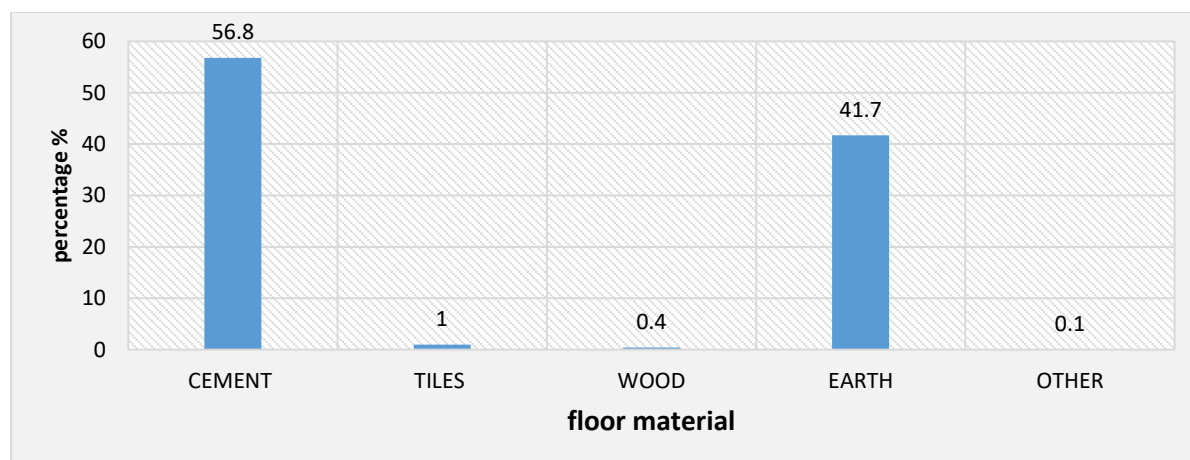
Source: ACAL & BC Gildenhuys, 2020

7.7 Building Materials

7.7.1 Floor Material

In Kiambu County, 75% of the residents have homes with cement floors, while 23% have earth floors. 2% have tiles and less than 1% have wood floors. Within the planning area, 56.8% of the households have homes with concrete floors.

Chart 7-3: Floor Material



(Source, KNBS, 2013)

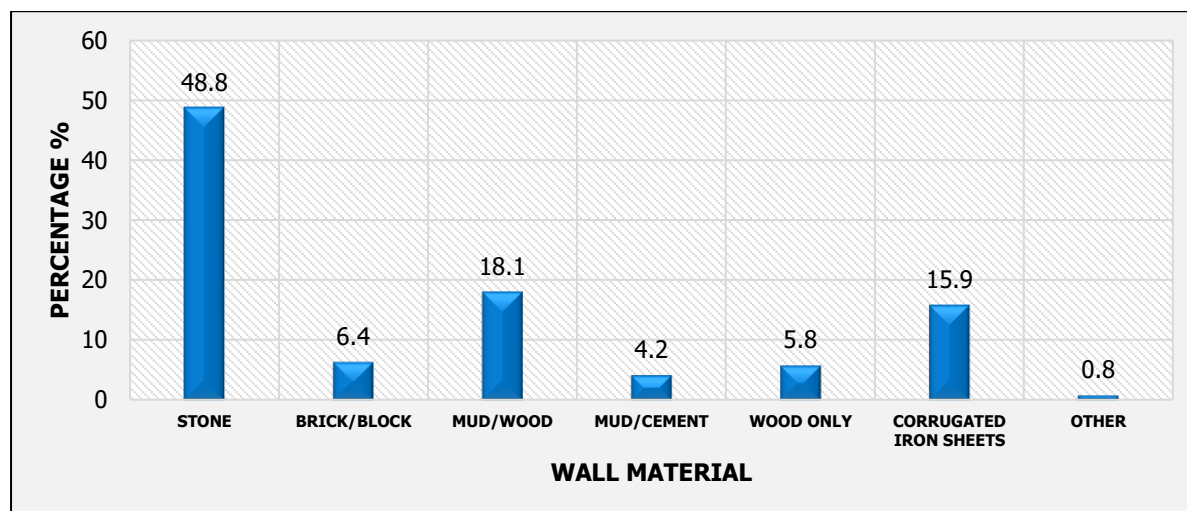
7.7.1.1 Roof Material

In Kiambu County, 7% of residents have homes with concrete roofs, while 88% have corrugated iron roofs. 35 have tile roofs. Grass and makuti roofs constitute less than 1% of homes, and mud/dung roofs are absent. In Gatundu area 94.5% of the households have have corrugated iron sheets.

7.7.1.2 Wall Material

In Kiambu County, 53% of homes have either brick or stone walls. 6% of homes have mud/wood or mud/cement walls. 15% have wood walls. 25% have corrugated iron walls. In Ngenda ward, 48.8% of the households have stone walls, 18.1% have walls made of wood/mud and 15.9% have walls made of corrugated iron sheets.

Chart 7-4: Wall material



(Source, KNBS, 2013)

7.8 Emerging Issues

Table 7-1: Emerging issues on housing and human settlements

Patterns and trends of Human Settlement	
Key Highlights	Opportunities
<ul style="list-style-type: none"> Well defined human settlement patterns. Commercial and public purpose land uses are concentrated along Gatundu – Kinare road while residential land uses are on Muhara road, Gatundu Juja road Linear pattern of sprawl along main transport corridors 	Existing defined pattern of growth can guide planning activities
Urban Form	
Key Highlights	Opportunities
The concentration of activities is within the CBD area and sprawls outwards along the main transport corridors	Opportunity for compact growth within the two nodes
Urban Edge	
Key Highlights	Opportunities
Key structuring elements defining urban edge are the main road networks, terrain and rivers	Ease of planning guided by structuring elements
Housing and Housing Demands	
Key Highlights	Opportunities

Old housing estates within the town No well-defined housing typology with the urban area. Old dilapidated buildings	Opportunities for urban renewal through planning
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Source: ACAL & BC Gildenhuys, 2020

8 CHAPTER EIGHT: Physical Infrastructure

8.1 Regional Connectivity

Gatundu town enjoys good connectivity to surrounding hubs in the region. The town is well linked to 2 Class A roads (A 104 – Nairobi - Naivasha Highway, and A2- Thika road). The linkage to A2 is through Kenyatta road, and also through C66. Thika road serves as a main cargo route and an important metropolitan, regional and international transit link. It is part of the classified international trunk road A2, which originates in Nairobi City Centre and extends to Moyale, Ethiopia. The Nairobi – Nakuru – Mau Summit road is part of the Northern Corridor and among the most important roads in the region. Gatundu – Kinare road links Gatundu town to this important transit corridor.

8.2 Road Networks

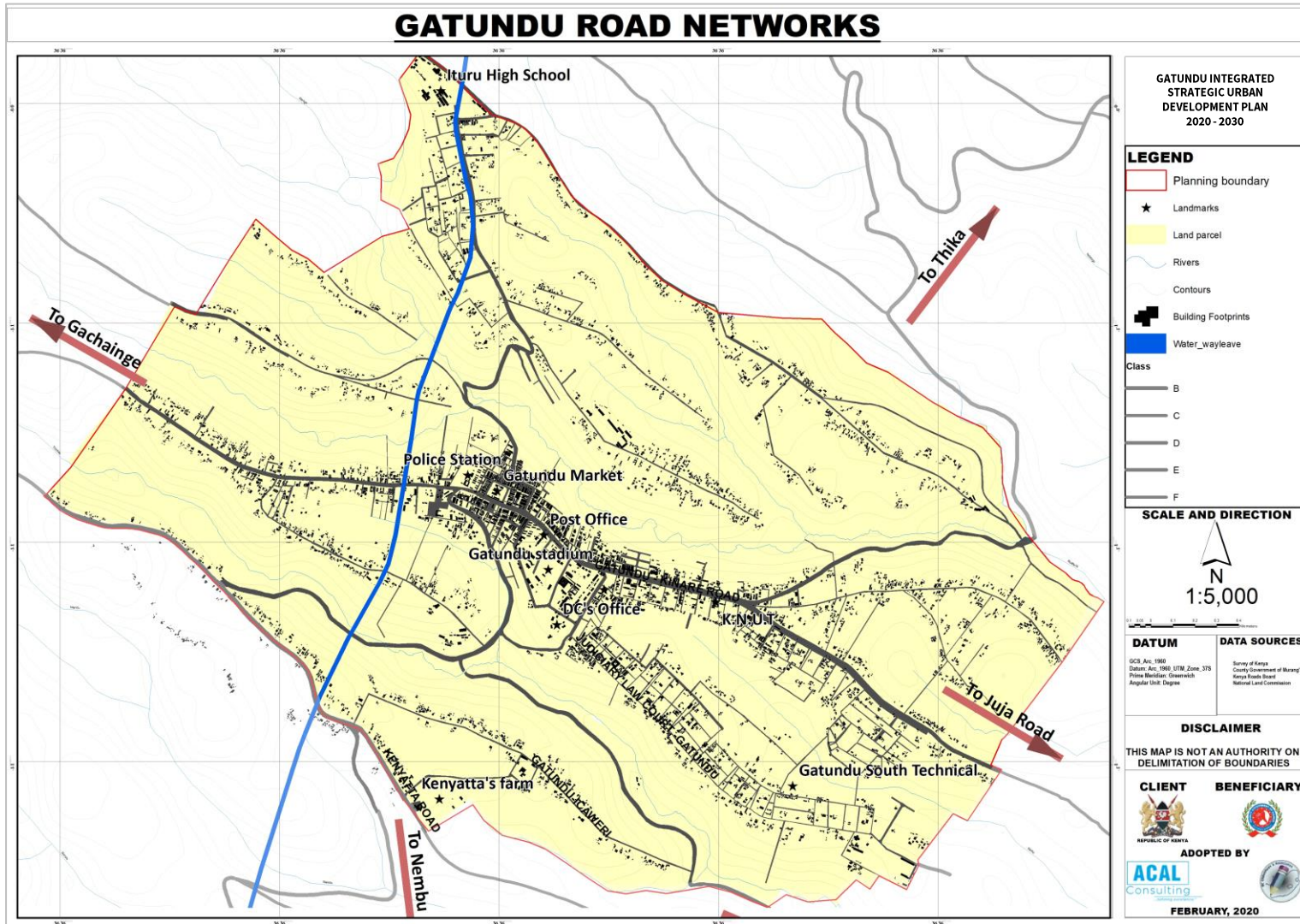
The planning area has 5 classes of roads, the majority being in reasonably good standards as summarised in table 8-1.

Table 8-1 Road Linkage and Conditions

ROAD	CLASS	CARRIAGE WAY	ROAD RESERVE	CARRIAGE WAY SURFACE TYPE	CONDITION
GATUNDU-KINARE ROAD	B30	7 Metres	40	PAVED	GOOD
KENYATTA ROAD	C565	12 Metres	8	PAVED	GOOD
GITHIORO-KIGANJO	E2209	12 Metres	8	PAVED	GOOD
GATUNDU - JUJA	F2127	12 Metres	8	GRAVEL	GOOD
MUHARA RD	G9666	3 Metres	6	GRAVEL	FAIR

Source: ACAL & BC Gildenhuys, 2020

Map 8-1 Transportation network in Gatundu town



Source: ACAL & BC Gildenhuys, 2020

8.3 Transportation

8.4 Circulation within the Planning Area

The circulation networks within the planning area are well developed and the roads are in good condition. However, the drainage networks are not well developed within the town hence the need for improvement. The town lacks adequate parking facilities leading to parking of motor vehicles on road reserves. Available parking has also been encroached by car wash business. There is also the tendency of lorry owners parking by the road side and at the centre of the town

8.4.1 Means of Transport

The town has both motorized and non-motorized means of transportation with the latter being the main transportation mode. These include motorcycles (bodabodas), private vehicles, bicycles and matatus. However, there are no designated pedestrian walkways along the roads within the town. The main transport means are motor-bikes, footing, vehicles and bicycles.

Plate8-1: Bus parks



Source: ACAL & EcoPlan Kenya, 2019

8.4.2 Travel Demand

Gatundu town has the core CBD, residential areas, and the hinterland. This leads to trip generations as people move between the different locations for trade, work, and recreation, as well as to access different services. The regular travel destinations for residents of Gatundu town in search of work, business opportunities or education include Mangu, Juja, Thika and Nairobi. The proximity of Gatundu to these key nodes coupled with a well-developed road network makes travel by road the main mode of transport.

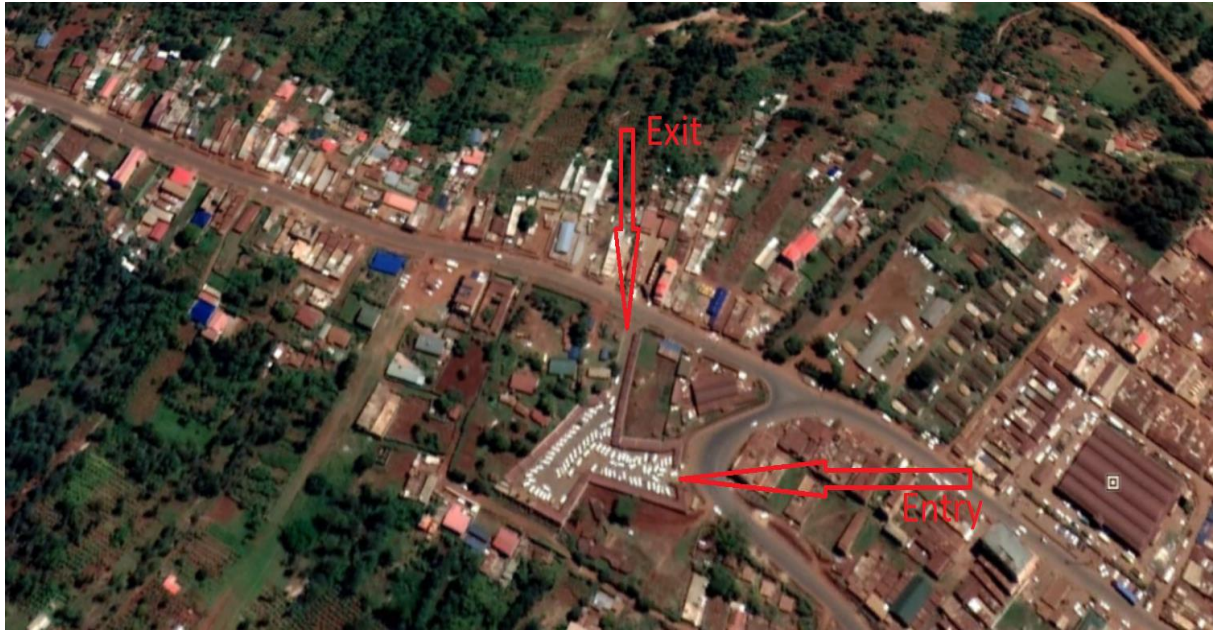
The main means for local transport within town is non-motorised transport, while long trips outside town are mainly done by use of public service vehicles and private cars.

It is expected that as the demand for travel will increase in tandem with the growing population of the area, hence the need to invest in more NMT facilities for local travels, and improved road networks for out of town travels. Rising income levels will also see the increased uptake of more private means of travel, particularly as households shift from low to medium incomes.

8.4.3 Terminal Facilities

Gatundu town has a modern bus park located within it. The bus park serves as the only Bus Park and terminus in town. However, the location of the entry and exit to the bus park has led to a lot of traffic related conflicts leading to increased accident cases. The entry to the bus park is on a sharp curve along Gatundu –Kinare road thus causing problems to motorists. There is therefore need to review the entry/exit arrangement to the park, or reconsider moving the bus park away from its current location.

Figure 8-1 Image Showing Location of Bus park



Source: Google Earth 2020

8.4.4 Traffic Management

The construction of the modern market has reduced cases of encroachment of the road by small traders thus reducing the traffic bottlenecks within the CBD. However, the smooth flow of traffic is restricted by lack of pedestrian facilities, leading to conflicts between pedestrians and motorists.

8.4.5 Non-Motorized Transport

Non-motorized transportation in Gatundu town consists of bicycles, wheelbarrows, handcarts and pedestrian movement. There are no designated pedestrian walkways, cycle lanes or NMT parking lots/ termini in the town, resulting in conflict with other modes, an indication that there is need to plan for NMT as it is an integral element of urban transport.

8.5 Water

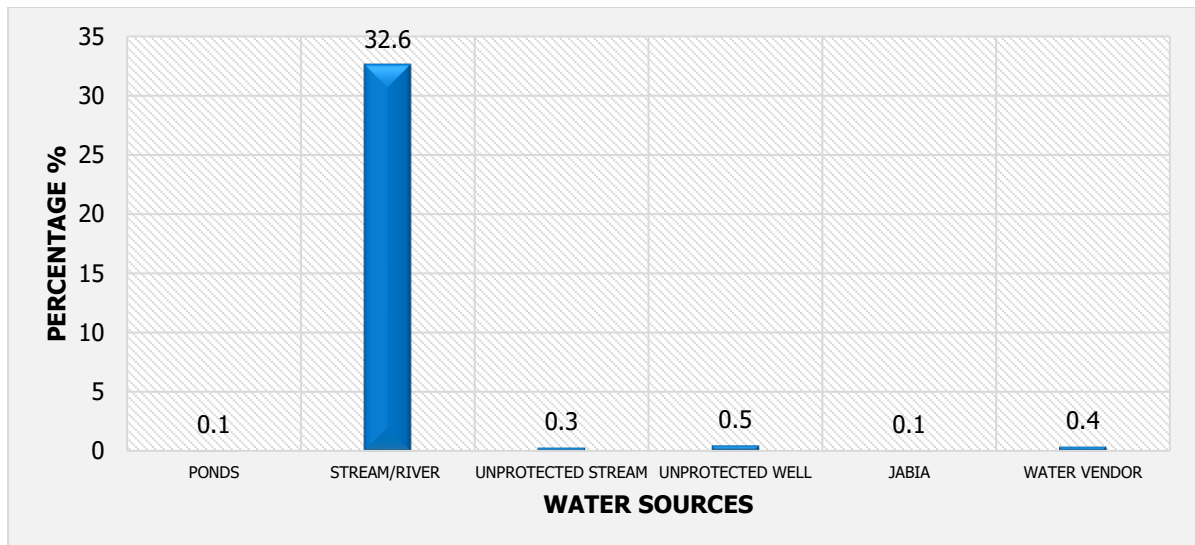
8.5.1 Water Access

In Kiambu County, 75% of residents use improved sources of water, while the rest rely on unimproved sources. Reliance on unimproved water sources exposes the population to the risk of contracting water borne and water related illnesses.

In Gatundu South constituency, about 33% of residents use water from sources considered to be unimproved. Improved sources of water comprise protected spring, protected well, borehole water, piped into dwelling places, and rain water collection, while unimproved sources include pond, dam, lake, stream/river, unprotected spring, unprotected well, water vendors and others.

In the planning area, 34.1% of households depend on unimproved water sources while 65.9% use improved sources.

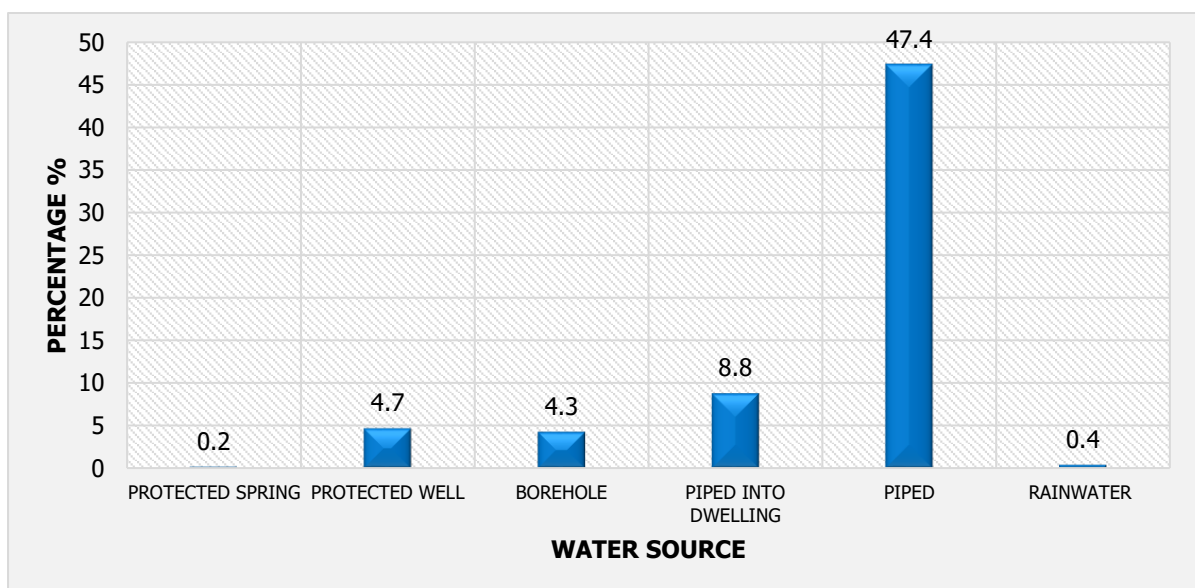
Chart 8-1: Unimproved water supply



KNBS 2013

For the households that use improved water sources, the main source of water in the planning area is piped water scheme (56.2%), of which 8.8% have piped water in their dwellings.

Chart 8-2 Improved water supply



8.5.2 Water Supply

The planning area is served by Gatundu Town Water Supply System, currently operated by the Gatundu Water and Sewerage Co Ltd. (GAWASCO), incorporated in April 2006 as a private company under the Companies Act, Cap 486. The Company's mandated area of supply is approximately 300km², comprising Gatundu Sub County, part of Gatundu North and part of Githunguri. The company currently supplies approximately 240km² of its mandated area⁶. Gatundu Water and Sewerage Co Ltd. operates three Water Supply Schemes, namely: Ndarugu, Thiririka and Rwabura Water Supply Schemes. According to the company, the capacities of the treatment works are as follows: Thiririka River 9,000 m³/d, Ndarugu River -4,000 m³/d, and Rwabura River 1,200 m³/d. The town receives on average 14,200m²/day of water from the water supply schemes discussed above.

⁶ Gatundu Sewerage Project Environmental & Social Impact Assessment Study Report

Other means of accessing portable water are household water harvesting and storage, as well as shallow wells. The company supplies Gatundu sub-County, and estimates show that 34,184 persons in Gatundu Sub County are connected to the company reticulation system. All connections are metered, however, water supply is erratic due to an ageing reticulation system that leads to unaccounted water of over 50%.

Several water supply projects are in the pipeline, key among them:

- Upgrading of existing mainlines and distributions.
- Completion of Theta works.
- Completion of Karuri works.
- Completion of Mutomo/Kenyatta Rd. works.
- Implementation of Gatundu/Mukinyi Water Project.
- Development of proposed Ng'enda/Gathage Water Project.

Some of the completed water projects in Gatundu include: Gakoe, Ndarugu, Kairi, Mukurwe, Thiririka and Ruabora water projects.

8.5.3 Water Demand

The projection of water demand is based on the respective per capita water consumption rates and service levels for the estimated population as stipulated in the Kenya Water Supply Design Manual, 2005.

The Initial, future and ultimate human water demand projection for the proposed project area will be 2,130m³/day rising to 2,808m³/day in the year 2030 for residential use, while the total water demand will rise to 3,460m³/day in 2030, as summarised in table 8-2.

Table 8-2 Water Demand (litres per day)

Type of demand	2010	2015	2020	2030
Residential	1,572,510	1,855,889	2,130,677	2,808,334
Commercial and Industrial	301,250	325,812	390,094	418,750
Institutional	118,025	154,600	177,480	233,840
Total	1,991,785	2,336,301	2,698,251	3,460,924

Source: Gatundu Water and Sewerage Co Ltd. (GAWASCO) 2016

8.5.4 Water Potentials

Potential water sources include river Theta, Ndarugu and the Karimenu dam. The table below shows the sites for water potential.

Table 8-3: Potential water sites for Gatundu town

Potential Source	Site
Theta River	Kiamwangi/
Ndarugu River	Wamugumo Coffee Factory
Karimenu II Dam	Buchana

Ground water potential has not been well estimated despite the area enjoying a rich water catchment from the Aberdare's.

8.5.5 Storm Water Drainage

Storm water infrastructure in the town is poorly developed and missing in most parts. Some of them are also clogged by siltation and solid waste thus reducing their efficiency. This is a challenge to management of storm water leading to pooling of water, destruction of roads and increased erosion risks. The storm water system further contributes to siltation and pollution if water rivers and streams.

Figure 8-2: Storm water drainage channels in Gatundu



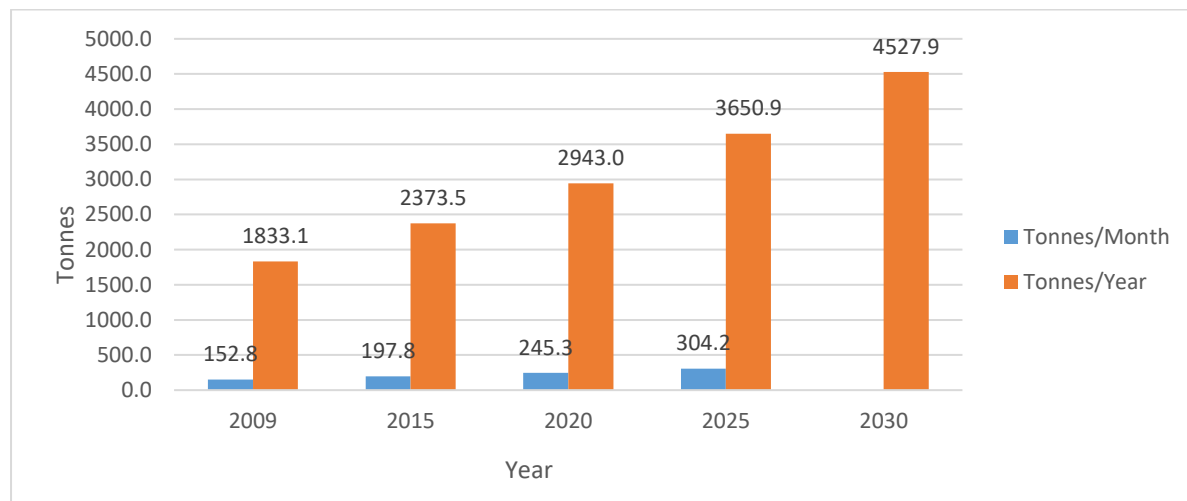
Source: ACAL & BC Gildenhuys, 2020

8.6 Liquid and Solid Waste Management

8.6.1 Solid Waste Management

Solid waste management is a main challenge in the planning area. With a per-capita waste generation of 0.5 kilograms, the total estimated waste for the planning area is 5.1 tonnes per day projected to increase to 4527 tonnes per in 2030 (see chart 6-1). The main sources of waste include the urban area, the market, and the households. Past inventories indicate a national average estimate of 60% - 70% of waste is organic waste, 20% plastic, 10% paper, 1 % medical waste and 2% metal⁷. The planning area has a level five hospital thus biomedical waste that require special handling. However, the hospital has its own arrangement for handling of hazardous wastes generated in the planning area.

Chart 8-3 Projected Waste Generation in Tonnes



Source: ACAL & BC Gildenhuys, 2020

⁷ Draft National Sustainable Waste Management Policy 2019. Ministry of Environment and Forest

8.6.2 Liquid and Human Waste Management

Currently, the town lacks a proper sewer. There is however an ongoing project which entails the development of a sewer reticulation system and treatment plant in Gatundu. The project will consist of Secondary Sewers, diameter varying in sizes from 200mm to 300mm approximate size 35km, Trunk Sewers, diameter varying in size from 450mm to 600mm approximate length 19km, and construction of Waste Water Stabilization Ponds Comprising of Intake Works, Anaerobic Ponds, Facultative Ponds, Maturation Ponds, and Sludge Drying Beds capacity 2769m³/day.

Currently, the residents of Gatundu mainly rely on pit latrines and use a few septic tanks.

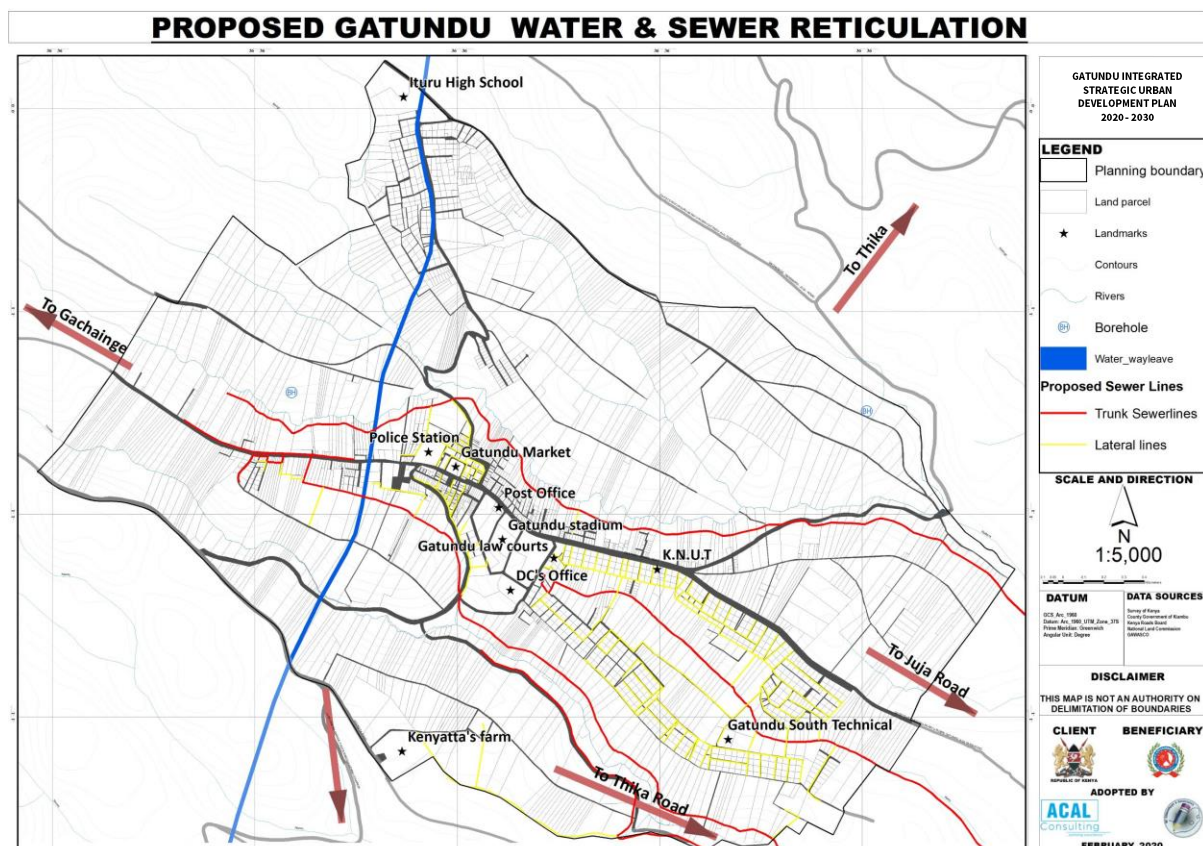
Table 8-4: Wastewater generation projection

Source	2010	2015	2020	2030
Residential	1258008	1484710	1704542	2246668
Industrial & Commercial	241000	260650	312075	335000
Institutional	94420	123680	141984	187072
Total	1593428	1869040	2158601	2768740

(Source, Gatundu water sewerage project, ESIA report, 2016)

Map 8-2 shows the proposed reticulation system for the sewer network.

Map 8-2 Proposed Sewer System

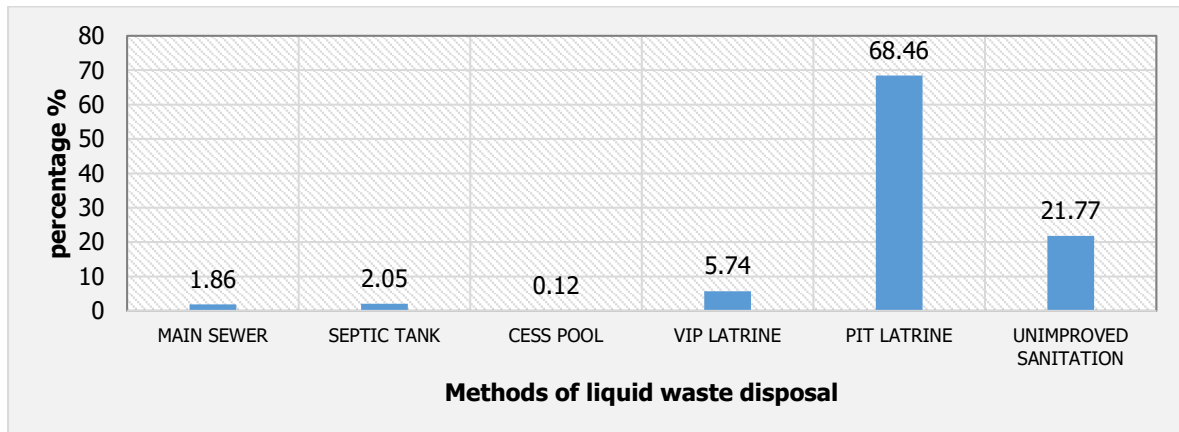


Source: Gatundu Water and Sanitation Company

8.6.2.1 Human Waste Disposal Mechanisms

A total of 80% of residents in Kiambu County use improved sanitation, while the rest use unimproved sanitation. In Ngenda ward, 73.23% of the residents use improved sanitation facilities while 21.77% use unimproved sanitation facilities majority of which use uncovered pit latrines, 21.67%. (KNBS, 2013) Some of the risks posed by use of pit latrines and septic tanks include possible contamination of the ground water. Access challenges due to terrain challenges also hinder exhaustion services.

Chart 8-4: Human wastes disposal mechanisms



KNBS, 2013

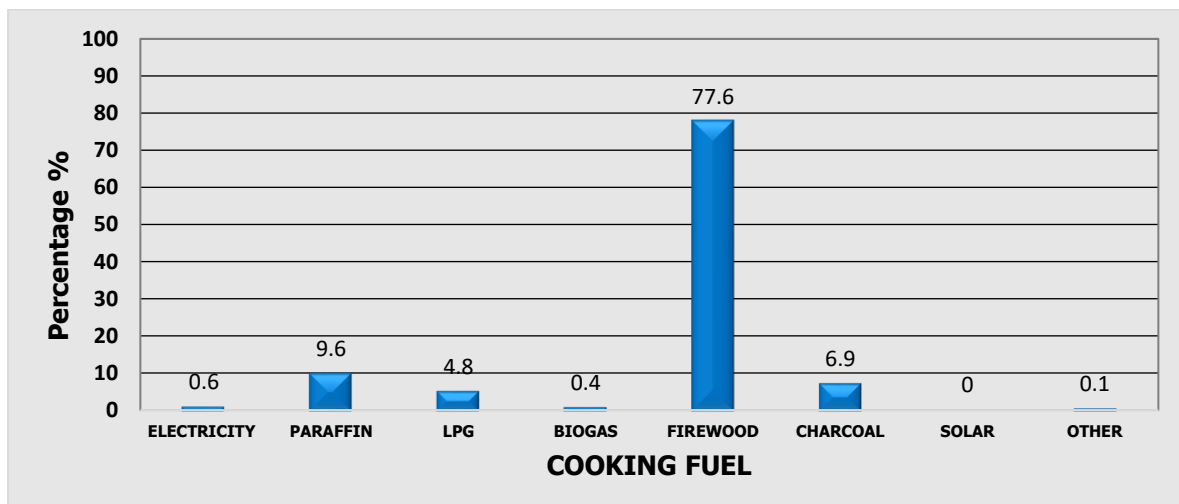
8.7 Energy

Energy is mostly used for cooking, heating, lighting and running of machinery and equipment.

8.7.1 Cooking

According to Kenya National bureau of statistics, only 13% of residents in Kiambu County use liquefied petroleum gas (LPG), and 23% use paraffin. About 35% of Kiambu residents use firewood for cooking while 26% use charcoal. Gatundu North and Gatundu South, have the highest level of firewood use in Kiambu County at 84% each. In the planning area, firewood is the main source of energy for heating and cooking at 77.6%.

Chart 8-5: Cooking Fuel



Source KNBS 2013

8.7.2 Lighting

A total of 54% of residents in Kiambu County use electricity as their main source of lighting. A further 26% use lanterns, and 18% use tin lamps. Less than 1% use fuel wood. In the planning area, there is universal access to electricity, with the whole area being connected to the national grid.

8.8 Information, Communication and Technology

8.8.1 Modes of Communication

The planning area has a good coverage of networks that is Safaricom, Airtel and Telcom Kenya. Gatundu being a Sub County headquarter is served by the National Optic Fibre Backbone (NOFBI) that is currently under installation.

8.9 Emerging Issues

Table 8-5: Emerging issues on physical infrastructure

Road Networks/Circulation	
Key Highlights	Opportunities
Well-developed regional linkages Poor state of local roads Road Reserve Encroachment Lack of Pedestrian Walk No Designated parking for motorcycles and for trucks	Opening up of key local roads
Transportation	
Key Highlights	Opportunities
Main mode of transport is by road, dominated by non-motorized, motor vehicle, and motorcycles There is a designated terminus facility for PSVs No facilities for Non-Motorized Transport Lack of adequate parking within CBD	Planning for NMT Integration of different modes (modal split) in transportation planning
Water	
Key Highlights	Opportunities
Access to piped water is at 47% Aging distribution infrastructure leading to high percentage on Non-revenue water Rivers and streams also form an important source of water	Ongoing expansion of water reticulation system by Gatundu water and Sanitation company Abundant water resources can be tapped to enhance access Opportunities for household rain water harvesting
Liquid and Solid Waste Management	
Key Highlights	Opportunities
Low access to sewer reticulation system No adequate infrastructure for solid waste management	Ongoing construction of trunk sewer can enhance access Planning for waste collection, transfer and disposal infrastructure
Energy	
Key Highlights	Opportunities
Dominant energy for cooking remains biomass (fuel wood, charcoal etc)	Availability of farms can support household biogas plants

Source: ACAL & BC Gildenhuys, 2020

9 CHAPTER NINE: SOCIAL INFRASTRUCTURE

Gatundu town is endowed with various social infrastructural facilities. The social facilities within the area are educational facilities, health facilities, community facilities, safety and security installations.

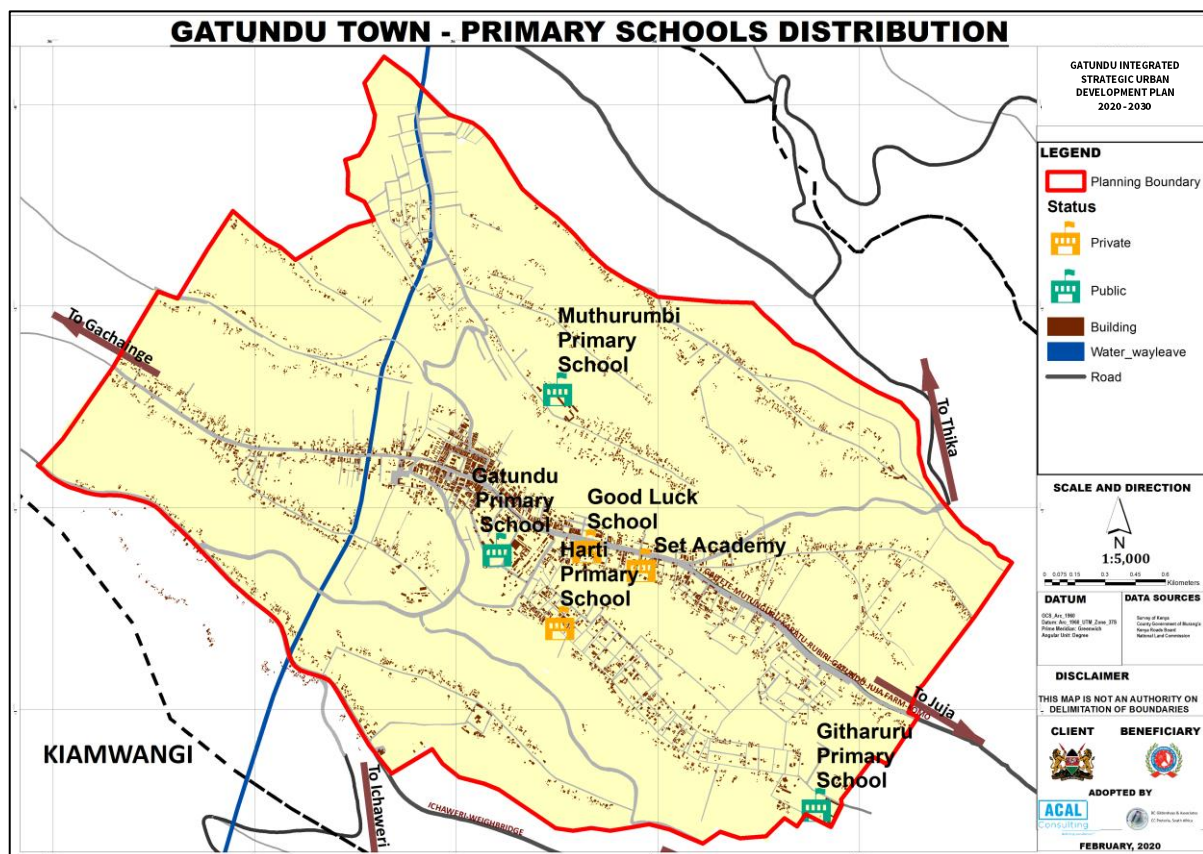
9.1 Educational Facilities

The planning area has 17 educational institutions. There are 9 primary schools, 4 secondary schools, 3 tertiary institutions and 1 special education institution within the planning area.

9.1.1 Primary Schools

Gatundu town has four public primary schools and three private primary schools. The four public primary schools are Ituru with an enrolment of 297 pupils, Muthurumbi with 337 pupils, Githarururu - 346 pupils and Gatundu primary school with 861 pupils. All the primary schools within the town are mixed gender schools. Most of the primary schools in the town are day schools. The Early Childhood facilities are integrated in the primary schools. Map 9-1 shows the distribution of primary schools in Gatundu.

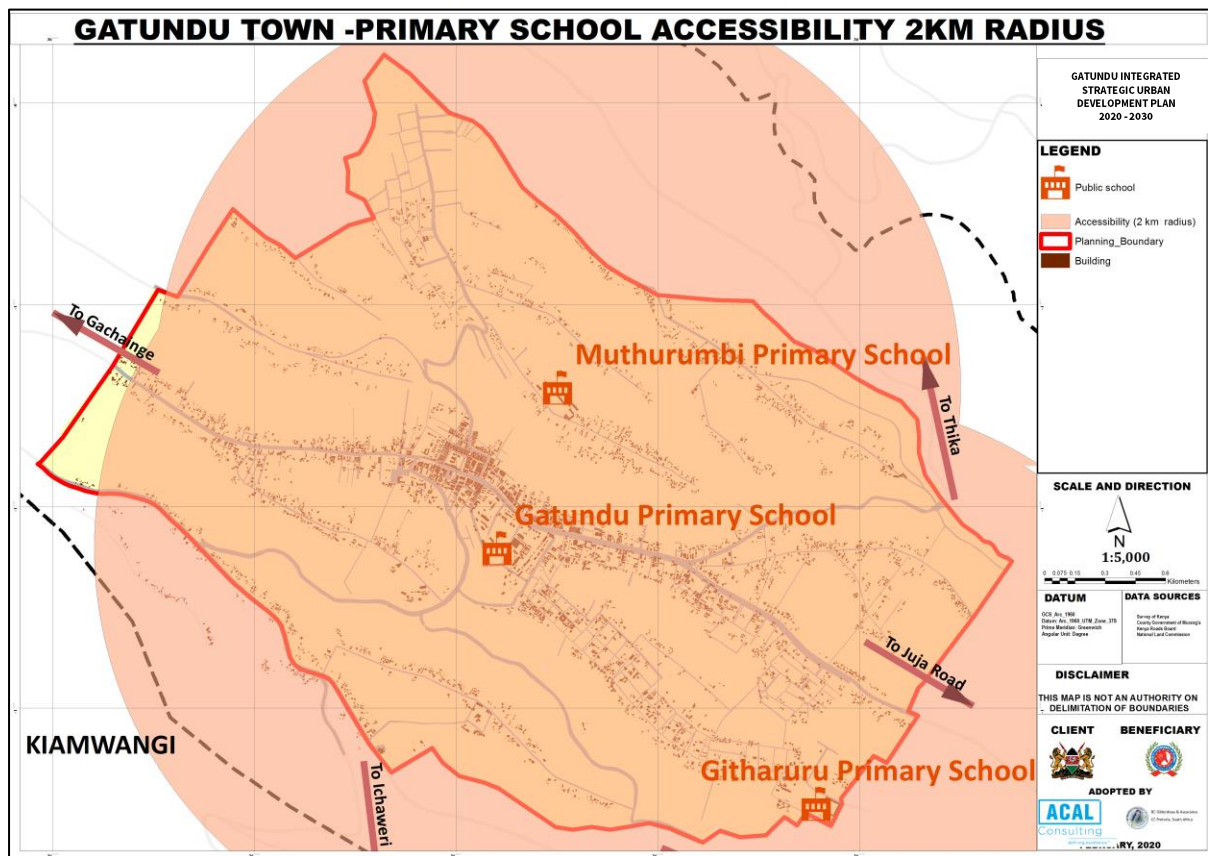
Map 9-1: Primary schools distribution



Source: ACAL & BC Gildenhuys, 2020

All the public primary schools within the planning area are accessed within a two-kilometre radius. Map 9-2 shows the accessibility of primary schools within the target catchment area, guided by the draft physical planning handbook. Each primary school should serve a catchment area of 4000 persons.

Map 9-2: Primary school catchment area

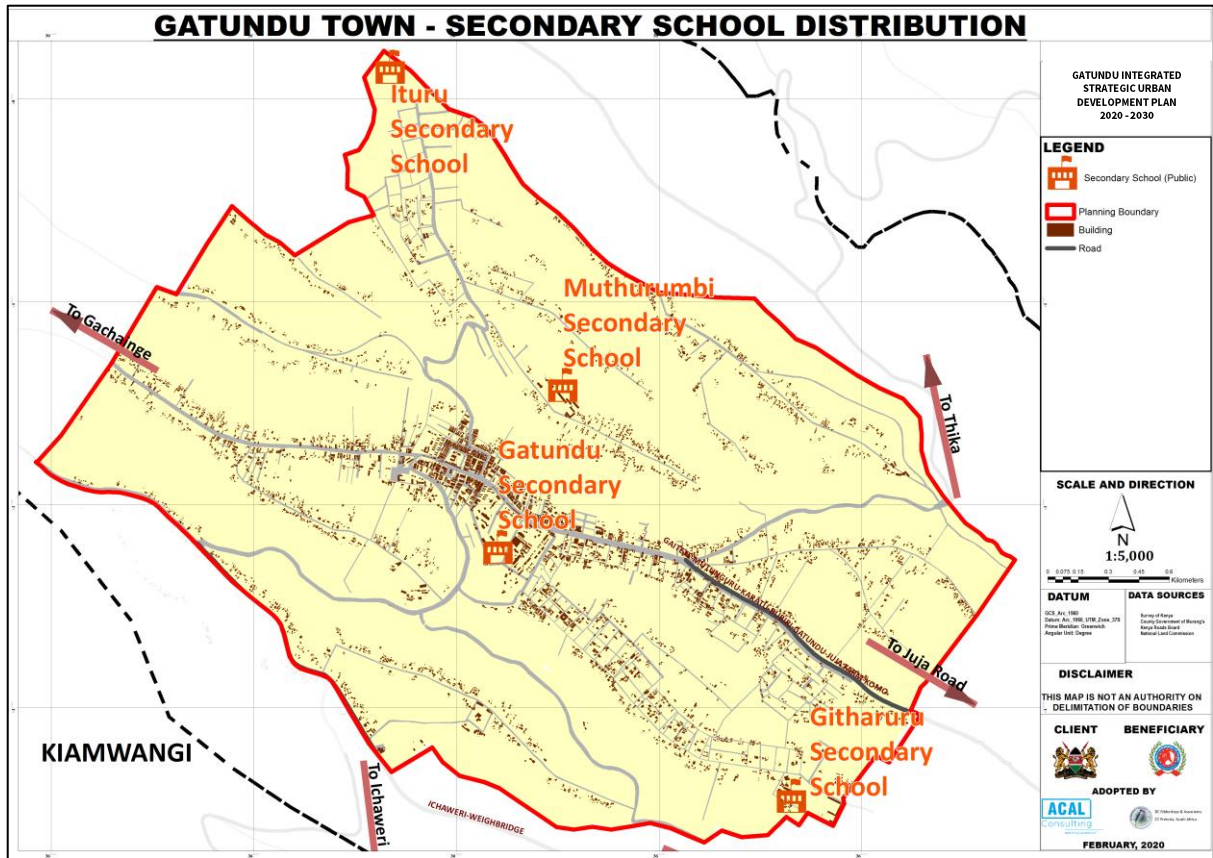


Source: ACAL & BC Gildenhuys, 2020

9.1.2 Secondary Schools

A total of 3 secondary schools are within the planning area namely Gatundu secondary, with an enrolment of 276 students, Muthurumbi secondary (285 students) and Githaruru secondary (743 students). Map 9-3 shows the distribution of secondary schools within the planning area.

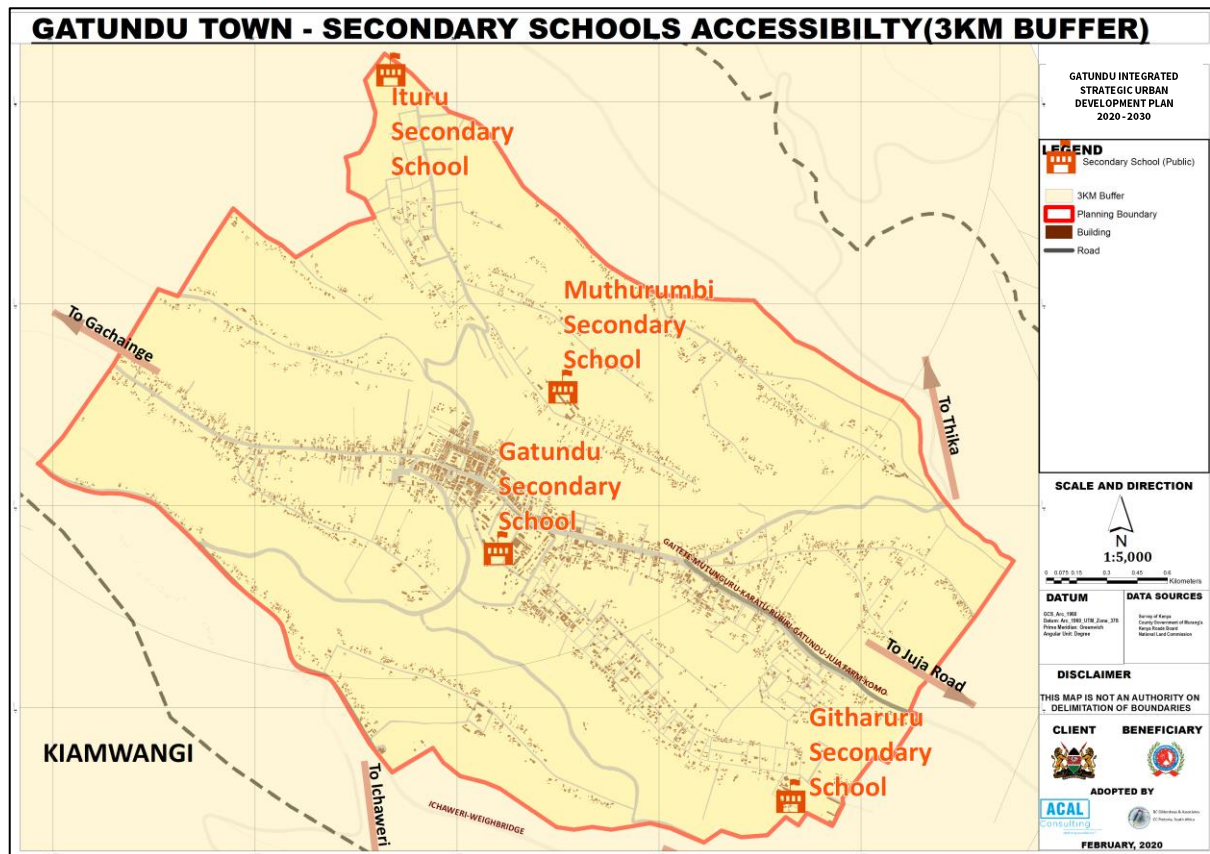
Map 9-3: Secondary schools distribution



Source: ACAL & BC Gildenhuys, 2020

All the schools can be accessed within a three-kilometre radius and are well distributed spatially within the planning area, as shown in map 9-4. The required catchment distance for secondary school is 3 km radius, with each secondary school serving a catchment population of 8000.

Map 9-4: Secondary school catchment area



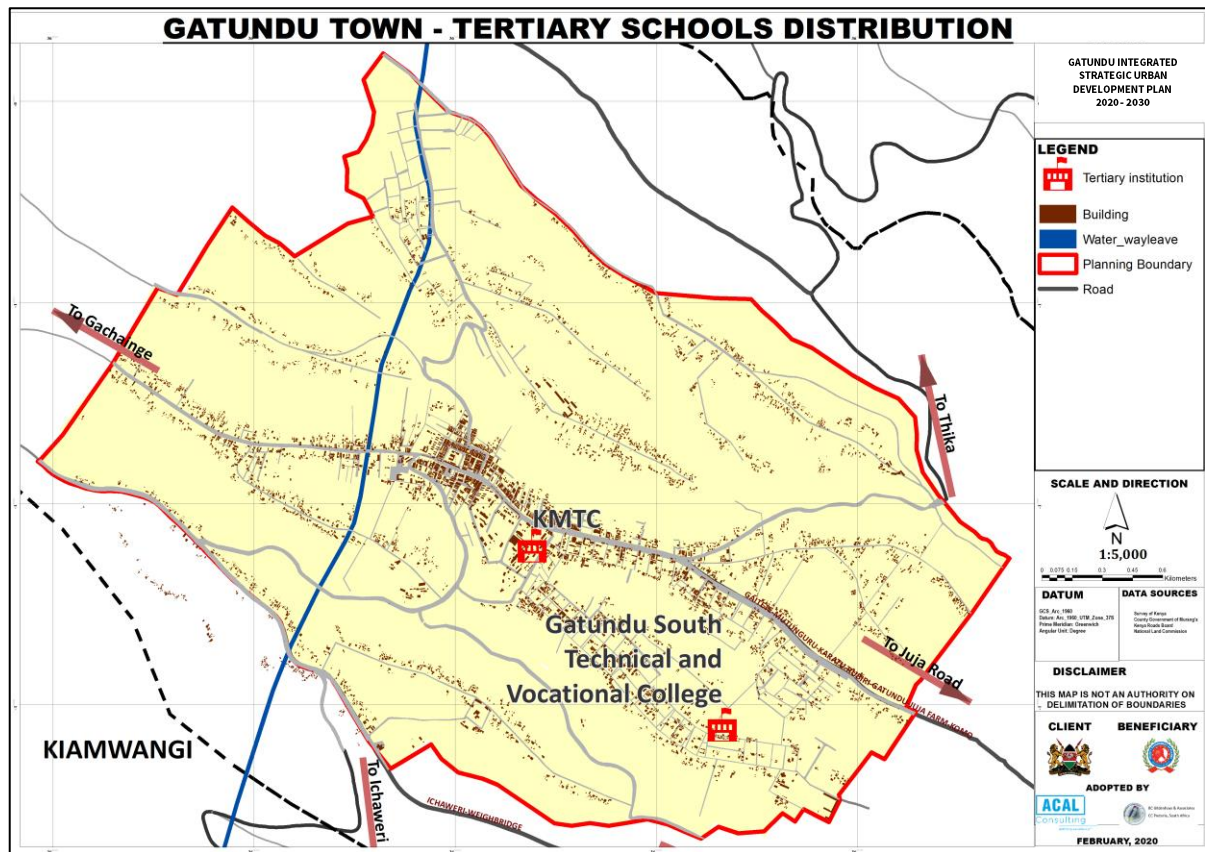
Source: ACAL & BC Gildenhuys, 2020

9.1.3 Tertiary Institutions

Gatundu town has two tertiary institutions: The Kenya Medical Training College situated in Gatundu Level 5 Hospital and the Gatundu Polytechnic which is still under construction.

Map 9-5 shows the distribution of tertiary institutions within the planning area

Map 9-5: Tertiary Institutions distribution

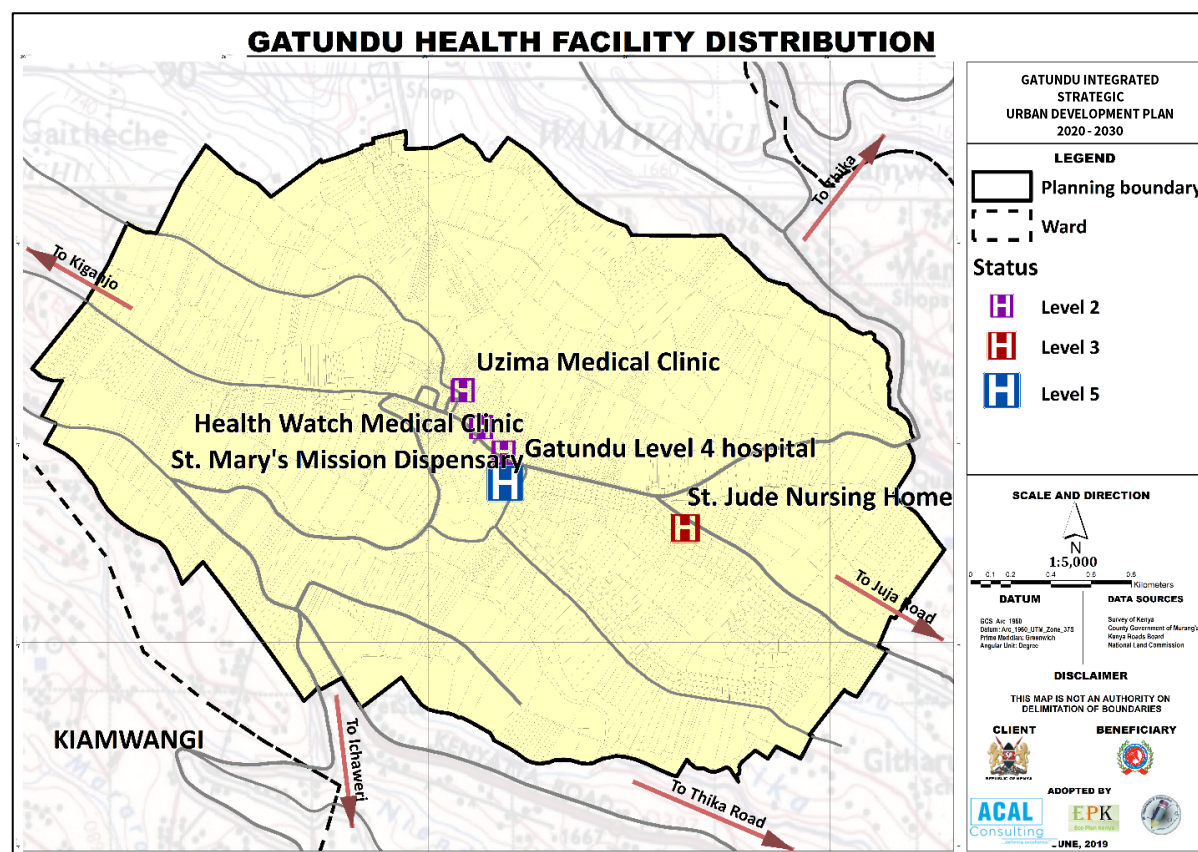


Source: ACAL & BC Gildenhuys, 2020

9.1.4 Health Facilities

The health facilities found within Gatundu town include the Gatundu L.5 Hospital which is a public hospital. Private hospitals include St Jude Nursing Home and Bethsaida ENT & Medical Services. The health centres include; By Grace Medical Clinic, St Mary's Mission Clinic, Uzima Medical Clinic, Health Watch Medical Clinic and Hope Medical Clinic. Map 9-5 shows the distribution of health facilities within the planning area.

Map 9-6: Distribution of health facilities in Gatundu town



Source: ACAL & BC Gildenhuys, 2020

Gatundu Level 5 hospital has 25 doctors, 110 nurses, 17 health officers and 8 Laboratory Technicians. Its bed capacity is 178 persons.

The planning area is therefore well served by both private and public health facilities. Focus should therefore shift towards enhancing medical staff to patient ratios and enhancing quality of service.

9.2 Other Social Infrastructure

9.2.1 Recreation Facilities

The planning area hosts Gatundu Stadium strategically located within the urban core area. However, the stadium is not well developed with the requisite infrastructure. The town lacks a public park for recreation activities.

9.2.2 Administrative and Other Facilities

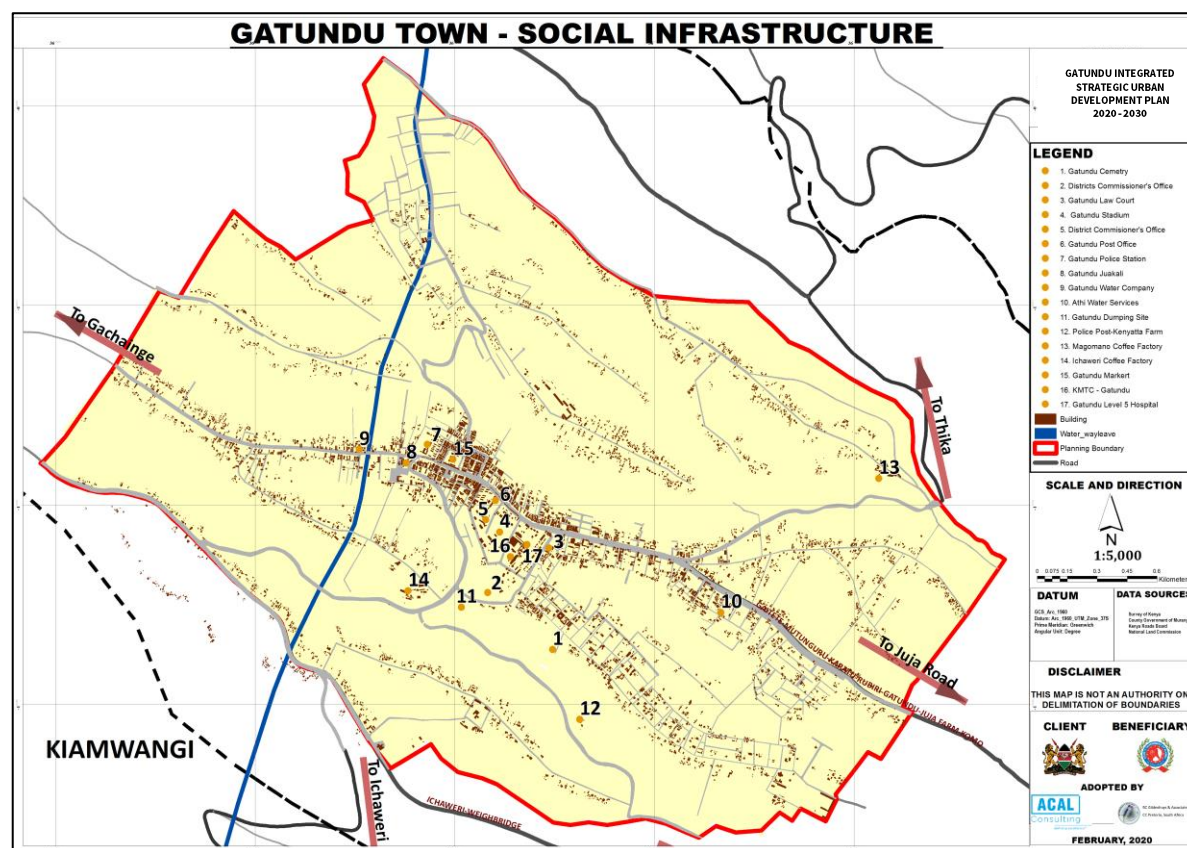
Gatundu town is the Sub-County headquarter of Gatundu South Sub-County and thus hosts various Government offices, on land owned by both the national government and the County government. There is also a police station within the town CBD, the office of deputy County commissioner, and law courts within the town.

There exists a public cemetery within Gatundu town, one slaughterhouse, and no public library within the town.

9.2.3 Religious Facilities and Social Halls

The planning area hosts numerous churches, predominant of which are parishes of the Presbyterian Church of East Africa (PCEA), the Anglican Church of Kenya (ACK) and the African Inland Church (AIC). There are also many evangelical churches that occupy small parcels of land all around the planning area.

Map 9-7: Other social infrastructure distribution



Source: ACAL & BC Gildenhuys, 2020

Table 9-1 summarises the social infrastructure within the planning area, highlighting what exists and what is missing so as to guide planning proposals.

Table 9-1: Summary of other social infrastructure

Facility:	Name/ Number:
Recreational Facilities	None
Government Offices	Present
Sports Facilities	Gatundu stadium
Social Hall	None
Public Library	None
Post Office	Gatundu Post Office
Fire Station	None
Police Stations	Gatundu Police Station
Religious Institutions	Many
Slaughterhouses	Gatundu South (Near Gatundu Polytechnic)
Cattle dip	3
Cemeteries	Present

Source: ACAL & BC Gildenhuys, 2020

9.3 Emerging Issues

The key emerging issues and opportunities derived from analyzing the social infrastructure have been summarized in table 9-1 below.

Table 9-2: Emerging issues on social infrastructure

Education Facilities	
Key Highlights	Opportunities
Planning area well covered with education facilities from ECD, primary, secondary to tertiary level. Two public tertiary institutions in the area.	Improvement of existing infrastructure within the education facilities Tertiary education facility can act as a driver for growth
Health	
Key Highlights	Opportunities
<ul style="list-style-type: none"> ▪ Presence of a public Level 5 health facility ▪ Most prevalent diseases are:- Pneumonia, Upper respiratory tract infection, Diarrhoea, Skin disease, Hypertension, Diabetes 	<ul style="list-style-type: none"> ▪ Need to enhance service provision with the existing facilities ▪ Universal access to health care
Social Infrastructure	
Key Highlights	Opportunities
<ul style="list-style-type: none"> ▪ Inadequate public recreation facilities within planning area ▪ Presence of a wide scope of social facilities such as government offices, security facilities and religious facilities ▪ There is no public library in Gatundu. ▪ Cemetery used for Agriculture 	<ul style="list-style-type: none"> ▪ Opportunity for development of a public park ▪ Opportunity for further investments in missing social facilities such as library

Source: ACAL & BC Gildenhuys, 2020

10 CHAPTER TEN: ECONOMIC ANALYSIS

10.1 Agriculture

Agriculture is a key economic activity in the area employing over 28.7% of the population⁸ within the planning area. The main crops grown include tea and coffee, while food crops grown are maize, beans and Irish potatoes. Other crops grown include mangoes, cabbages and flowers, bananas, avocado, tree tomatoes, sugarcane, arrow roots and sweet potatoes.

The main livestock enterprises are dairy farming, poultry keeping, and pig rearing. The agricultural sector is faced with many challenges that include declining production due to erratic weather; declining farm sizes due to subdivisions; land use change due to urbanisation; as well as challenges related to pricing and markets for commodities.

Plate 10-1 Agricultural activities



Source: Field work 2019

10.2 Industrial Activities

Light and medium industries are found in Gatundu. Light industries include coffee processing (Coffee factories in Magomano and Ichaweri), and animal feeds processing (Tembo Animal Feeds). Other light industrial activities include furniture making, metal welding, motorcycle repair and bakery services.

Figure 10-1: Industrial Activities in Gatundu

Light industry

8 KNBS 2013



Juakali shed in gatundu.

Source: Field work, 2019

10.3 Trade and Commerce

Commercial activities in Gatundu town include both formal and informal activities. They include:

- Retail and wholesale shops
- Hotels and eateries
- Markets for vegetables, fruits, cereals
- Agricultural produce retail and hawking
- General hardware shops
- Service provision activities e.g. banks

Gatundu modern market is the main commercial facility offering space for retail services targeting agricultural commodities, and household goods.

Figure 10-2: Commercial activities



Gatundu market



Financial institutions

Source: Field work, 2019

The projected income from trade and businesses through business permits in Gatundu is Ksh 26,317,241.68 underscoring the importance of the town as a commercial hub.

10.4 Mining

The only type of mining within the planning area is quarrying for construction materials (building stones and ballast). There are no discovered precious minerals in Gatundu.

10.5 Tourism

In addition to the town's rich cultural history, the town has key features that can be tapped into for tourism. Just at the entry of the town is Thiririka Falls, surrounded by beautiful forest land scape that offers an ideal picnic site.

Plate 10-2 Thiririka Falls



Photo credit; Aron Kecha

Kimunyi village hosts the famous Mau Mau caves. The historical 'holy' caves situated in Kimunyu village are popular among Christians from different denominations who stream there in droves to fast and pray. The caves are said to have been used by Mau Mau fighters as a hideout from the colonial forces during the struggle for independence.

10.6 Emerging Issues

Table 10-1: Emerging issues on economy

Agriculture	
Key Highlights	Opportunities
<ul style="list-style-type: none"> ▪ Dominant economic activity is agriculture, both subsistence and commercial ▪ Limited value addition of agricultural produce in the area ▪ Land fragmentation a threat to agricultural sustainability 	<ul style="list-style-type: none"> ▪ Potential for high value crops such as macadamia, pineapples, avocados and coffee ▪ Potential to modernize farming to increase yield ▪ Potential in other sectors such as aquaculture and apiculture
Industries	
Key Highlights	Opportunities
<ul style="list-style-type: none"> ▪ Several light Industries exist in town. However the main constraint remain adequate space to accommodate jua kali artisans 	<ul style="list-style-type: none"> ▪ Value addition of agricultural produce can drive industries in the area

<ul style="list-style-type: none"> ▪ The area has dormant Coffee industries 	<ul style="list-style-type: none"> ▪ Land for coffee industries can be used for other value additions industries
Trade and Commerce	
Key Highlights	Opportunities
<ul style="list-style-type: none"> ▪ Town has grown a modern market that has driven trade and commerce ▪ Town located along a major Link road (Gatundu-Kinare Road) and enjoys good regional connectivity 	<ul style="list-style-type: none"> ▪ Potential to enhance the commercial function through expansion of market, and provision of support infrastructure ▪ Strategic location of town can be harnessed to model the town as a trade hub
Tourisms	
Key Highlights	Opportunities
<ul style="list-style-type: none"> ▪ Thiririka falls is an ideal tourism site that has not been fully exploited ▪ Mau Mau falls have a deep historical significance that has not been fully exploited 	<ul style="list-style-type: none"> ▪ The site hosting Thiririka falls can be developed into a picnic site/arboretum thus service as a key attraction ▪ The Mau Mau falls can be gazette as national heritage and developed into tourism sites

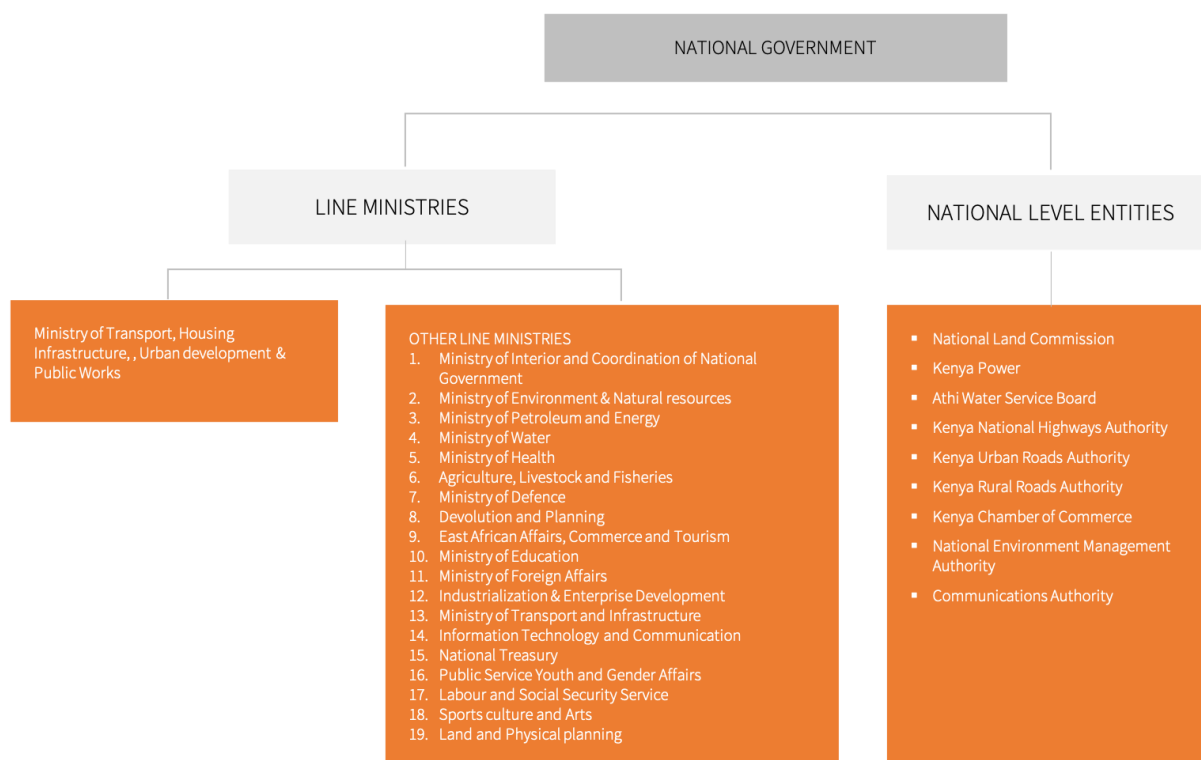
Source: ACAL & BC Gildenhuys, 2020

11 CHAPTER ELEVEN: GOVERNANCE AND INSTITUTIONS

11.1 Institutional Framework

Institutions are agents of plan implementation; a sound institutional framework can make or break a plan's implementation. Although planning is a devolved function, both the National Government and the County Government play a major role in the governance of the County and guides the roles of other actors like the private sectors and civil societies.

Figure 11-1 Institutional Arrangement at National Level



Source: ACAL 2020

11.2 National Government

The National Government provides the funds for projects in the County, making it a major institutional player in the success of the IUSDP. The National Government is through the relevant ministries play a key role in trunk infrastructure planning such as international roads, water and sewerage infrastructure, education infrastructure, and management of key natural resources. The role of the National Government is also to ensure budgetary allocation in the County and to facilitate national statistics and data on population, the economy and society in general.

This plan has been prepared with the support from Ministry of Transport, Infrastructure, Housing, Urban development & Public Works, through the Nairobi Metropolitan Services Improvement Programme (NaMSIP)

11.2.1 Nairobi Metropolitan Services Improvement Programme (NaMSIP)

The national government through Nairobi Metropolitan Services Improvement Programme (NaMSIP) has supported the planning process, under its program for strengthening urban services and infrastructure services. Through the collaboration with NaMSIP, the National Government will ensure improvement in service delivery by strengthening the current and future entities responsible for service delivery, including the central ministry, current local authorities and Kiambu County Government, utilities and other service providers, and possible future metropolitan authorities responsible for planning, transport, and other services.

The population will benefit from better planning and a reduction in the chaotic, unplanned development that has plagued the greater metropolitan region. In particular, they will benefit from the project's support for planning

and public infrastructure in the areas surrounding the commuter rail stations. They will also benefit from increased access to urban infrastructure and services under the project, such as access roads, street and security lighting, sanitation services, and solid waste collection and disposal.

11.2.2 Financing Mechanism

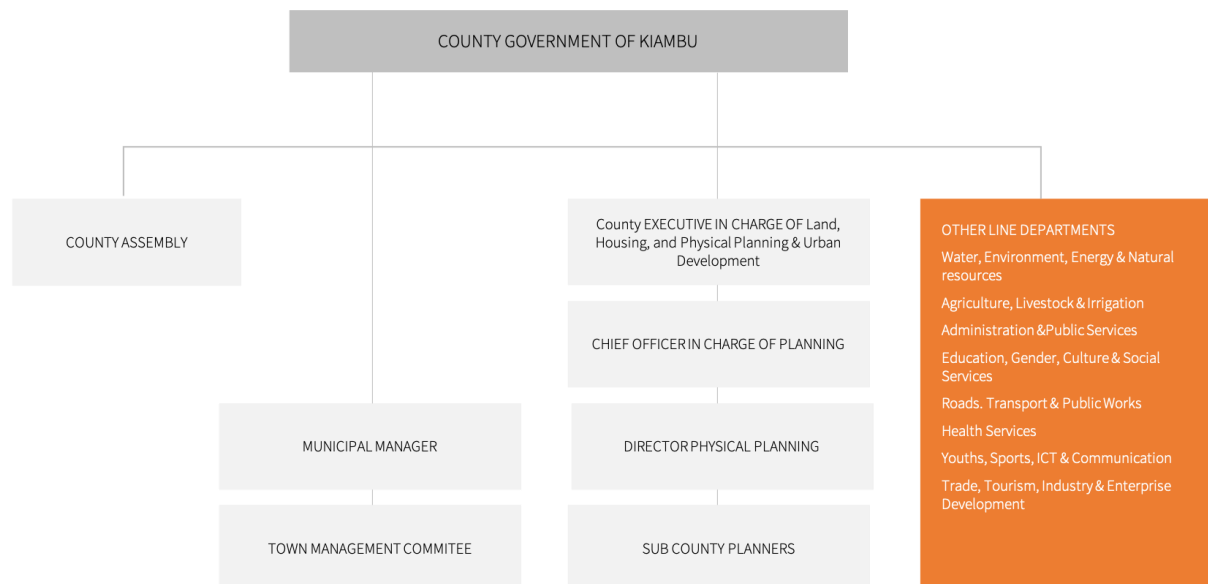
It is constitutionally required that the revenue raised nationally is shared equitably among the National and County Governments. Among the National Government revenue, 43% is transferred to the County Governments. Additional allocations from the national government’s share of the revenue, either conditionally or unconditionally can be added to the County Governments (CRA, 2014).

The County government of Kiambu financial projections for the year 2019/2020 is Ksh 15.63B constituting Ksh 2.96B own source revenues and 12.6B allocations from National government. All projects involving NaMSIP will be funded by the World Bank and non-bank sources. The resources required are outlined in every project to ensure implementation.

11.3 County Government of Kiambu

The county government has the legislative arm represented by the county assembly, and the executive arm.

Figure 11-2 Planning Structure



Under the legislative arm, the Constitution confers powers on the County Assemblies to receive and approve plans and policies. These plans and policies affect the management and exploitation of the County’s resources. They also affect the development and management of County infrastructure and institutions.

Under the executive arm, the planning function falls under the department of Land, Housing, and Physical Planning & Urban Development. The department’s role is to promote an integrated framework in spatial planning and infrastructure development for social, economic and environmental well-being of Kiambu County.

Leadership and governance of towns is at the County level and guided by the Acts of parliament: County Government Acts and the Urban Areas and Cities Act. The multi sectors such as infrastructure and public works, health and other social facilities are guided by the various departments existing within the County level. Therefore, the County government has the role of construction of necessary infrastructure and facilities like transport facilities, storm water drainages, pre-primary education facilities, and polytechnics.

11.4 Actors and Framework for ISUDP Implementation

The County Government Act 2012 provides the legal framework for plan implementation. Urban areas that qualify as Cities and Municipalities will be managed under a City or Municipal Corporate Board, while towns will be managed by Town management committees. The Board/committees will function as an agency of the County government and will be accountable to the governor and the county residents. The Board/committees will have

powers to raise revenue and make financial spending decisions. They will be responsible for service delivery under the urban area/town. They will have the executive authority to manage and implement City, Municipal or urban plans. The day to day administration of towns will be through a competitively recruited town manager answerable to the County Executive Committee.

11.4.1 Town Management Committee

Gatundu is classified as a town based on its population. The 2nd schedule of Urban Areas and Cities Act categorizes areas with population of at least 10,000 as towns. The effective implementation of the Gatundu IUSDP therefore requires the appointment of a competent town/urban management committee for the urban areas. The function of the urban management committee is to oversee the affairs of the town, formulate and implement integrated development plans, and control land use, land sub-division, land development, and zoning. Such a committee also promotes and undertakes infrastructural development, implements applicable national and county legislations, collects rates, taxes, levies, duties, fees, and surcharges on fees, and promotes a safe and healthy environment.

The management of Gatundu town shall therefore be vested in the county government and administered on its behalf by— (a) a town committee constituted in accordance with section 31 of the Urban Areas and Cities Act. Section 31. (1) States that the management of a town shall be vested in a town committee comprised of five members which shall be constituted as follows:

- a. the county executive committee member responsible for urban areas and cities or his representative;
- b. two members appointed competitively by the county governor;
- c. a cluster representing registered associations of the informal sector; and,
- d. A cluster representing the business community.

(2) The members of the town committee specified under subsection (1) shall be appointed by the county governor with the approval of the county assembly.

11.4.2 Citizen Committees for Plan Implementation:

The involvement of community members in the plan implementation process will ensure fulfilment of legal requirements of citizen participation in implementation of plan. Therefore, ISUDP proposes a Citizen Committee consisting of the representatives of residents’ associations within the planning area, coordinated by the Ward Administrator, whose members will either be elected or nominated by residents’ associations. These committees will work with the Steering Committee in ensuring plan implementation.

11.4.3 Financial Mechanism

11.4.3.1 Revenue Collection and Sources

The main sources of revenue for Gatundu South Sub County where the planning area lies can be summarised in table 11-1

Table 11-1 Revenues in Gatundu South Sub County

REVENUE BUDGET GATUNDU SOUTH	FY 2018//2019
Management Unit Description	Amount
Agriculture Livestock & Fisheries Management Unit	91,264.00
Physical Planning Management Unit	2,118,066.32
Business Permit Management Unit	9,423,729.68
Cess Management Unit	
Education Culture ICT & Social Services Unit	-
Health Services Management Unit	81,121,369.16
Housing Management Unit	5,952.00
Land Rates Management Unit	2,011,195.68

Market Management Unit	1,018,126.80
Others	404,924.48
Roads Transport Public Works Management Unit	252,092.00
Slaughter House Management Unit	642,258.00
Trade Tourism Industry & Cooperatives Unit	400,009.12
Vehicle Parking Management Unit	7,419,217.60
Water Environment & Natural Resources Mgt Unit	874,165.28
Liquor Licences Management Unit	8,200,120.00
Direct Transfers	
Total:	113,982,490.12

Source: Kiambu County Financial Statements, 2017

The main source of revenue includes health services at 81m and business permits at 9.4m. Other sources include plot and land rates, market fees and building materials, and other cess. The others include license penalties and land rates penalties. However, the plan will help raise revenue through payments of rates.

11.5 Private Sector

11.5.1 Roles

The private sector plays a major role in the County development. The private sector within the planning area includes financial institutions, service providers, small and medium-size enterprises (SMEs), educational institutions, transport and communication companies, credit and savings societies, and manufacturing companies.

The private sector is important in formulation and implementation of the Gatundu IUSDP through formation of Private-Public Partnerships that are a source of funds for projects proposed in the CSP. The private sector also plays a role in the training and employment of the residents in the County thus reducing unemployment. They are also expected to carry out various projects not limited to provision of services including health, education, ICT and industries. This sector is therefore fundamental in achieving material growth in Gatundu Town.

11.6 Civil Societies

11.6.1 Roles

Civil work is considered one of the most important means of the County's progress. This has become more important with the widening gap between the resources and population's necessities, which is why civil organizations should be considered the County's partner in sustainable development, and in providing the necessary needs. Civil society is the direct supervisory power of the people on the rulers and authority's performance. Through civil societies, the people in Gatundu are catered for in terms of welfare and societal well-being. Through them, the people participate in the development of their residences and the County at large.

With serious and vital consideration of civil societies in development, Kiambu County will increase its rate of development and reduce corruption levels in governance, and this guarantees one of the most basic foundations of development.

11.7 Emerging Issues and Opportunities

The major planning opportunities and challenges presented by the governance sector have been summarized in Table 11-2.

Table 11-2: Opportunities and challenges (governance)

National Government	
Key Highlights	Opportunities
<ul style="list-style-type: none"> ▪ Key Agencies represented in this plan ▪ Athi water Service Board for Trunk water and Sewer infrastructure ▪ Kenya National Highways Authority ▪ Kenya Rural Roads Authority ▪ Kenya Power ▪ Support through NaMSIP 	<ul style="list-style-type: none"> ▪ Financial allocation for ongoing Key infrastructure projects including Kariminu Dam, Upgrade of truck sewer and water system ▪ Potential to rope in other actors
County Government	
Key Highlights	Opportunities
<ul style="list-style-type: none"> ▪ Presence of a relevant department for planning ▪ There is a sub county planner in each sub county ▪ The town management committees not yet in place 	<ul style="list-style-type: none"> ▪ Support for establishment of municipal boards, town management committees
Financial Mechanisms	
Key Highlights	Opportunities
<ul style="list-style-type: none"> ▪ Allocation from county governments ▪ County revenue streams 	<ul style="list-style-type: none"> ▪ Improvement of revenue streams through preparation of valuation role
Private Sector and Civil Societies	
Key Highlights	Opportunities
<ul style="list-style-type: none"> ▪ Active private sector 	<ul style="list-style-type: none"> ▪ Legal provision for public participation in governance

Source: ACAL & BC Gildenhuys, 2020

11.8 Stakeholder Concerns

A stakeholder workshop covering Gatundu town was held on 2 May 2018 at the Martyrs of Uganda Catholic Church. The outcomes of the meeting were assessed in term so the relevance of the issues for the planning process. The following issues were raised during the meeting.

Plate 11-1 Outcomes of stakeholder meetings

Physical environment		
Component	Issue/Proposals	Proposals
Rivers and Riparian zones	They proposed a new planning area that highlights the extent based on some of the physical features such as a river on the west and nodal activities on either side to the North and south i.e. the anticipated growth nodes.	Planning areas was agreed as part of the inception phase. All work was based on those boundaries and it is not possible to adjust boundaries at this stage.
Rain water	Proposed rain harvesting as most of the run-off water ended up being wasted	Noted. Dealt with as part of the access to infrastructure component in the project strategy.
Infrastructure		
Component	Issue	Proposal

Housing	Ageing housing in Gatundu town contributing to the static growth of the town	Revitalization of some of the old houses in Gatundu Town. Urban renewal program to densify the zones
Movement	Limited pedestrian infrastructure	Plan for NMT facilities
Parking	Inadequate Proper parking in the town had limited parking Encroachment of parking by car wash business. tendency of lorry owners to park by the road side and the centre of the town	Plan for adequate parking in CBD Provide parking for lorries
Roads and development	Challenges of access	Proposed parallel roads from Ituru to the river and the road towards Thika proposed a small scale industrial area for SMEs and Juakali enterprises
Land Use		
Component	Issue/Proposals	Comments
Land Size	Land Ownership	Regularization of the town plots -they mentioned that they didn't have any documentation
Land grabbing	Land Grabbing on public utilities. They mentioned a cemetery that is currently being used as a dumpsite.	Reclaim public land
Land Use	incompatibility issues on land uses	Clear land use zones
Transport		
Component	Issue/Proposals	Comments
Roads	Opening of the road towards Handege and Naivasha to open up the town	The proposal was noted for recommendation to KENHA
Roads	Encroachment-Road reserve, bus park and major back streets.	Dealt with as part of planning proposals
Roads	The proposed infrastructure improvements on roads should work with the existing proposed sewerage lines.	The consultant liaised with Gatundu water and sewerage company.
Waste Management		
Component	Issue/Proposals	Comments
Sewer	They requested the consultants to have a consultative meeting with GAWASCO on matters to do with the proposed sewer treatment project.	A consultative meeting was held with the CEO of GAWASCO, Sub county admin, chiefs and a few opinion leaders on the same
Land Use		
Component	Issue/Proposals	Comments
Land	due diligence on the land where the current dumpsite is located whether its indeed a cemetery for the town as there was no cemetery for the town.	
Development	Controlled development to prevent loss of agricultural land.	A zoning plan to be developed
Land size	Queried the sustainability of agriculture in the area as the farmers were not getting maximum use out of their land if they compared	Allocate land uses appropriately

	it with having residential establishments. This was a plight for guidance on land use suitability and adequate planning.	
Social Services		
Component	Issue/Proposals	Comments
Recreational	Proposed to have recreational spaces as breathing spaces. The town didn't have an open space for the public.	Dealt with as part of planning proposals
	Following the above discussions, the stakeholders suggested that the mentioned boundary adjustments be made. Also, that adequate consultations with the stakeholders and administrative representatives be made before the second stakeholders meeting.	Noted.

Source: ACAL & BC Gildenhuys, 2020

12 CHAPTER TWELVE: SYNTHESIS OF EMERGING ISSUES, OPPORTUNITIES AND CHALLENGES

The information provided in this chapter establishes some of the parameters that influence how the study area is managed today and how it will be managed in the future. Analysis of the biophysical, environmental and social conditions in Gatundu reveals several opportunities across the different sectors. This can be summarised as follows:

12.1 Geographic Location

The town is strategically located on a main transport corridor. Gatundu Kinare road links A2 to A104 through Kenyatta Road and Gatundu Kinare road. The town is further surrounded by rich agricultural hinterland that supports various horticultural crops, tea, milk and fruit crops. The strategic location of the town positions it as an important potential dormitory town for Nairobi.

12.2 Physiographic Characteristics

Topography and Slope: The planning area is characterized by a series of ridges running parallel to each other and converging in deep valleys. Rivers and streams are found at the bottom of the valleys. However, the planning area enjoys a relatively good topology, 70% of the land being developable. Settlements are linear along the ridges, following the road networks.

However, the terrain has shaped the settlement pattern and can be used to inform and guide planning recommendations. The slopes offer opportunities for water and sewerage supply via gravity.

Soil and Geology: The rich soils are ideal for different forms of agriculture, supporting a wide variety of crops

12.3 Population and Demography

Population Size and Structure: The population of the area will have doubled from the base population at 2009, to a total of 25155 persons by the year 2030. The planning area has the bulk of the population within the ages 16-64.

The youthful population presents adequate labour to support development activities. However, if not well managed, the population presents a challenge in terms of generation of adequate gainful employment.

Well Being: The sub county has lower poverty levels (21.75% compared to national average of 36%). Majority of the population are engaged in agricultural activities as the main livelihood source. There are therefore numerous opportunities within the agricultural sector to generate opportunities through farming, and through value addition of produce.

12.4 Land Use Analysis

Agriculture remains the dominant land use within the planning area. Commercial and public purpose land use is dominant within the CBD along the Gatundu Kinare road. Residential land use is dominant along the feeder road, mainly Gatundu law curst road, Gatundu- Juja road and Muhara road.

There is no provision for public recreation spaces within the planning area. Land subdivision is a key threat to agriculture land use. The traditional subdivision system (narrow strips of land fronting both the road and the river) is a threat economic viability of the land parcels.

12.5 Environment and Natural Resources

The area has good vegetation cover comprising trees, shrubs and food crops. There are no gazetted forests within the planning area. However, patches of woodlots exist at plot level. A water fall exists within the town on Thirikika River. The area also has Mau Mau caves.

Environmentally sensitive areas in the planning areas include the steep slopes (>25%) and riparian areas.

12.6 Housing and Human Settlements

Settlement Patterns: Human settlements are largely inclined outwards as you move away from the CBD. Pockets of human settlements are also concentrated on main junctions forming small nodes that can act as market centres.

Housing Stock and Typology: There is no well-defined housing typology in the urban areas. Row houses are very common, with flats coming up in certain parts.

The bulk of the building stock in the town are ageing, depicting urban decay.

Space utilisation is also not optimized due to the dominance of low rise typologies. Sprawl is eating into existing agricultural land thus a threat to agriculture production.

12.7 Physical Infrastructure

Regional connectivity; The town is well linked to two Class A roads, which are part of the Northern corridor thus of significance to the region. The good regional connectivity makes the town an ideal location as a dormitory town to serve the growing demand for housing in the metropolis.

Local Circulation: The roads within the CBD are in a fairly good condition. However, outside the CBD, local level access roads are not well developed. Some of the roads are very narrow, with cases of encroachment being recorded.

Transportation: Road is the main form of transportation, supporting both motorised and non-motorised transport. However, the town lacks provision for infrastructure to support non-motorised transport. The location of the bus park has led to traffic related accidents/incidences hence the need to review the suitability of the site, or remodel the entry – exit arrangements. The residential areas are served with roads as narrow as 3 m. The area hosting Gatundu Vocational Training Centre and the cattle dip and cattle boma is not well accessed due to narrow roads and poor condition of the roads. Several missing links are within the planning area.

Water and Sanitation: access to piped water and sewerage system is at slightly less than 50%. Majority of households rely on protected wells, and on rivers and streams for water. Onsite sanitation facilities dominated by pit latrines is common. The water reticulation system by Gatundu Water and Sanitation Company has low coverage, and with dilapidated infrastructure thus unreliable water supply.

As the population grows, the onsite sanitation facilities will become a threat to the environment due to the risk of pollution. There is therefore need to invest in proper water supply and sewerage system. Opportunities also exist in household rain water harvesting.

Energy: biomass remains the dominant energy source for heating and cooking, while electricity dominates the lighting segment. Biomass energy places a burden on environment, as demand for fuel wood rises. Despite the presence of livestock, mainly dairy cows, uptake of alternative energy such as biogas is limited.

The energy has good grid connection to electricity. The electricity can be tapped to drive light and medium industries in the area. Biomass based clean energy such as biogas can also be tapped.

12.8 Social Infrastructure

Education facilities: the area has good coverage of schools (primary to secondary). All parts of the planning area can access schools within 2km radius for primary and 5 km radius for secondary). There exist two main public tertiary learning institutions in the planning area. However, in terms of land requirements, the schools fail to meet the required threshold of 3.5 Ha.

Opportunities exist in modernizing and improving infrastructure with the education facilities.

Health: There exists a level 5 hospital within the planning area. The facility also hosts Kenya Medical Training College. The facility can be enhanced to promote medical tourism so as to contribute to the vision of service hub.

Administration: As a sub county headquarter, the area is an administrative hub with facilities such a police station, administration offices, etc. The service function can be harnessed to enhance the status of the town.

12.9 Economic Analysis

Agriculture remains the main economic homestay of the area. However, this may be threatened by continuous land subdivision. Trade and commerce is also a key livelihood activity. Due to the presence of government offices, financial institutions, colleges and schools, employment is also a major source of household income.

Trade and commerce Gatundu market is the key defining feature for retail trade. Both formal and informal traders dominate the retail sector the town also serves as a commercial hub for the hinterland areas, due to its important service function. The town has several banks and financial institutions serving the people.

Industries: coffee factories are the main industries in the planning area. Light industry is dominated by Jua Kali artisans. However, agro based industries can be easily sustained by the agriculture sector in the hinterlands.

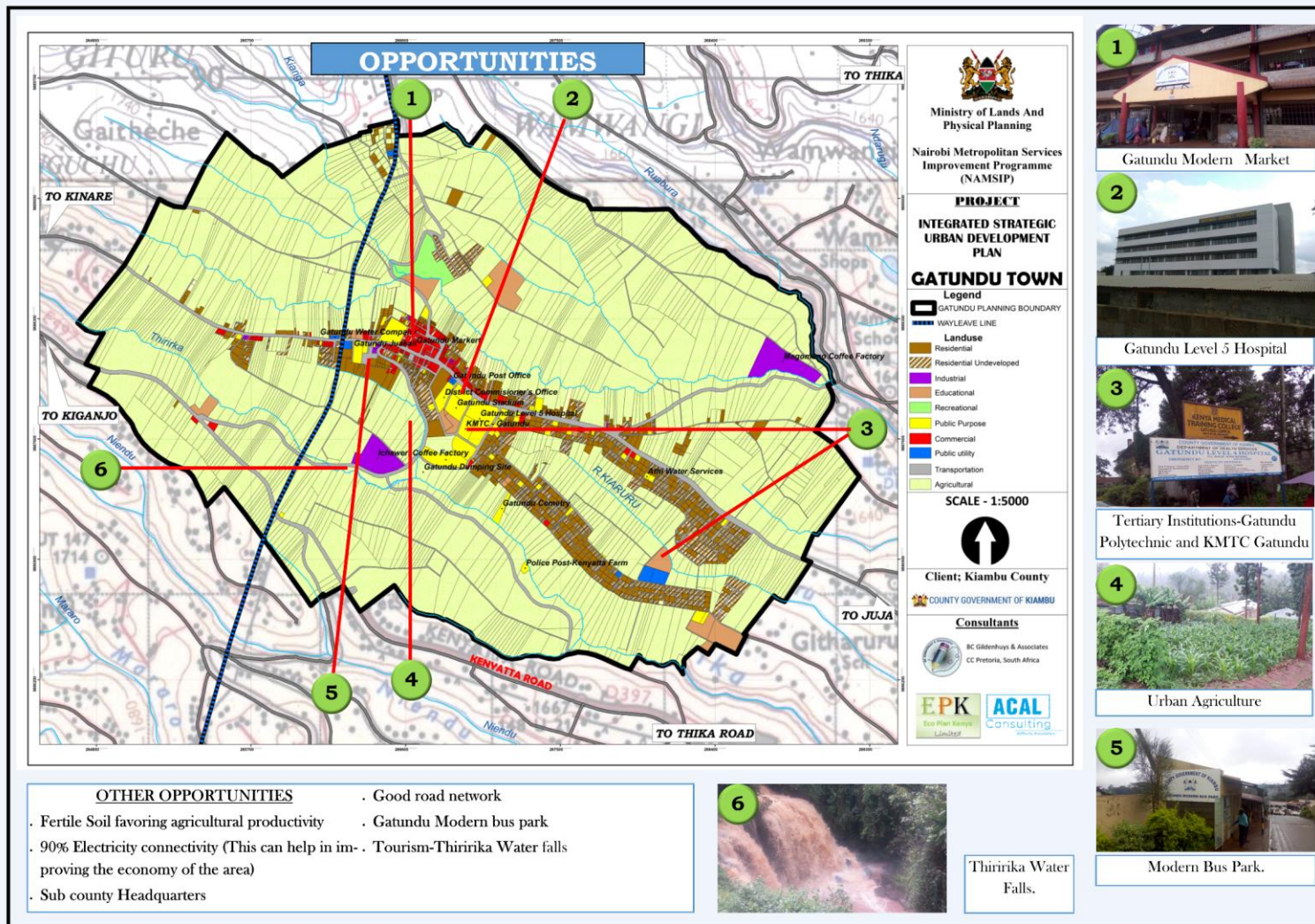
Tourism. Key tourist attraction features include the Thiririka falls and Mau mau Caves. None of them has been properly exploited to serve this function.

12.10 Governance

The county has a well-developed planning infrastructure supported by the executive in charge of land and physical planning. Each sub county has a sub county planner employed by the county government.

Opportunities exist within the urban areas and cities act that provides for formation of town management committees for a town of Gatundu's status. The county can therefore go ahead to form and gazette the town management committee that will play a key role in implementation of the plan.

Map 12-1: Opportunities



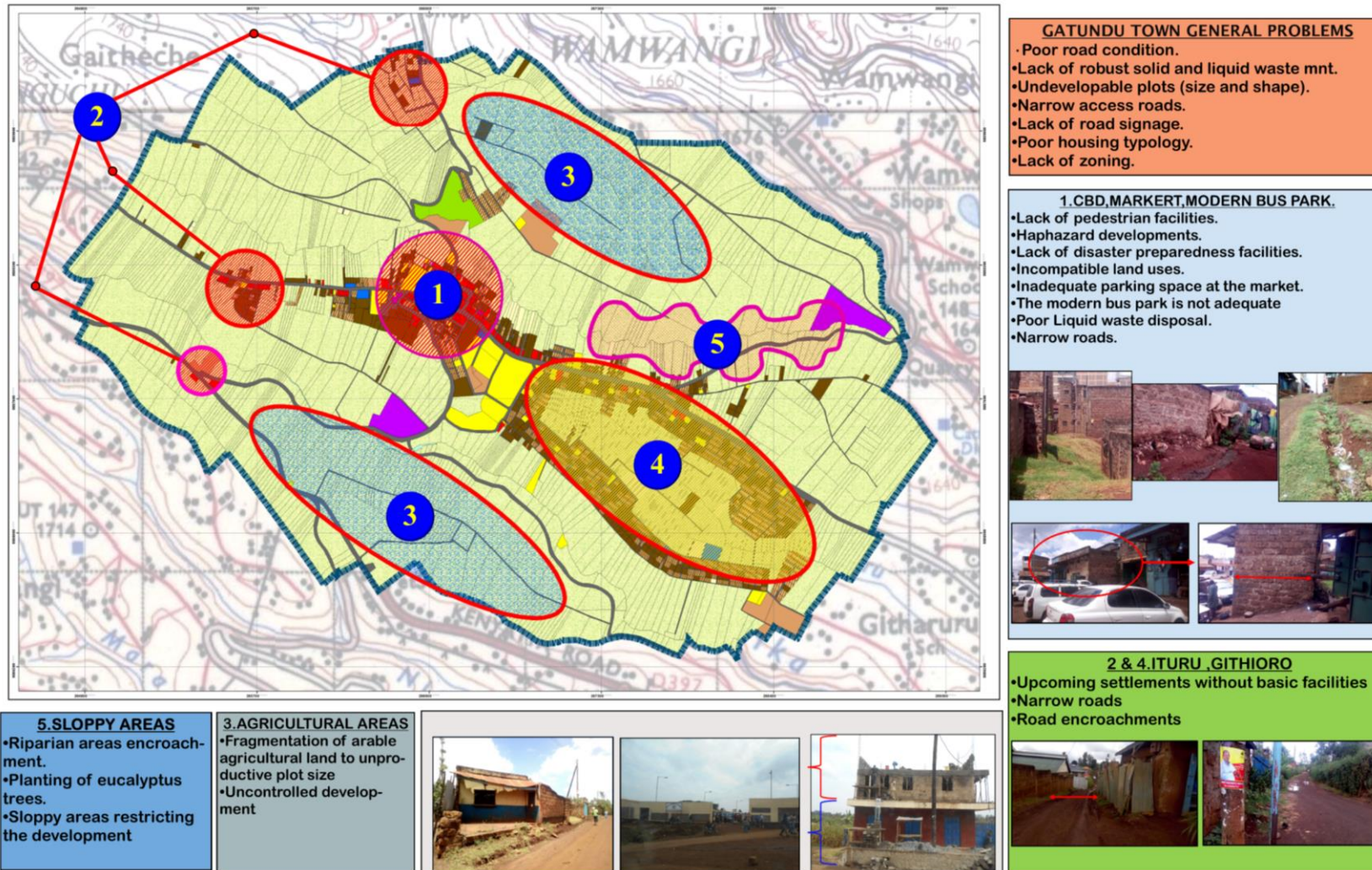
Source: ACAL & BC Gildenhuys, 2020

Plate 12-1: Challenges in the Gatundu town



Source: ACAL & BC Gildenhuys, 2020

Map 12-2: Challenges in Gatundu



Source: ACAL & BC Gildenhuys, 2020



GOVERNMENT
OF KENYA



COUNTY GOVERNMENT
OF KIAMBU

PART III: PLAN FORMULATION

13 CHAPTER THIRTEEN: SCENARIO BUILDING AND CONCEPTUAL FRAMEWORK

This part of the report provides a detailed analysis of the strategic structure plan of Gatundu Town. It also makes attempts to building scenarios that benefit Gatundu town's development. It majors on the projections for required land for development, analysis of development models and finally the preferred development model adopted by the plan.

13.1 Scenario One: Nil Intervention

This model depicts a situation whereby the area's urban structure is not tampered with but left to continue evolving with no planning improvement measures being put in place. Urban growth will obviously adopt the current development trend; spearheaded by haphazard developments, poor accessibility, inadequate basic facilities and inharmonious organisation of land uses. There being no planning interventions, the end product will be a much worse situation than the existing one.

This scenario will have the following effects:

- a) **Land and Human Settlements** - If the current urban growth of the town continues and little planning interventions are applied to guide growth, the planning area will sprawl along the Gatundu Kinare road, and the other main transport corridors. Due to space constraints, this type of development will lead to more encroachment on road reserves, as well as increased traffic congestion on the main roads. There will be proliferation of unplanned peri-urban areas to accommodate growth. These unplanned growth nodes will lead to uncontrolled development of the town leading to urban decay. Population growth in the urban areas will also exert pressure on existing urban services and infrastructure.
- b) **Environment:** Planning areas has fragile environments such as steep slopes and riparian areas that need conservation. Pressure for more space to accommodate development leads to increased encroachment on fragile areas, thus risk of landslides and erosion in areas with slopes above 25%. Encroachment on riparian areas is a direct threat to water security, as well as to health of the people relying on the water resources downstream, in addition to the loss of ecological integrity of these resources. The need to conserve these areas cannot be underscored.
- c) **Transport:** Gatundu town will sprawl along the Gatundu - Kinale road and further along Juja - Gatundu road, and Muhara road roads, causing congestion on the roads.
- d) **Economic-** If the current land use trends in the planning area are not addressed and no reforms are made, the economic sector in Gatundu will suffer in several ways. Loss of agricultural land will translate to loss of livelihoods and increased food insecurity. Increasing population will put a strain on the economy since the labour force will have no gainful occupation. Value addition industries will not be developed. The increased strain on existing infrastructure will negatively affect the economy.

Advantages of this option include:

- Maximizes individual choice and freedom
- Maximizes reduction of movement
- No resistance to change
- No demolition of existing developments i.e. buildings

13.2 Scenario Two: Urban Economic Regeneration Scenario

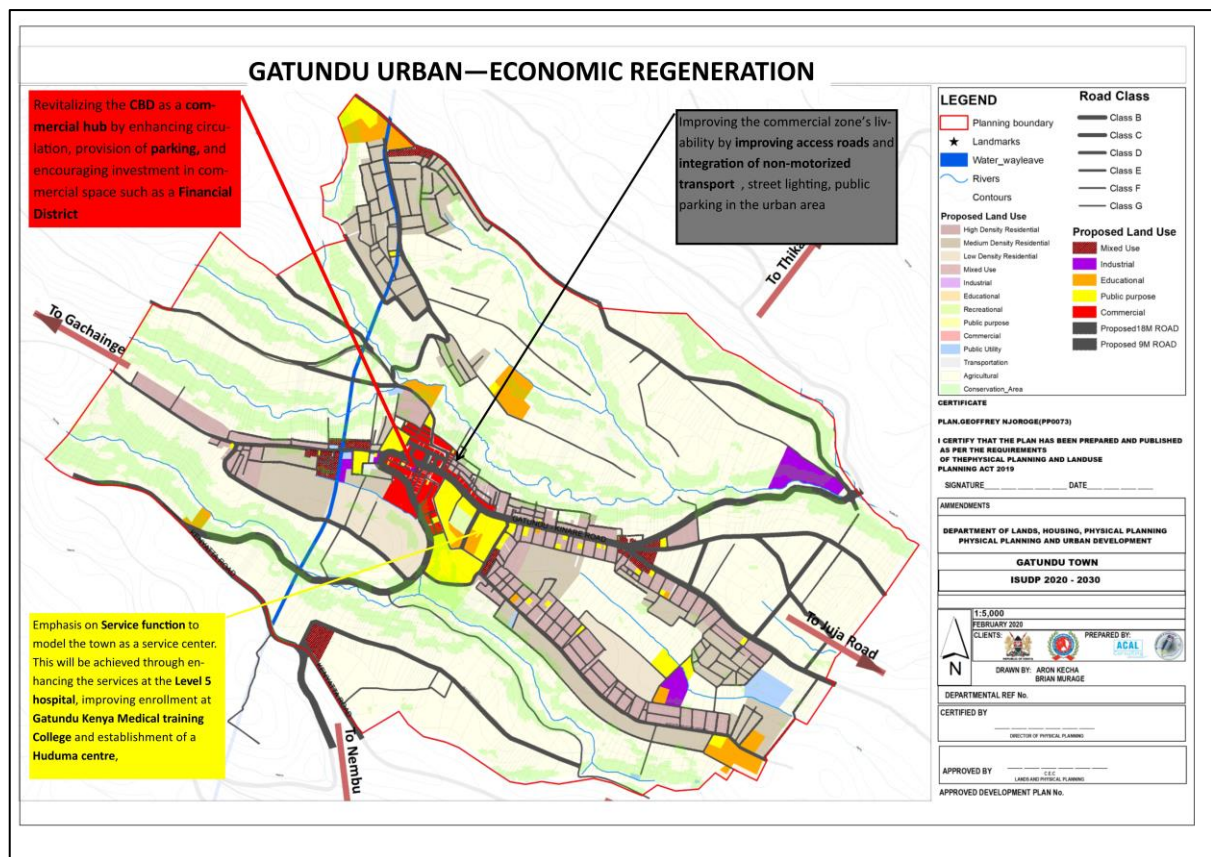
This model assumes the vision of building a vibrant economic hub for Gatundu town. It therefore deliberately puts in place measures to spur the said growth. It acknowledges economic informality and puts in place measures to promote as opposed to destruction of economic informality by:

- a) Revitalizing the CBD as a commercial hub by enhancing circulation, provision of parking, and encouraging investment in commercial space such as malls
- b) Tapping into the tourism potential by developing the area around Thiririka Falls as an arboretum/picnic site, gazettement the Mau Mau caves as historical sites, and promoting the rich history as a colonial town and home of the 1st president of Kenya to spur tourism potential of the town.

- c) Emphasis on Service function to model the town as a service center. This will be achieved through enhancing the services at the Level 5 hospital, improving enrollment at Gatundu Kenya Medical Training College and the Gatundu Vocational Training Center, establishment of a Huduma centre, and investment in quality housing stock.
- d) Improving the commercial zone's livability by improving access roads, street lighting, and public parking in the urban area.
- e) Investment in key enabler infrastructure such as water and sewerage, street lighting and other street furniture.

Potential constraints and assumptions.

- a) This scenario relies on an educational, cultural and entrepreneurial milieu. It assumes that public institutions will act in good faith to foster these milieus, but it also relies on a private sector to proactively take up measures herein.



13.3 Scenario Three: Green Growth Scenario

This scenario is based on the understanding that an inclusive and successful urban economy also recognizes the importance of balancing economic growth with environmental sustainability, by supporting innovation in the green economy. The UN Habitat defines a green economy as a low carbon, resource efficient and socially inclusive urban economy.

Under this scenario, Gatundu town can implement the following:

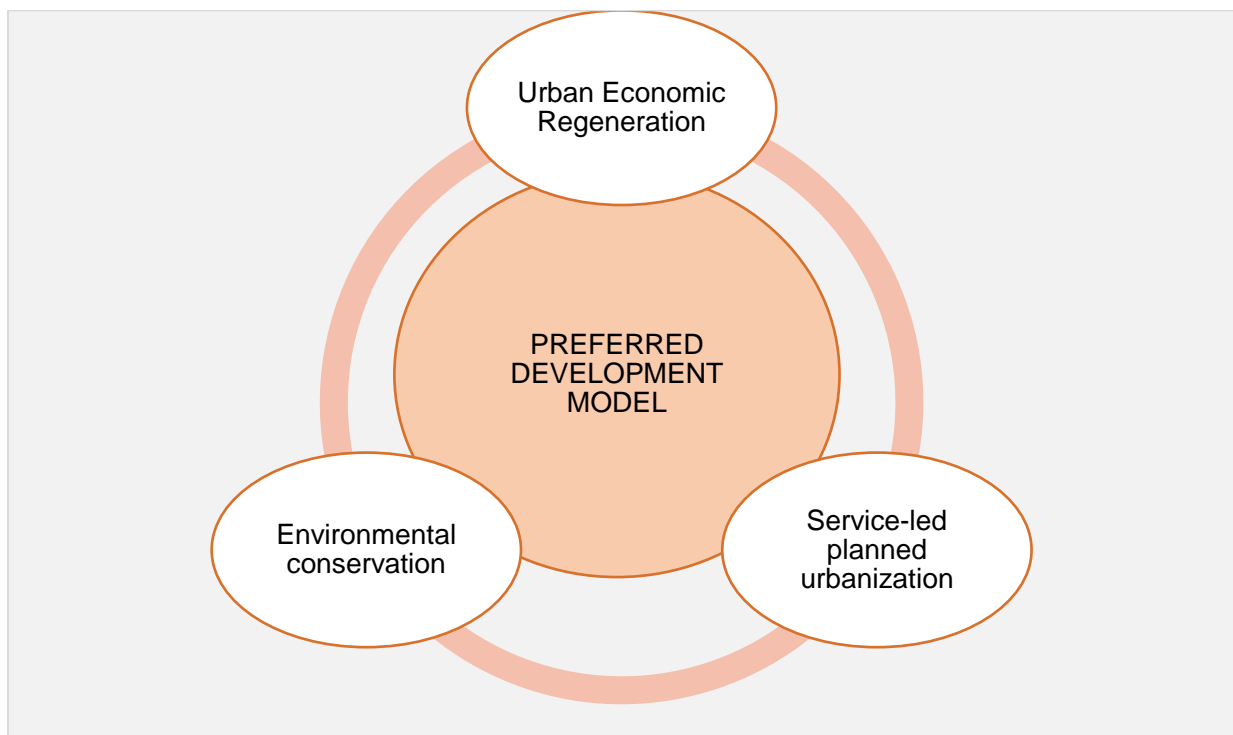
- a) Compact growth and integration of non-motorized transport to reduce environmental footprints.
- b) Increased number of open spaces and using conservation to create more recreational spaces especially in the areas of steep slopes.
- c) Introduction of neighborhood open spaces and ensuring access to open space for everyone.
- d) Conservation of wetlands, riparian areas and areas of steep slopes (>25%) riparian reserves forms a boundary that compacts development to the CBD.
- e) Promoting sustainable solid and liquid waste management in the urban area.

13.4 Preferred Model of Integrated Strategic Urban Development Plan

This model is guided by the vision of the plan which is “A Vibrant Commercial and Service Hub.” The IUSDP focus is to therefore put in place strategies that will guide enhance the town as a commercial and service hub, offering quality services to the residents and the people seeking services therein. Further to this, the plan recognises the environment as key pillar of sustainable development and therefore identifies some of the environmental challenges that may jeopardise the achievement of this vision.

In light of the above, the strategies proposed focus on three key pillars: Promoting economic regeneration of the town, promoting the town as an important service hub (administrative, education, commerce), as well as protecting the environment to guarantee quality of life and maintain resources that act as the support base for any meaningful development.

Figure 13-1 Summary Illustration of Preferred model



Source: ACAL & BC Gildenhuys, 2020

The preferred model aims to use urbanization as a tool for service provision and improved quality of life for the residents of Gatundu town.

Urban Economic Regeneration.

- i. Provision of space for light industries within the town to promote micro and small enterprises innovations.
- ii. Provision of Space for Value addition targeting agricultural produce from the rich hinterland.
- iii. Improvement of circulation through opening up local access roads and paving of unpaved roads.
- iv. Investing in requisite road furniture including street lighting and non-motorised transport facilities.
- v. Provide for parking facilities within the town to reduce traffic related conflicts and accommodate the people seeking services in the town.
- vi. Protection of urban farmlands to ensure food security and provide raw material for value add industries.

Service Led Urbanization.

- i. Provision of high quality medical services through enhancement of service delivery in the level 5 hospital so as to attract medical tourism.
- ii. Provision of adequate facilities to offer administrative and civic services to the people from the larger catchment area. This will target establishment of Huduma centres and enhancement of security.
- iii. Capitalizing on presence of two public tertiary education facilities, and the upcoming Mama Ngina University in Mutomo. The tertiary institutions can act as growth poles attracting new populations into the town, thus driving demand for goods and services, stimulating economic growth. This potential can be enhanced through:
 - a. Investing in key strategic road linkages (opening and grading key roads).
 - b. Provision of adequate and standard housing stock to attract people and promote the dormitory function of the town.
 - c. Improvement of civic infrastructure (water, sewerage, energy, security) to match the growing population.
- iv. Promotion of tourism through establishment of a picnic site at the Thiririka Falls, as well as the Mau Mau caves.

Environmental Conservation

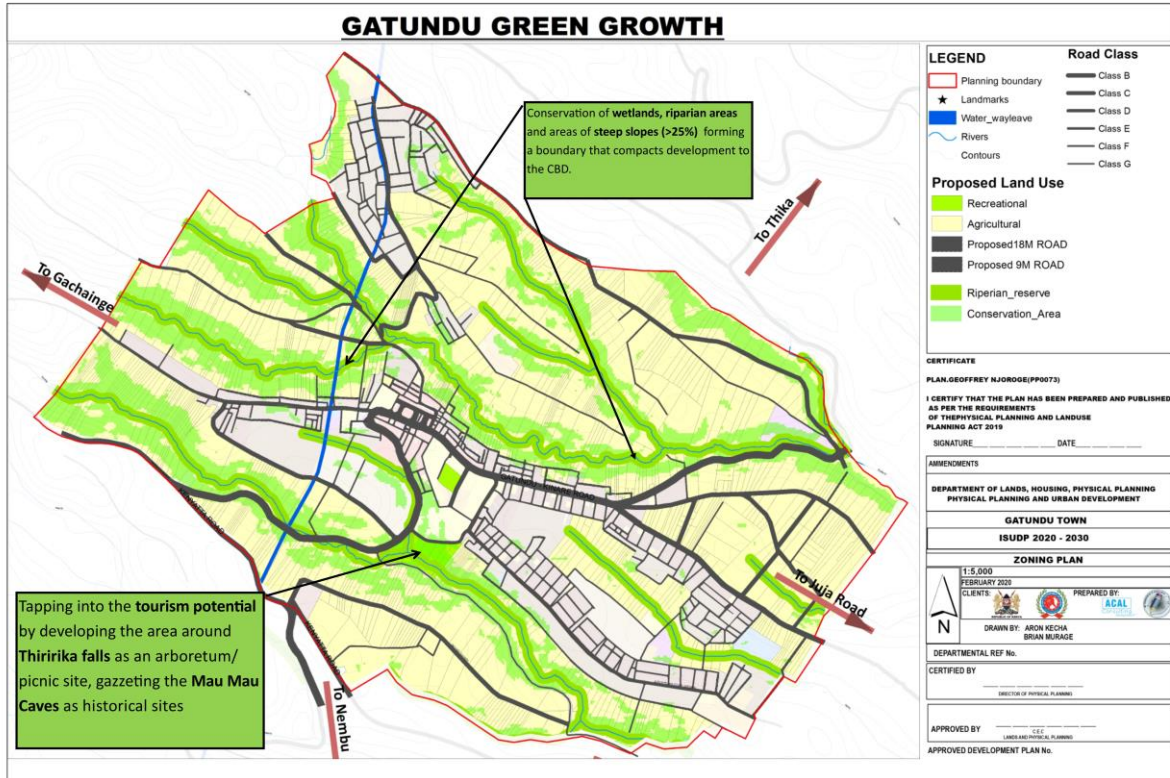
- i. Housing and human settlements that advocates for densification to reduce sprawl.
- ii. Promotion of non-motorized transportation within the town.
- iii. Provision of public open spaces for recreation and improvement of urban realm.
- iv. Protection of environmentally fragile areas such riparian areas and areas of steep slopes.

Some of these impacts include:

- Regulation of subdivision of land. This is done through zoning policies and regulation that provides the minimum land subdivisions.
- Controlled expansion of urban areas. Urban area growth is controlled through the zoning plans, land use plans and regulations which provide the urban limits and zones.
- Infrastructure provision. This is done through management of urban infrastructure and services through provision of such facilities and services that are commensurate to the population needs and demands.
- Protection and conservation of environmentally sensitive areas. These include; delineation of ecological and environmentally fragile areas, restriction of development to such areas and have policies that control and protect such areas.

Advantages of the model:

- It recognizes importance of urban growth
- Helps limit urban expansions by compacting developments
- Reduces overreliance and congestion on the core - CBD
- Encourages densification and urban renewal
- Encourages energy efficiency
- Lowers cost of infrastructure development
- Encourages protection of public land/forest and other environmentally fragile areas through conservation.



14 CHAPTER FOURTEEN: STRATEGIES AND MEASURES

This chapter lays down the different strategies that have been proposed in order to achieve the Gatundu vision of a vibrant and commercial and service hub.

14.1 Urban Economic Regeneration

The strategy appreciates the strategic location and linkages of Gatundu town and the enormous opportunity for trade within the town. The town is well connected to its surrounding areas by both a good network of local and regional roads creating opportunities for export and import of goods and services. The town also has a vibrant CBD surrounded by a fertile agricultural zone.

14.1.1 Strategies:

Strategy 1: Enhancement of Trade and commerce.

Activities:

- i. Urban renewal for the Core CBD shall entail opening up the access roads within the CBD, provision of on street parking facilities, and zoning regulations to encourage investment in commercial space such as shopping malls.
- ii. The CBD action area plan targets beautification of the CBD through zoning to create a well-planned and attractive centre for economic development. Some of the key provisions will include:
 - o Provision of service lanes along the main spine road to enhance access to shops.
 - o Enforcement of building lines and setbacks within the CBD to reduce encroachment on road reserves and thus enhance circulation.
 - o Conversion of streets within CBD into one-way traffic flow to ease congestion and provide for parking.
- iii. Development of incentives and subsidies to attract small-scale traders to already existing market infrastructure.
- iv. Protect the agricultural hinterland that produces both coffee and food crops through effective zoning policies.
- v. Expand the existing markets and ensuring that all nodes have access to markets for their produce.

Strategy 2: Promotion of Light-industrial development.

Activities:

- i. Establish a light industry for agro-processing to add value to farm produce.
- ii. Development of incentives and subsidies to attract private sector investment in agro-industries.

Strategy 3: Enhancement of agricultural activities and productivity.

The town is still an agricultural town surrounded by a rich hinterland. As a key livelihood source, agriculture offers potential to generate income, as well as to meet the rising demand for food within the town.

To this end, the plan proposes:

- i. Setting of the minimum acreage allowable for sub-division within the agricultural zone at 0.5 acre (0.2 Ha).
- ii. Develop a County policy for urban agriculture.
- iii. Initiate soil and water conservation programs along steep slopes within the agricultural zone.

14.2 Service Led Urbanization

As an administrative, education and commercial hub, the town can position itself to attract investments due to convenience in accessing key government and commercial services. The town is an administrative hub hosting the various government offices. The town will further experience an influx in population when the upcoming Mama Ngina University is opened. Presence of Gatundu Vocational Training Centre and Kenya Medical Training College further positions the town as a strategic dormitory town. However, this status is highly compromised by lack of quality and attractive housing stock, as well as inadequate access to water, sewer and recreation facilities.

Strategy 1: Affordable Housing program.

This calls for the need to invest in adequate and quality housing stock to attract and retain people to reside in the town.

To this end, the plan proposes the following:

- i. Redevelopment/ Infill of the old colonial estates: Densification of the old housing estate under affordable housing program.
- ii. Designation of different zones for the development of high-medium and low density residential housing.
- iii. Investment in adequate utilities: water and sewerage.

Strategy 2: Investment in Civic Infrastructure

Activities:

- i. Establish a Huduma centre to serve the town and its hinterland thus cementing its position as an administrative hub.
- ii. Provision of water and sewerage services in anticipation of the rising demand.
- iii. Invest in improving the facilities and services within Level 5 hospital so as to attract medical tourism.

Strategy 3: Improvement of Vital Infrastructure

- i. Expansion of the water intakes and trunk system to enhance water supply in the town.
- ii. Rehabilitation of water reticulation systems to reduce non-revenue water.
- iii. Expansion of water reticulation system to ensure universal coverage within the planning area.
- iv. Promotion of water harvesting at the household and institutional level.

Strategy 4: Social & Education Facilities

- i. Provision of a social hall within the town.
- ii. Identify possible locations for open spaces/parks within the town.

14.3 Environmental Protection and Conservation Strategy

The issues of focus in developing the environmental protection strategies included: storm water drainage, soil erosion, riparian reserves, ecosystems, water sources, solid waste management, sewerage systems, proposed buffers and forests.

Strategy 1: Conservation of Sensitive Environments.

Activities:

- i. Non-approval of development applications for physical constructions within wetlands and riparian reserves.
- ii. Promotion of terracing along all steeply sloping areas.
- iii. Promote farm agro forestry in areas with steep terrain
- iv. Community sensitization programs for soil and water conservation.
- v. Removal of eucalyptus trees along riparian reserves.

Strategy 2: Pollution control

Activities:

- i. Design and construct proper storm water management systems.
- ii. Provision of infrastructure for liquid waste management: universal coverage of sewer line within planning areas.
- iii. Development of solid waste management infrastructure: Adequate waste collection points, waste transfer stations.

14.4 Supporting Infrastructure

To implement the strategies above, there is need to invest in key support infrastructure which include roads, water, and sewer. The plan has identified the key areas for improvement which will include:

Strategy 1: Improved transport efficiency.

Activities:

- i. Design and construction of a 1.1 km pedestrian walk ways along Gatundu – Kinare road, from KURA offices to Gatundu Oasis church.
- ii. Design and construct service lanes along the Gatundu – Kinare road.
- iii. Construct a 12m access road to the colonial villages.
- iv. Convert the roads within CBD into one-way traffic flows with onsite parking i.e. Gatundu-Kinare road, and those surrounding the market.
- v. Paving of the roads within the CBD which are not paved yet.
- vi. Levelling and murraming of the roads connecting the CBD to surrounding residential and agricultural areas, Gatundu- Mang'u road.
- vii. Regular maintenance of road infrastructure within the planning area.
- viii. Provision of parking for lorries.

Strategy 2: Promotion of NMT transportation.

Activities:

- i. Designation of routes for NMT infrastructure (pedestrian walkways and cycling lanes) within the CBD and the internal centre roads.
- ii. Designation of an area for construction of a boda boda terminus/ sheds.

15 CHAPTER FIFTEEN: GATUNDU TOWN STRATEGIC STRUCTURE PLAN

15.1 Introduction

The structure plan proposes different land uses guided by situational analysis of Gatundu town spatial structure, land use requirements and the intended spatial structure and character of Gatundu town. The land uses proposed include high density residential areas, medium and low density residential areas, core CBD for commercial, transportation strategies, as well as zoning of land for public purpose, educational and recreation functions. The land uses are guided by a land use budget that calculates land use requirements for the different uses to the year 2030. The land use requirements are summarised in table 14-1 below.

Table 15-1 Summary of Land Budget

Guiding Framework					
Planning Area		991.2395Ha			
Developable Land		404 Ha			
Base Pop (2020)		16,261			
Ultimate Pop (2030)		25,155			
Land Use		Existing Area (ha)	Required 2020	Required 2030	Proposed
0. Residential					
	High Density Residential	4.3059	73.188	112.52	55.3312
	Medium Density	15.829	54.891	84.39	87.7496
	Low Density	14.8536	12.198	18.75	23.4615
Total		34.9885	140.28	215.66	166.5423
1. Industrial		8.8535	4		7.8615
2. Educational					
	ECDE				
	Primary		14.31	20.44	
	Secondary		14.15	14.15	
	Tertiary				
Total		17.5537	28.46	34.59	17.723

3. Recreation					
	Parks		3.271	5.03	
	Halls/community centre		0.204	0.31	
	Playing Fields		4	4.00	
Total		1.1932	7.475	9.35	6.7392
4. Public Purpose					
	Health		3	3	
	Admin			10	
	Police Station		2	2	
	Community Centre			1	
	Fire Station			0.4	
	Library			0.4	
	Post Office			0.04	
Total		18.1447	21.4559	16.84	21.4559
5. Commercial		7.2917	10.5412		10.5412
6. Public utilities					
	Water and Sewerage		4.9		
	Garbage		2		
Total		2.0657	5.1		4.9
7. Transportation		64.0021			58.7996
8. Deferred/ Undeveloped		2.7905	0		0
9. Agricultural		834.217			682.8893

TOTAL	991.2395			
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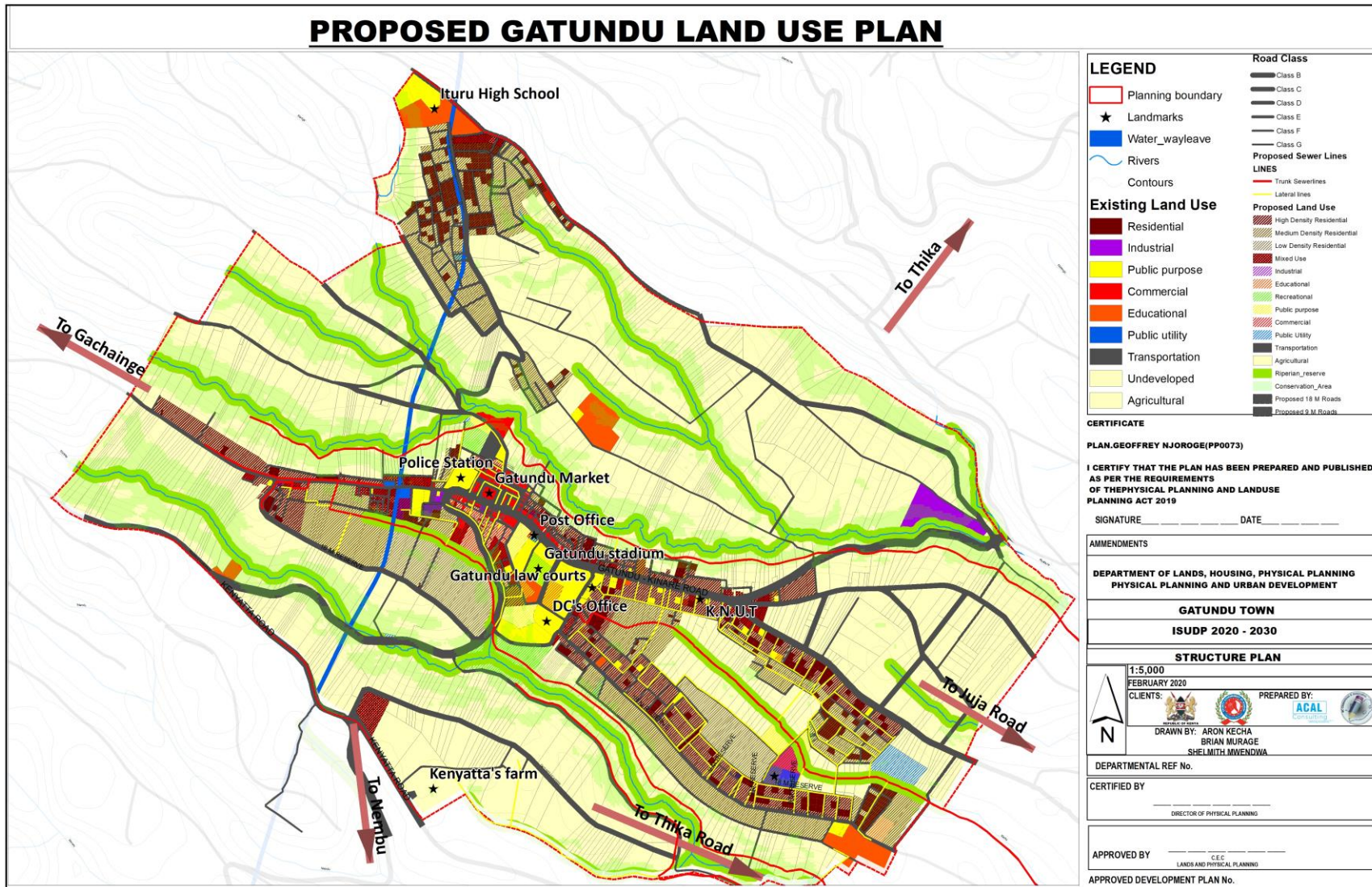
	Existing Land Use			Required 2020	Area in HA	Area in HA	
	No of Plots	Total Area (HA)	% Area			Guiding Standard	Deficit/Surplus
1. Residential							
High Density Residential		11.66		73.19	0.03 Ha/HH	-61.53	112.52
Medium Density Residential		6.24		54.89	0.045 Ha/HH	-48.65	84.39
Low Density Residential		3.95		12.20	0.03 Ha/HH	-8.24	18.75
Totals		21.86		140.28		-118.42	215.66
2. Industrial							
Light Industry				4.00	4 Ha/30,000 Pop		4.00
Heavy Industry				0.00	10 Ha/100-500k pop		
Totals		6.04				2.04	4.00
3. Educational							
ECDE							
Primary				14.23	1:4000 (3.25 ha)		20.31
Secondary				14.06	1:8000 (4.5ha)		14.06
Tertiary					10.2 ha		
Totals		13.90		28.29		-14.39	34.38
4. Recreational							
Parks				3.252	2ha:10000		5.0006
Halls/community centre				0.20	0.25ha: 20,000		0.3125375
Playing Fields							

Totals		0.8426		3.455		-2.410	5.31
5. Public Purpose							
Health Centre		0		3	3	-3	3
Admin					10		10
Police Station					2		2
Community Centre					1		1
Fire Station		0			0.4		0.4
Library		0			0.4		0.4
Post Office					0.04		0.04
Totals		7.2333			16.84	-9.6067	16.84
6. Commercial							
7. Public Utility							
Water and Sewerage							
Garbage					0.1 (collection)	2 (dumping site)	2
Totals		0.0364		2		-1.9636	2
8. Transportation							
Deferred		8.9953					
Agricultural		575.1965					
Totals		663.64				-144.76	278.19

Population& Year		13,186 (2015)			16,354 (2020)		20,283 (2025)		25,155 (2030)	
Land use		Existing LU	Area (Ha)	% Area	Area (Ha)	% Area	Area (Ha)	% Area	Area (Ha)	% Area
RESIDENTIAL	HIGH DENSITY	34.96	55.62	5.8	69.02	7.21	85.6	8.9	106.01	11.1
	MEDIUM DENSITY	92.28	27.82	2.9	34.31	3.6	42.8	4.4	53.08	5.5
	LOW DENSITY	6.64	9.27	0.7	11.50	1.2	14.2	1.4	17.69	1.8
INDUSTRIAL		8.79	4	0.42	0	-	4	0.42	0	-
EDUCATION	PRIMARY	13.0	42	4.39	53	6	66	7	81.75	8.5
	SECONDARY /TECHNICAL SCHOOL		39	4.03	97	10	121	13	149.70	15.6
	TERTIARY									
RECREATION	PARKS	3.17	2.6	0.28	3.2708	0.34	4.0566		5.031	
	MUSEUMS /HISTORICAL SITE		0.4	0.04		0.21				
	COMMUNITY CENTRE		0.2	0.02	0.20	0.21	0.25		0.314	
PUBLIC PURPOSE	HEALTH	8.54	8	0.84	8	0.84	8	0.84	8	0.84
	ADMINSTRATION		20	2.09	20	2.09	20	2.09	20	2.09
	LAW AND ORDER									
	LAW COURT		2		2	0.21	2	0.21	2	0.21
	POLICE STATION		2.2	0.23	2.2	0.21	2.2	0.21	2.2	0.21
	FIRE STATION/ DISASTER MGMNT		0.4	0.04	0		0		0	0
	LIBRARY		0.4	0.04	0		0		0	0
COMMERCIAL		8.48								
Public UTILITIES	WATER RESERVIOR	0.71	0.1	0.01	0.1	0.01	0.1	0.01	0.1	0.1
	GAR BAGE COLLECTION POINTS		0.1	0.01	0.1	0.01	0.1	0.01	0.1	0.1
	GARBAGE TRANSFER STATIONS		2	0.21	2	0.21	2	0.21	2	2
	SANITARY LAND FILL (csp-1km away)		2	0.21	2	0.21	2	0.21	2	2
TRANSPORTATI ON	-	56								
DEFERRED LAND	-	-								
AGRICULTURAL	-	733								
TOTAL		956	217.91		301.46		375.3		447.73	

Source: ACAL & BC Gildenhuys, 2020

Map 15-1: Gatundu Structure Plan



Source: ACAL & BC Gildenhuys, 2020

15.2 Urban Revitalization/Development

The CBD is confined to the area between the police station and the post office. The area has dominant commercial activities and retail activities and houses the modern market, several banks, office spaces and petrol stations. The minimum land size allowable is 0.075 ha. The CBD has been zoned for commercial, shopping complexes and office buildings. The streets within the CBD will be one way with onsite parking facilities. The central business district proposal is to densify the structures to high rise business, shops and offices. The proposal is to have an addition population catered for to house the day population who come to the market and don't reside within the planning area. Provision of services like sufficient water supply and urban resources (street lighting, walkways and bike lanes). It is also to limit the minimum acreage outside the planning area to 0.5 Ha to encourage constant supply of farm products to the market.

15.2.1 Transport

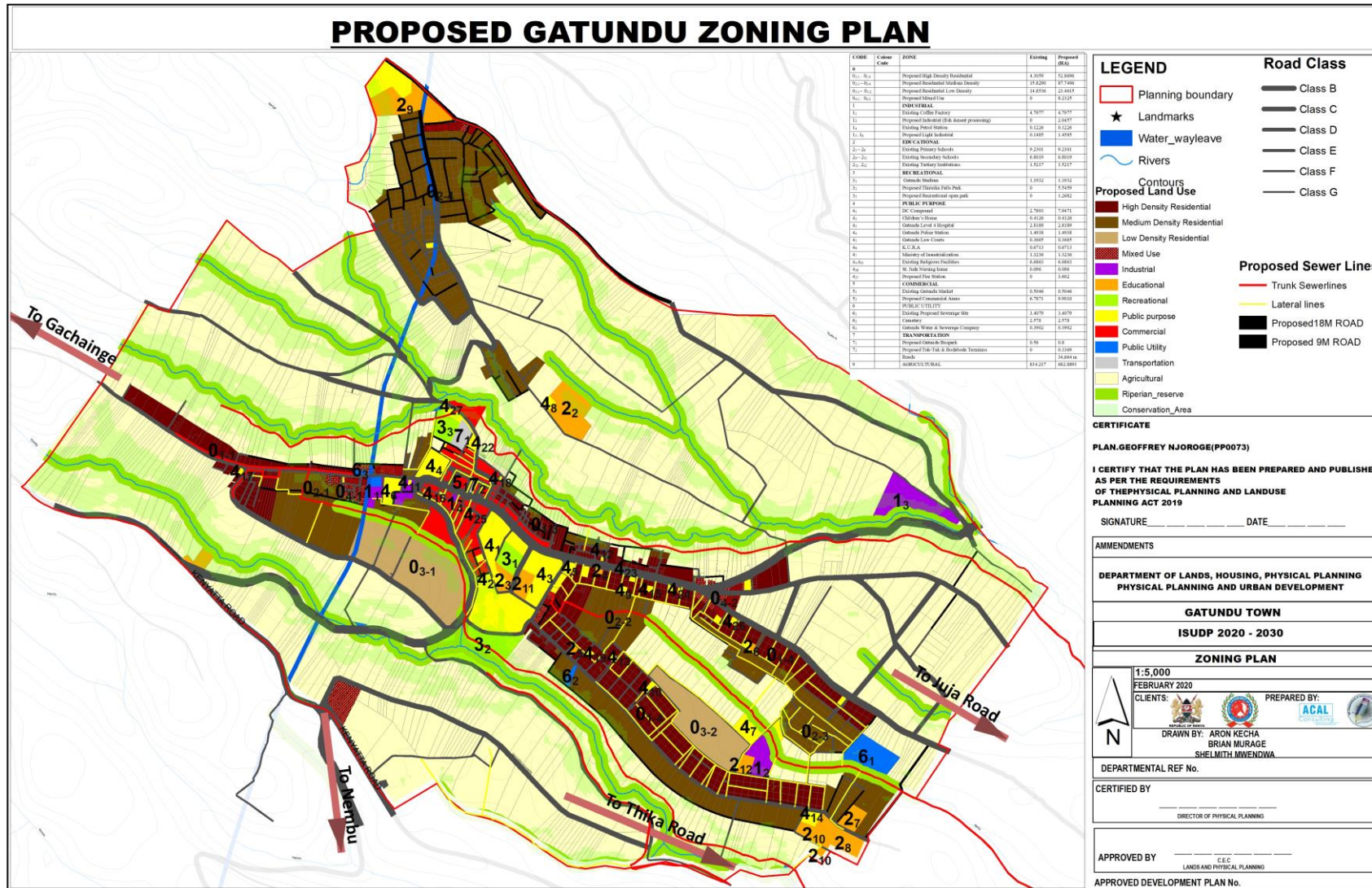
Gatundu town has a bus park near at the confluence of Gatundu Juja and Gatundu Kinare road. The Bus Park has a separate entry and exit. However, the current location of the bus park has contributed to traffic related conflicts, leading to closure of the exit. The entry to the bus park is on a curve making the area a blind spot and prone to accidents. The following proposals have been made in the structure plan: relocation of the bus park to the Ituru road, 200 metres from the existing market, designing and construction of pedestrian walkways from the bus terminus along the Gatundu Kinare road on both sides totalling 3.5kms each. Construction of storm water channels along the transport corridor. The section should also have adequate street furniture including signage street lighting. Design and construction of NMT facilities totalling 6 km on Gatundu Juja road and Muhara road. Provide for parking sheds for motorcycle taxis at key junctions.

The plan provides for parking for transportation trucks near the market facility to facilitate offloading and loading of trucks.

16 CHAPTER SIXTEEN: ZONING PLANS

This zoning plan shows the proposed areas for various land uses as well as the recommended densities for each zone, guided by the land budget. The zoning plan acts as the policy guidelines for safeguarding the environment, managing urbanisation and spurring economic growth in Gatundu. Map 14-1 below summarises the key zones proposed in this plan.

Plate 16-1 Gatundu Zoning Plan



Source: ACAL & BC Goldenhuys, 2020

16.1.1 Zoning guidelines

To guide the implementation of the zoning plan, zoning guideless that will act as a basis for development control detailing the allowable limits of operation within each zone have been prepared and summarised in table 16-3 below.

Table 16-1 Zoning Table

CODE	ZONE	Permitted Use	Standards	Regulations
0	RESIDENTIAL			
0 ₁₋₁ – 0 ₁₋₅	Proposed High Density Residential	Multi-storeyed apartments/flats minimum 4 floors Allow for mixed use; commercial (shops, retail stores)	Plot ratio 1:5 Plot Coverage 70% No of Floor 5 Setback <ul style="list-style-type: none"> o Front: 3m o Sides: 1.5m o Rear: 1.5m 	Minimum 9-meter road reserve. Minimum setbacks (front: 4m, rear: 4m, side 3m (excluding eaves) and 9m where balconies overlook the side boundary). Minimum communal open space: 20% of site area, at a minimum of 25 m ² . <ul style="list-style-type: none"> ▪ 1 parking space for every 2 No. bedsitter unit/studio ▪ 1 Parking Space for every 1-Bedroom unit ▪ 1 Parking Space for every 2-Bedroom unit ▪ 1.5 parking Space for every 3-Bedroom unit
0 ₂₋₁ - 0 ₂₋₈	Proposed Residential Medium Density	PRINCIPAL USE; MEDIUM DENSITY RESIDENTIAL Development type: mixed use development, single family dwelling units, multiple family dwellings, <ul style="list-style-type: none"> ▪ bungalows, ▪ duplexes, ▪ Maisonette, flats	<ul style="list-style-type: none"> • Plot coverage: 50% • Plot ratio: 1:4 • Minimum Setbacks <ul style="list-style-type: none"> o Front: 3m o Sides: 1.5m o Rear: 1.5m 	<ul style="list-style-type: none"> ▪ Minimum land size:0.045 - 0.1 HA ▪ Maximum height: two storeys ▪ Building line: minimum of 3m from road reserve ▪ 10% tree cover: ▪ Allow rain water harvesting Car parking: 2 parking spaces each 3m by 2m
0 ₃	Proposed Residential Low Density	PRINCIPAL USE; LOW DENSITY Development type: single family dwelling units, multiple family dwellings, <ul style="list-style-type: none"> ▪ Mansion ▪ bungalows 	<ul style="list-style-type: none"> • Plot coverage: 25% • Plot ratio: 1:2 • Minimum Setbacks <ul style="list-style-type: none"> o Front: 6m o Sides: 3m o Rear: 3m • Skyline: 6m height 	<ul style="list-style-type: none"> ▪ Minimum land size: 0.2 Ha ▪ Maximum height: two storeys ▪ Building line: minimum of 6m from edge of road reserve ▪ Minimum of 10% tree cover: Promote rain water harvesting

0 _{4.1} -0 _{4.2}	Proposed Mixed Use	PRINCIPAL USE; Residential and Commercial Development type Flats	<ul style="list-style-type: none"> ▪ Plot coverage: 75% ▪ Plot ratio: 1:5 ▪ Minimum Setbacks ▪ Front: 3m ▪ Sides: 1.5m ▪ Rear: 1.5m 	<ul style="list-style-type: none"> ▪ predominant use (occupying 50%) shall determine the regulation applicable ▪ Heavy Industries prohibited
1	INDUSTRIAL			
1 ₁	Existing Coffee Factory	Agro-Processing industry: target fruits Conditional use: workers accommodation, public facilities, sundries/grocery shops, fast food outlets		<ul style="list-style-type: none"> ▪ Plot Coverage of up to 70% ▪ Minimum 12-meter road reserve. ▪ Parking provided for every 100 m2. ▪ Minimum land size per industry is 4 Ha allocated for the entire zone
1 ₂	Proposed Light Industrial – Food Processing	Principle Use: food processing (meat, fish, honey) industries Fast foods processing		
1 ₄	Existing Petrol Station			<ul style="list-style-type: none"> ▪ Minimum subdivision 0.1- 0.2 ▪ Frontage 18m ▪ 25% Ground Coverage
1 ₅ - 1 ₆	Proposed Light Industry	Development type: Light industries <ul style="list-style-type: none"> • Jua kali • Artifacts 		
2	EDUCATIONAL			
2 _{1.1} – 2 ₈	Existing Primary Schools <ul style="list-style-type: none"> • Githioro Nurey Sch • Muthurumbi primary 	PRINCIPLE LAND USE: EDUCATION Education		<ul style="list-style-type: none"> ▪ For Low income housing, school should be within walking distance of 300-500 meters. ▪ The minimum land requirement for an ECD center should be 0.25 Ha.

	<ul style="list-style-type: none"> Githaruru Primary School 			<ul style="list-style-type: none"> Population ration of 1:3500 in urban areas The minimum land requirement for a primary school center should be 0.15-0.25 Ha.
2 ₉ – 2 ₁₁	Existing Secondary Schools Muthurumbi sec school Gatundu Childrens Home Githaruru Sec School			<p>For Secondary School Population 1:8000</p> <p>The minimum land requirement for a secondary school center should be 3.4- 4.5 Ha (depending on the number of streams).</p>
2 ₁₁ – 2 ₁₂	Gatundu Polytechnic KMTC			Minimum Land requirement 10.2 ha
3	RECREATIONAL			
3 ₁	Gatundu Stadium	PRINCIPAL USE; RECREATIONAL Development type: <ul style="list-style-type: none"> Play field supporting ball games and athletics 	Ground coverage <20%	Allow only buildings supporting recreational use Provide for centralised parking Provide parking 1 per 100m ² Provide ancillary services (water, sanitation, lighting)
3 ₂	Proposed recreation park at Thiririka Falls	PRINCIPAL USE; RECREATIONAL Picnic and Nature trails		Provide parking 1 per 100m ² public access of a minimum 9m Provide for picnic sites and refuse disposal facilities of at least 0.4 ha.
3 ₃	Proposed recreation – Open Ground	PRINCIPAL USE; RECREATIONAL Open park		Provide for 3 m foot paths and tracks within the facility, seating spaces, sanitary facilities
	Rivers	PRINCIPAL USE; RECREATIONAL	Allow 30m from the river stream	<ul style="list-style-type: none"> Do not allow building developments

		Development type: Proposed River riparian reserve		
4	PUBLIC PURPOSE			
4 ₁	Administrative Hub	PRINCIPAL USE; PUBLIC PURPOSE Development type: administrative center Sub county Offices <ul style="list-style-type: none"> • Law courts • Police stations • Police posts 	<ul style="list-style-type: none"> • Plot coverage: 35% • Plot ratio: 1:3 • Minimum Setbacks <ul style="list-style-type: none"> ○ Front: 3m ○ Sides: 1.5m ○ Rear: 1.5m 	<ul style="list-style-type: none"> ▪ land size: 4 Ha Car parking: Parking spaces each 3m by 2m
4 ₃	Level 5 Hospital	PRINCIPAL USE; PUBLIC PURPOSE Development type: Level 3 health facility	<ul style="list-style-type: none"> • Plot coverage: 35% • Plot ratio: 1:3 • Minimum Setbacks <ul style="list-style-type: none"> ○ Front: 3m ○ Sides: 1.5m ○ Rear: 1.5m 	Minimum Land size: 4ha
4 _{272Q}	Proposed Fire Station	Principle Use; Fire and Disaster management To include station, staff accommodation and drilling area.	<ul style="list-style-type: none"> • Plot coverage: 35% • Plot ratio: 1:3 • Minimum Setbacks <ul style="list-style-type: none"> ○ Front: 3m ○ Sides: 1.5m ○ Rear: 1.5m 	Car parking: Parking spaces each 3m by 2m Minimum Land Size 0.4 hectares
4 ₈	Police Station	PRINCIPAL USE; PUBLIC PURPOSE Development type: Law and Order <ul style="list-style-type: none"> • Law courts • Police stations • Police posts Police base	<ul style="list-style-type: none"> • Plot coverage: 35% • Plot ratio: 1:3 • Minimum Setbacks <ul style="list-style-type: none"> ○ Front: 3m ○ Sides: 1.5m ○ Rear: 1.5m 	<ul style="list-style-type: none"> ▪ Minimum Land Size; ▪ Law court 1ha ▪ Police stations 2 ha. ▪ Police post 2.0 hectares Patrol base 0.2 hectares

5 COMMERCIAL				
5 ₁	Existing Gatundu Market	<p>Modern markets</p> <p>NON-PRINCIPLE USE;</p> <p>Terminal facility</p> <p>Shows and Exhibition areas</p> <p>Mixed used Development</p>	<ul style="list-style-type: none"> • Plot coverage: 80% • Plot ratio: 1:5 <p>20% of plot to be open with furniture</p>	<ul style="list-style-type: none"> ▪ Multi storey: 0.25-0.3 ha ▪ Allow rain harvesting <p>Minimum land size is 0.045 ha</p> <p>Plot length versus the width 1:3.</p> <p>Building lines for roads range between 6-18 meters wide 6 m</p>
5 ₂ – 5 ₄	Proposed Commercial Areas	<p>PRINCIPAL USE; COMMERCIAL</p> <p>Development type: mixed use development, multi storey developments, shopping complexes, office buildings,</p> <ul style="list-style-type: none"> • Financial services • Business support services • Professional offices • Retail and wholesale <p>NON-PRINCIPLE USE;</p> <p>Development type: hotels, eateries, accommodation</p> <ul style="list-style-type: none"> • Hotels <p>restaurants</p>	<ul style="list-style-type: none"> • Plot coverage: 85% • Plot ratio: 1:5 • Minimum Setbacks <ul style="list-style-type: none"> ○ Front 3m ○ Sides 3m ○ Rear 3m • Building Line: minimum of 3m from edge of Road reserve • Onsite parking: 1 parking space per 100msq of commercial space <p>Off-street Parking: 1.5 m wide one-way parallel parking space on the road reserve</p>	<p>Mixed use allowed</p> <p>Minimum land Subdivision Level - 0.045 Ha</p> <p>Provide 1.5 parking for every 100m² except where Basement parking is provided.</p>
6 PUBLIC UTILITY				
6 ₁	Waste Management Site			
6 ₂	Cemetery			
6 ₃	GAWASCO			
7 TRANSPORTATION				

7 ₀	Existing Roads	Roads, Terminals, bus stops, Bus Depot, Bus Terminals, Truck Terminals, Warehouses, Storage,	As per standards	
7 ₁	Proposed Kamwangi Bus Park		Provide for 60% open space	No direct access to the road
7 ₂	Proposed Roads (Total=1,672m)		As per road guidelines	
9	AGRICULTURAL			
	Existing Farm lands	All agriculture uses. ii. Farm-House, Building for Agricultural activities subject iii. Dairy and Cattle Farms, Fish Farms. iv. Poultry Farms, Stud Farms. v. Forestry. vi. Storing and Drying of Fertilizers incidental to the agricultural activities.	<p>Small scale agriculture: Minimum land subdivision level - 0.2 hectares</p> <p>Large scale agriculture (commercial):</p> <p>Minimum land subdivision level -2.0 Ha</p> <p>Urban agriculture (Permitted for crops less than 0.5m): Minimum land subdivision level - 0.045 H</p>	All plots to have access road – 9 m

16.2 Action Area Plan

16.2.1 Gatundu CBD Revitalization Action Plan.

DESCRIPTION

Gatundu town is experiencing urban decay despite its rich history. The town needs an urban renewal program to improve its social, economic and cultural significance. This requires measures that will improve land optimisation within the core CBD, enhance circulation, and provide for open spaces, parking spaces and non-motorised transport system.

The action area plan targets the market area, the administrative office area bound by the slip road that connects passes behind the hospital rejoining Gatundu Kinare road.

CHARACTER

The character of the action area can be summarized as:

- i. Terraced duka structures along the main road with rusted and worn out mabati roofing.
- ii. Gatundu modern market as an iconic feature is at the centre of the action area.
- iii. There exist tarmacked roads in the area.
- iv. The main road is adequate, but the feeder roads are narrow.
- v. On street/ informal parking is evident on the carriage way.
- vi. There is traffic conflict between pedestrians, motorists, bodabodas and even animals.
- vii. Informal trade e.g. maize roasting, selling of sweets and fast foods, shoe shining and shoe repair.
- viii. The area housing the administrative offices is characterized by the following:
 - o Scattered government building, almost each department housed in a separate building
 - o Old row housing
- ix. The action area is a busy node. A lot of human movement and activities take place.

Below is an illustration for the action area.

Figure 16-1 Action Plan Illustration



Source: ACAL & BC Gildenhuys, 2020

INTERVENTIONS

The following activities need to be done in order to renew or rather regenerate the area:

- i. Consolidate government offices in one modern multi storey building to optimize on space.
- ii. Create more open spaces within the administration area, with proper land scaping and adequate outdoor furniture.
- iii. Provide for parking facilities, preferably a parking Silo.
- iv. Expanding roads within the action area to enhance better functionality of the town.
- v. Tarmac the slip road to divert some of the traffic outside town.
- vi. Provide service lane parallel to Gatundu-Kinare road on B30.
- vii. Provide drainage along Gatundu-Kinare road.
- viii. Acquisition of land next to the market for tuk tuk parking.
- ix. Promote modern high-rise buildings in the area next to the AP lines to act as a financial capital and give the town a modern face.
- x. Provide street lights for roads in the CBD and the major roads.
- xi. Provide onsite parking for all buildings.

17 CHAPTER SEVENTEEN PLAN IMPLEMENTATION MATRIX.

Table 17-1: Implementation Matrix (Urban renewal and Housing)

Sector:	Strategies	Projects:	Actors	Outcome	Time frame:		
					0-3 yrs	4-7 yrs	8-10 yrs
Urban renewal and Human settlements Objective: To make Gatundu Town the destination of choice for investors	Identification of Land for public purposes	Zone and map out all public land in Gatundu Map out all way leave areas, road reserves	CGK, Utility companies, KURA	Data base of land available for public purpose			
	Commercial zones	Zoning The CBD for commercial, shopping complexes and office buildings densify the structures to high rise business, shops and offices	CGK	More space for business Eas of movement in CBD			
		Conversion of street within CBD into one way with onsite parking facilities. The central business district proposal is to	CGK	Parking facilities in CBD			
		Street lighting for security	CGK				
	Infill development/ Urban renewal	Rezoning of residential areas near CBD into high-density, high rise serviced social housing neighbourhood.	CGK, State department of Housing				
		Designation of zones for the development of high-density residential housing for low income earners (affordable housing).	CGK	Increased access to housing-good quality housing Land value optimisation			
	Zoning of residential	Designation of zones for medium, and low-density housing within the planning area.	CGK	Increased access to housing-good quality housing Land value optimisation			

	areas & Housing strategy	Encourage PPP initiatives to promote investment in housing sector	CGK	Better quality housing stock			
		Enforcement of the zoning regulations (set out in this plan) on allowable building lines, setbacks, plot ratios and ground coverage.	CGK	Improved urban design			
	Development control within residential zones	Non-approval of incompatible land uses within residential zones such as heavy industrial use.	CGK	Improved efficiency			

Table 17-2 Implementation Matrix (Transportation Strategy)

Sector:	Strategies	Projects:	Actors	Outcome	Time frame:		
					0-3 yrs	4-7 yrs	8-10 yrs
Transportation: To improve access and efficiency for better business and quality of life in Gatundu	Improved transport efficiency	Have a 12m service lane on all commercial properties fronting the Gatundu – Kinare Road	KENHA	Improved traffic flow			
		Paving of the roads within the CBD.	KURA, CGK	Improved access			
		Construct a 12m access road to the colonial villages.	CGK	Improved access			
		Levelling and murraming of the roads connecting the CBD to surrounding residential and agricultural areas.	CGK	Improved access			
		Improvement of road connectivity within residential zones.	KERRA CGK	Improved access			
		Regular maintenance of road infrastructure within the planning area.	KERRA, KURA, CKG	Improved access			
		Convert Select streets within CBD into one way traffic flows	CGK				
		Traffic calming near key facilities like market, schools and hospital.	CGK	Reduced accidents			
	Enhanced transport safety	Upgrading of the key junctions to provide for acceleration /deceleration lanes	KENHA KENHA	Reduced accidents, improved traffic flows			
		Designation of routes for NMT infrastructure (pedestrian walkways and cycling lanes) within the CBD and the internal centre roads.	CGK	Reduced conflicts, accidents and improved traffic flow			
	Promotion of NMT transportation	Designation of an area for construction of a boda boda terminus/ sheds.	CGK				
		Non-approval of development applications for physical constructions within wetlands.	NEMA, MCG	Conservation of wetlands and riparian areas			

Table 17-3 Implementation Matrix (Infrastructure)

Sector:	Strategies	Projects:	Actors	Outcome	Time frame:		
					0-3 yrs	4-7 yrs	8-10 yrs
PHYSICAL AND SOCIAL INFRASTRUCTURE DEVELOPMENT STRATEGY Objective: To make Gatundu Town a modern, well serviced town	Improving sanitation services	Acquisition of the land for construction of a sewer treatment plant	AWSB, GAWASACO	Improved management of waste-water			
		Connection of buildings to the sewer network	GAWASACO				
		Establishment of a garbage collection and sorting centre/ site (for onward transmission to Thika).	CGK	Improved Management of Solid waste			
		Construction of additional public toilets within the CBD	CGK	Improved sanitation in town			
	Improving access to safe water	Expansion of the water reticulation system	AWSB, GAWASACO	Improved availability of water			
		Improvement of reticulation system to enhance efficiency	CGK	Reduced unaccounted for water			
		Promotion of water harvesting at the household and institutional level.		Increased water conservation			
	Improving drainage	Construction of drainage channels on all access roads.	CGK				
	Improving access to education to persons with special needs	Provide additional facilities as may be required to accommodate persons with special needs	Ministry of education				

Table 17-4 Implementation Matrix (Environmental Management)

Sector:	Strategies	Projects:	Actors	Outcome	Time frame:		
					0-3 yrs	4-7 yrs	8-10 yrs
ENVIRONMENTAL MANAGEMENT AND CONSERVATION Objective: To create an environmentally sustainable Gatanga Town.	Conservation of wetlands and riparian areas	Community awareness programs on the importance of wetland areas and riparian areas.	CGK, NEMA	Conservation of wetlands and riparian areas			
		Mapping and Zoning of wetlands and Riparian areas.	CGK, NEMA				
		Reclamation and rehabilitation of wetlands and riparian areas	NEMA, CGK				
	Conservation of steeply sloping zones	Zoning and Mapping out of areas with slopes exceeding 25%	NEMA, CGK	Reduced erosion hazards, reduced risk of landslides, improved safety Reduced pollution			
		Rehabilitation of degraded sloppy areas (farm forestry, terracing, wood lots)					
		Promotion of agro forestry in the entire agricultural zone.	CGK	Improved tree cover, improved soil and water conservation			
	Control of pollution	Connect units to the sewer system being constructed	AWSB.GAWASACO	Reduced pollution Increased employment opportunities and livelihoods			
		Solid waste management infrastructure for the town	CGK				
		Monitoring of Illegal discharge of effluents into natural environment	CGK, NEMA, WRUA				

Table 17-5 Implementation Matrix (Economy)

Sector:	Strategies	Projects:	Actors	Outcome	Time frame:		
					0-3 yrs	4-7 yrs	8-10 yrs
LOCAL ECONOMIC & INVESTMENT DEVELOPMENT STRATEGY Objective: Enhance opportunities for livelihood improvement in the town	Enhancement of agricultural activities and productivity.	Development of incentives and subsidies to attract private sector investment in Agro-Industrial Zone	CGK	Increased employment opportunities and livelihoods			
		Setting of the minimum acreage allowable for sub-division within the agricultural zone at 1 acre (0.4 Ha).	CGK, NLC	Protection of agricultural land			
		Restrict change of use for zoned agricultural areas	CGK	Preservation of farm lands			
	Promotion of agro-industrial development	Promotion of high value cash crops	CGK				
		Zone out potential areas for setting up of agro industries	CGK	Reduced erosion risk			
		Strengthen farmer’s cooperatives through training and incentives.	CGK, ministry of Trade				
		Development of incentives and subsidies to attract private sector investment in Gatundu Town.	CGK	Increased livelihoods options and earnings			
	Enhancement of trade and commerce	Development of incentives and subsidies to attract small-scale traders to already existing market infrastructure.	CGK	Increased livelihoods options and earnings			
		Redevelopment and beautification of the CBD through zoning to create a well-planned and attractive centre for economic development.	CGK	Increased livelihoods options and earnings			

18 CHAPTER EIGHTEEN: IMPLEMENTATION MATRIX

18.1 Capital Investment Plan

The table below summarises the key projects to be implemented to make the structure plan a success so as to achieve the vision of the plan

18.1.1 Quick win Projects

Figure 18-1 Road Networks Improvement

Project	Components	Quantity	Cost Per Unit	Total Cost	Lead Agency
CBD Renewal	Improvement of roads within Core CBD (Market area)	4	60,000,000.00	240,000,000.00	CGK
	Provision of Drainage, NMT and other Road Furniture (4kms)	4	15,000,000.00	15,000,000.00	CGK
	CBD beatification (Lump Sum)	1	30,000,000.00	15,000,000.00	CGK
subtotal				270,000,000.00	

18.1.2 Water and Sanitation

Table 18-1 Water and Sewerage Projects

Project	Components	Quantity	Cost Per Unit	Total Cost	Lead Agency
Water and Sewerage	Sewer infrastructure: Construction of new trunk and reticulation sewer in Gatundu totaling 20kms	20	20,000,000.00	40,000,000.00	GAWASCO/AWSB
	Water Reticulation: Construction of new trunk and reticulation system totaling 20 kms	20	15,000.00	300,000,000.00	GAWASCO/AWSB
Solid waste Management	Land Acquisition 0.5 ha	1.24	15,000,000.00	18,600,000.00	CGK
	Skips and Transfer Station	3	10,000,000.00	30,000,000.00	CGK
subtotal				748,600,000.00	

18.1.3 Road Networks

Table 18-2 Proposed Road Improvements

Project	Components	Quantity (kms)	Cost Per Unit	Total Cost	Lead Agency
Roads	Service lane along B30	1.9	40,000,000.00	76,000,000.00	KURA
	NMT along B 30	1.9	7,000,000.00	13,300,000.00	KURA
	9m service lane within CBD	4	60,000,000.00	240,000,000.00	CGK
	Tarmacking road behind DCs residence	0.8	40,000,000.00	32,000,000.00	CGK
	Tarmacking link road for Gatundu Juja road to Gatundu Kinare road	1.5	60,000,000.00	90,000,000.00	
				0.00	
	Street Lighting	1	30,000,000.00	30,000,000.00	CGK
	Upgrading road to Gatundu Vocational Training Centre	1.5	40,000,000.00	60,000,000.00	
	Opening up of access roads	30	15,000,000.00	450,000,000.00	
Sub total				991,300,000.00	

18.1.4 Recreation

Project	Components	Quantity	Cost Per Unit	Total Cost	Lead Agency
Recreation	acquisition of land 4 acres	4	20,000,000.00	24,000,000.00	CGK
	Development of picnic trails and support infrastructure	1.00	100,000,000.00	100,000,000.00	CGK
Sub total				124,000,000.00	

18.1.5 Bus Park Relocation Option

Table 18-3 Bus Park Relocation

Project	Components	Quantity	Cost Per Unit	Total Cost	Lead Agency
Bus park	Land Acquisition (6 acres)	6	20,000,000.00	120,000,000.00	CGK
	Construction of Modern Bus park (1000m2)	1,000.00	40,000.00	40,000,000.00	CGK
					CGK
subtotal				160,000,000.00	

18.1.6 Summary of Cost

Component	Total Cost
CBD Regeneration	270,000,000.00
Water & Sanitation	748,600,000.00
Circulation	991,300,000.00
Recreation	124,000,000.00
Bus park relocation	160,000,000.00
Allow for admin Cost (10m/year)	100,000,000.00
Total Cost	2,393,900,000.00

18.2 Monitoring, Evaluation and Reporting

Plan monitoring refers to a set of regulated processes that continuously and systematically gather information on a plan during the execution period. This monitoring should be used in order to control and report contingencies or possible correction of the plan.

Plan evaluation refers to the processes needed to measure the achievement of the objectives and established goals for the Gatundu ISUDP and to suggest proper policy and design changes. The evaluation process requires identification of tools to measure the performance of the actions and policies, and to solve problems related to implementation and effectiveness of policies. Evaluation can be carried out at any time of the planning process and, unlike monitoring, it can be performed by external agents that are not part of the team in charge of the plan. Usually, the evaluation of objectives is performed with the aid of indicators, which are considered a fundamental element for the evaluation of spatial policies.

The aim of Monitoring and Evaluation is to clarify on:

- What is to be monitored and evaluated
- The activities needed to monitor and evaluate
- Who is responsible for monitoring and evaluation activities
- When monitoring and evaluation activities are planned (timing)
- How monitoring and evaluation are carried out (methods)
- What resources are required and where they are committed

In addition, relevant risks and assumptions in carrying out planned monitoring and evaluation activities should be seriously considered, anticipated and included in the M&E framework.

The pillars of successful monitoring and evaluation are:

- Planning and programme and project definition—Projects and programmes have a greater chance of success when the objectives and scope of the programmes or projects are properly defined and clarified. This reduces the likelihood of experiencing major challenges in implementation.
- Stakeholder involvement—High levels of engagement of users, clients and stakeholders in programmes and projects are critical to success. This will ensure that effective citizenship is promoted through project ownership and implementation support. Stakeholder involvement must be transparent and not merely a rubber-stamping exercise. It should be clear to all what the results from stakeholder involvement will be used for.
- Coordination - A coordination committee during the monitoring and evaluation of the Gatundu ISUDP will maximize the use of available resources, avoid duplication, ensure accountability, reduce monitoring and evaluation delays, conflict and improve the capacity of the members.
- Communication - good communication results in strong stakeholder buy-in and mobilization. Additionally, communication improves clarity on expectations, roles and responsibilities, as well as information on progress and performance. This clarity helps to ensure optimum use of resources.

Monitoring and evaluation of the progress made in implementation of this plan will be the task of the coordination unit. The coordination unit is made up of the following:

- The Chief Officer (Lands and Urban/ Physical Planning), or any relevant person appointed by the Chief Officer, to manage the implementation process. He will oversee all functions of the coordination committee including the implementing heads of departments;
- Members of the town management committee;
- Senior member from the Ministry of Trade, Lands, Urban/ Physical Planning, Energy and Industrialization;
- Thematic Department Heads (Agriculture, Education, Water, Energy, Health, Infrastructure, Environment, Roads, Housing and Sanitation, Gender, Youth, Sports, Tourism etc); and,
- One representative of disabled persons, marginalized communities and the youth.

NB: Committee members must not be more than two-thirds from one gender.

An illustration of a monitoring and evaluation framework is as shown in the table below.

Table17-2: Monitoring and Evaluation Framework (Urban Renewal and Housing)

Sector:	Projects:	Baseline	Target	Indicators	Responsibility	Time frame:		
						0-3 yrs	4-7 yrs	8-10 yrs
Urban renewal and Human settlements Objective: To make Gatundu Town the destination of choice for investors	Enforcement of the zoning regulations (set out in this plan) on allowable building lines, setbacks, plot ratios and ground coverage.		100% compliance in urban	Percentage compliant buildings	CGK			
	One way streets with parking in the CBD	0	7 streets	Total no of one way streets	CGK, KURA			
	Connection of building to the sewer network	0	100% within town	% of sewered buildings	GATWASCO			
	Establishment of a garbage collection and sorting centre/ site (for onward transmission to Thika).	0	All nodes to have collection centres	Transfer stations and waste collection stations Frequency of waste collection	CGK			
	Open space/ recreation facilities within CBD	0	1	Total area under open space/recreation within CBD	CGK			

Table 17-3: Monitoring and Evaluation Framework (Transportation)

Sector:	Projects:	Baseline	Target	Indicators	Responsibility	Time frame:		
						0-3 yrs	4-7 yrs	8-10 yrs
TRANSPORTATION Objective: To create a sustainable, safe and efficient system of transportation within Gatundu Town	Have a 12m service lane on all commercial properties fronting the Gatundu – Kinare Road		2 km	Presence of Standard Service lane 12m wide road with dual carriage ways and a pedestrian walkway.	KENHA CGK			
	Paving of the roads within the CBD.		100%	Condition of roads	KURA CGK			
	Construct a 12m access road to the colonial villages			Size and status of the roads	KURA CGK			
	Levelling and murraming of the roads connecting the CBD to surrounding residential and agricultural areas.		100%	No of kilometres levelled and murramed	CGK			
	Improvement of road connectivity with the residential zones.			Number of new connectivity points	CGK			
	Regular maintenance of road infrastructure within the planning area.			Condition of Roads	KURA CGK			
	Convert Select streets within CBD into one way traffic flows			Number of car free streets within CBD	CGK			
	Traffic calming near key facilities like market, schools and hospital.			Presence of bumps/signage for speed near markets and schools	KURA CGK			
	Upgrading of the key junctions to provide for acceleration /deceleration lanes			Signalled Junctions/ Presence of	KURA CGK			

			accelerating/deceleration lanes				
	Designation of routes for NMT infrastructure (pedestrian walkways and cycling lanes) within the CBD and the internal centre roads.		No of streets with NMT Condition of NMT	CGK			
	Designation of an area for construction of a boda boda terminus/ sheds.		Designated areas for motorcycle taxis				
	Redevelopment and beautification of the CBD through zoning to create a well-planned and attractive centre for economic development.	1		CGK			
	Urban renewal plan targeting the old colonial estates for densification		No of renewal plans No of renewed neighbourhoods				
	Redevelopment of residential areas near CBD into high-density, high rise serviced social housing neighbourhood.		New housing stock				
	Designation of zones for the development of high-density residential housing for low income earners (affordable housing).		Percentage of densified neighbourhood				
	Designation of zones for medium, and low-density housing within the planning area.						
	Construction of additional public toilets within the CBD		No of new sanitation facilities in CBD				

Table 17-4: Monitoring and Evaluation Framework (Infrastructure)

Sector:	Projects:	Baseline	Target	Indicators	Responsibility	Time frame:		
						0-3 yrs	4-7 yrs	8-10 yrs
PHYSICAL AND SOCIAL INFRASTRUCTURE DEVELOPMENT STRATEGY Objective: To make Gatundu Town a modern, well serviced town	Expansion of the water reticulation system		100% connection in town	No of new Connections	GATWASCO			
	Construction of storm drains	None	All roads to have drains	Kms of new storm drains constructed	KURA, KERRA CGK			
	Provide additional facilities as may be required to accommodate persons with special needs			No of disability friendly facilities				
	Connect units to the sewer system being constructed	No Connection	100% connection within Town	No of Units connected to sewer	GATWASCO			
	Solid waste management infrastructure	No Dumpsite	Designated dumpsite	Designated waste collection centres	CGK			
	Recreation facilities and green spaces	1 stadium	1 stadium, one parks	Refurbished Gatundu stadium Open parks	CGK			

Table 17-5: Monitoring and Evaluation Framework (Environmental Management and Conservation)

Sector:	Projects:	Baseline	Target	Indicators	Responsibility	Time frame:		
						0-3 yrs	4-7 yrs	8-10 yrs
ENVIRONMENTAL MANAGEMENT AND CONSERVATION Objective: To create an environmentally sustainable Gatundu Town.	Zoning and mapping of riparian areas		all	No of riparian zones conserved	CGK. WRUA. NEMA			
	Promotion of the planting of appropriate tree species along the riparian reserves.			No of wetland friendly trees planted	CGK. WRUA. NEMA			
	Promotion of terracing along all steeply sloping areas.			Total Area under soil and water conservation	CGK., NEMA ministry of Agriculture			
	Promotion of agro forestry in the entire agricultural zone.			No of farmers practicing agroforestry Tree cover percentage increase	CGK., ministry of Agriculture			
	Zone areas with slopes above 25% for farm forestry			Total areas zoned and conserved	CGK., NEMA ministry of Agriculture			
	Restrictions on the discharge of liquid waste into rivers.			Water quality along rivers and streams	CGK., NEMA			

Table 17-6: Monitoring and Evaluation Framework (Economy)

Sector:	Projects:	Baseline	Target	Indicators	Responsibility	Time frame:		
						0-3 yrs	4-7 yrs	8-10 yrs
LOCAL ECONOMIC & INVESTMENT DEVELOPMENT STRATEGY Objective: Enhance opportunities for livelihood improvement in the town	Light industries for value addition	2	5	New Industries/spaces for industries	CGK., ministry of Trade			
	Development of incentives and subsidies to attract private sector investment in Gatundu Town.							
	Development of incentives and subsidies to attract small-scale traders to already existing market infrastructure.							
	Provide space for Jua Kali artisans	0	2	No of work spaces designated for jua kali				
Agriculture Sector	Setting of the minimum acreage allowable for sub-division within the agricultural zone at 1 acre (0.4 Ha).			Land subdivision guidelines				
	Promotion of high value cash crops			Farmer uptake of new crops				
	Promotion of terracing along steep slopes within the agricultural zone.			Soil and water conservation measures at farm level	CGK., ministry of Agriculture			
	Strengthen farmer's cooperatives through training and incentives.				CGK., ministry of cooperatives			
	Restrict change of use for zoned agricultural areas				CGK.,			

19 ANNEX 1: LIST OF PARTICIPANTS AT STAKEHOLDER FORUM

S.NO	NAME	ORGANISATION	POSITION	CONTACTS
1.	GEORGE GITAU	RELIGIOUS ORG	CHAPLAIN	0713187229
2.	DAVID N. MWANGI	PRIVATE	BUSINESS	0723323026
3.	SAM KAGENI	PRIVATE	BUSINESS	0710808882
4.	MICHAEL KIMANI	PRIVATE	BUSINESS, MARKET CHAIRMAN	0721255594
5.	DANIEL N WAMBERE	CGoK	ENVIRONMENTAL OFFICER	0729510612
6.	STEPHEN N ROMANOS	CGoK	IRRIGATION OFFICER	0723880647
7.	MICHAEL KARIUKI	CGoK	WATER OFFICER	0728757132
8.	JAMES W. KABIRU	CGoK	WORKS OFFICER	0721303078
9.	CHARLES M MWANGI	CGoK	PLANNER	0723894753
10.	ENG. GEDION GATIMI	ACAL	PROJECT ENGINEER	0722741181
11.	ROBERT KARIUKI	ACAL	ASS. ENGINEER	0722429707
12.	DAVID KAGOYO	PRIVATE	BUSINESS	0720428828
13.	M.M. ABDI	CGOk	SUBCOUNTY ADMINISTRATOR	0722112565
14.	ANN MAUNDU	CGoK	FINANCE AND ICT OFFICER	0707262356
15.	GEORGE NGUNJIRI	PRIVATE	BUSINESS	0722398399
16.	FLORIDA KAGENDO	CGoK	CROPS OFFICER	0720473145
17.	T.H. NDORONGO	BUSINESS	PRIVATE	0722258438
18.	DENNIS AGUYA	CGoK	PLANNER	0723640595
19.	JOHN NGUGI	CGoK	PUBLIC HEALTH OFFICER	0728464453
20.	ANN GRACE	CGOK	CHIEF OFFICER	0715867421
21.	MICHAEL WAMAE	CGoK	ADMINISTRATOR	0717009778
22.	JANE WAMBUI	PRIVATE	BUSINESS	0724721622
23.	CHARLES MURIMI GATHITU	CGoK	DEPUTY CHIEF OFFICER	0720348854
24.	SAMUEL WAKIBI	COUNTY ASSEMBLY	PERSONAL ASS TO WARD MCA	0721476680
25.	GEORGE NDUNGU	PRIVATE	BUSINESS	0711651824
26.	ESTHER KIMANI	TSC	HEAD TEACHER	0722119371
27.	PAUL KANYI	PRIVATE	BUSINESS	0721577516
28.	SALOME WACEKE	PRIVATE	BUSINESS	0708010931
29.	GEORGE GITONGA K	BODABODA ASSOCIATION	CHAIRMAN	0707988720
30.	JOSPHAT NJIRIRI	PRIVATE	BUSINESS	0724546331
31.	BARBRA JANE	PRIVATE	BUSINESS	0720314595
32.	DAVID MATHENGE	ACAL	SURVEYOR	0722575279

33.	PAOLA NJOKI	ACAL	PLANNER	0707091220
34.	DANIEL MURAGE	ACAL	PLANNER	0712571118
35.	ANN MUGO	NAMSIP	PROJECT SUPERVISOR	0720561660
36.	JOASH KAROMBORI	CGOK	PLANNER	0714724969
37.	SAMUEL GICHERE	ACAL	PROJECT DIRECTOR	0703401596
38.	EMMANUEL MUTWIRI	CGoK	PLANNER	0710730826

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